2023

USDA- Natural Resources Conservation Service
Keith Shadle
Resource Soil Scientist
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SOIL PROFILE STUDY GUIDE

PENNSYLVANIA ENVIROTHON

The purpose of this study guide is to help familiarize you with recognizing different characteristics of soils that are important considerations for how the land is used.

USDA United States Department of Agriculture
Natural Resources Conservation Service

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Introduction

These soil pits were excavated on a farm along Heister Valley Road near Mount Pleasant Mills in Snyder County, Pennsylvania. The pits were dug in a topographic sequence starting in the valley bottom and continuing up the slope onto the Shade Mountain. They represent different landform positions, drainage classes, and parent materials. These soil pits illustrate how variable the soils can be on one property.

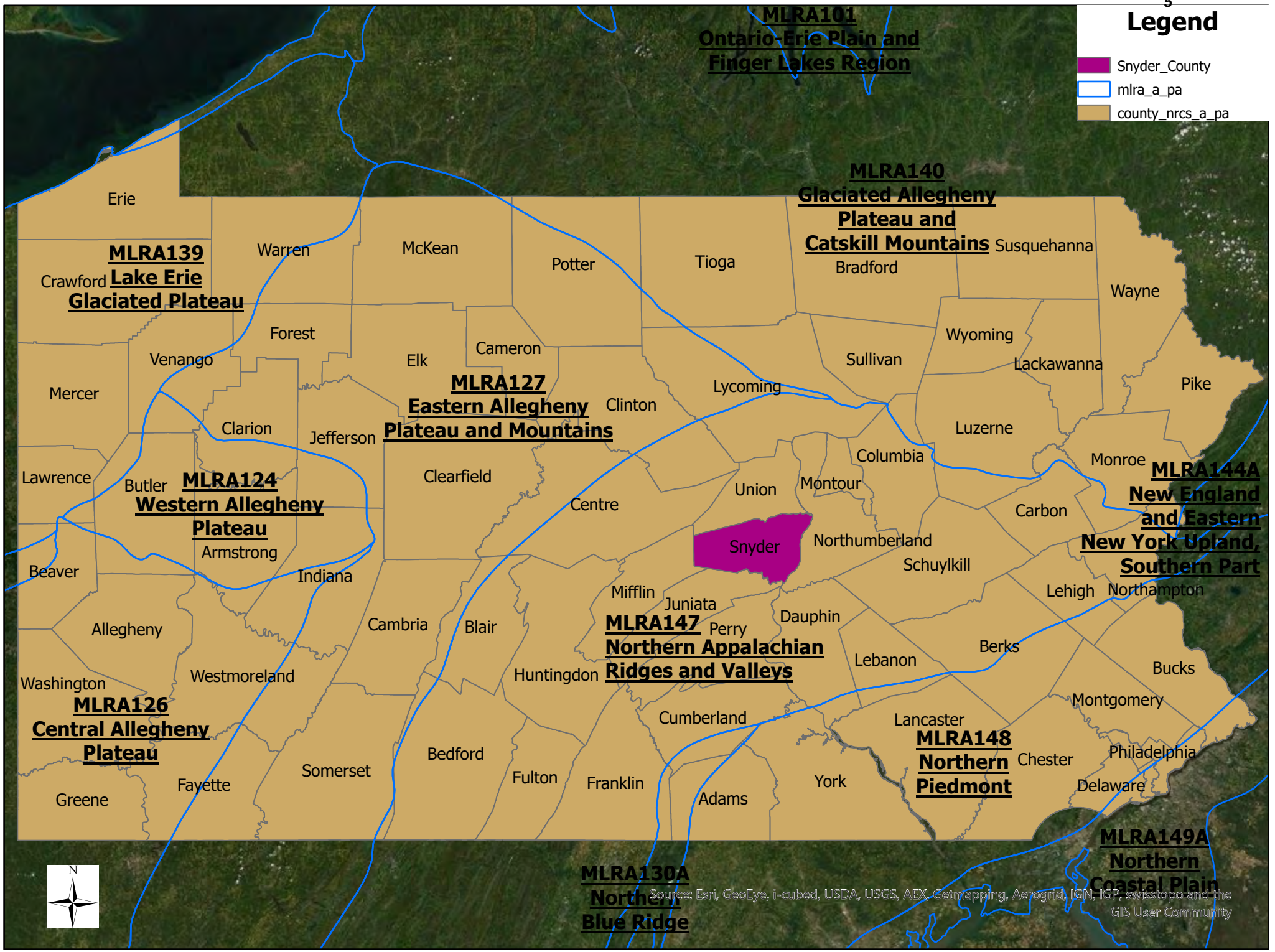
Snyder County is located in the Northern Appalachian Ridges and Valleys physiographic province also known as Major Land Resource Area (MLRA) 147. A physiographic province or MLRA is a geographic region with similar characteristics of landscapes, geology, climate, soils, and land uses. There are portions of 11 MLRA's within Pennsylvania. (See Location Map)

MLRA 147 is characterized by a distinct pattern of folded and faulted sandstone and shale ridges separated by limestone and shale valleys. The resistance of the materials to erosion has had a major effect on the topography of the region. The ridges are dominated by the resistant sandstones while the valleys are dominated by the less resistant shales and limestones. Historically this landscape was dominated by hardwood forests of various oaks and hickories with scattered areas of pine species. (See Location Map Hillshade for example of topography)

The dominant soils in this MLRA formed in residuum and colluvium. Residuum is material that has weathered in place and colluvium is material that has moved down slope due to the forces of gravity. There are also soils that formed in alluvium (water transported material) along streams and drainageways. The Northern portion of this MLRA was also glaciated during the Pre-Illinoian glaciation more than 770,000 years ago. These old glacial till deposits are typically found in the valleys in this portion of the MLRA including Snyder County.

The purpose of this study guide and the soil pit profile posters is to help you improve your soil description skills, familiarize you with different characteristics of soils, and to help you understand how soil characteristics are important to consider for how land is used.

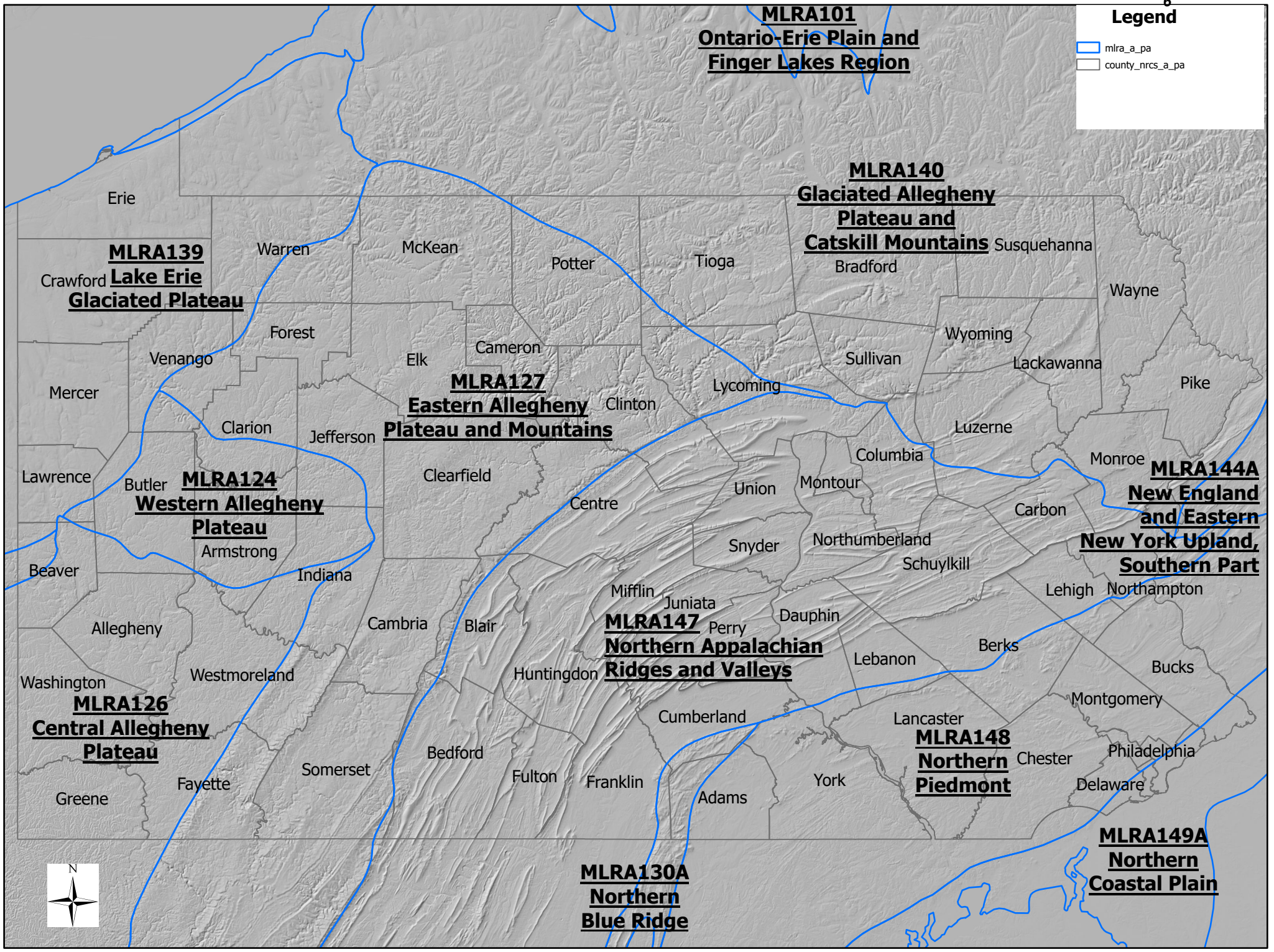
Location Map



Legend

- Snyder_County
- mlra_a_pa
- county_nrcs_a_pa

Location Map- Hillshade

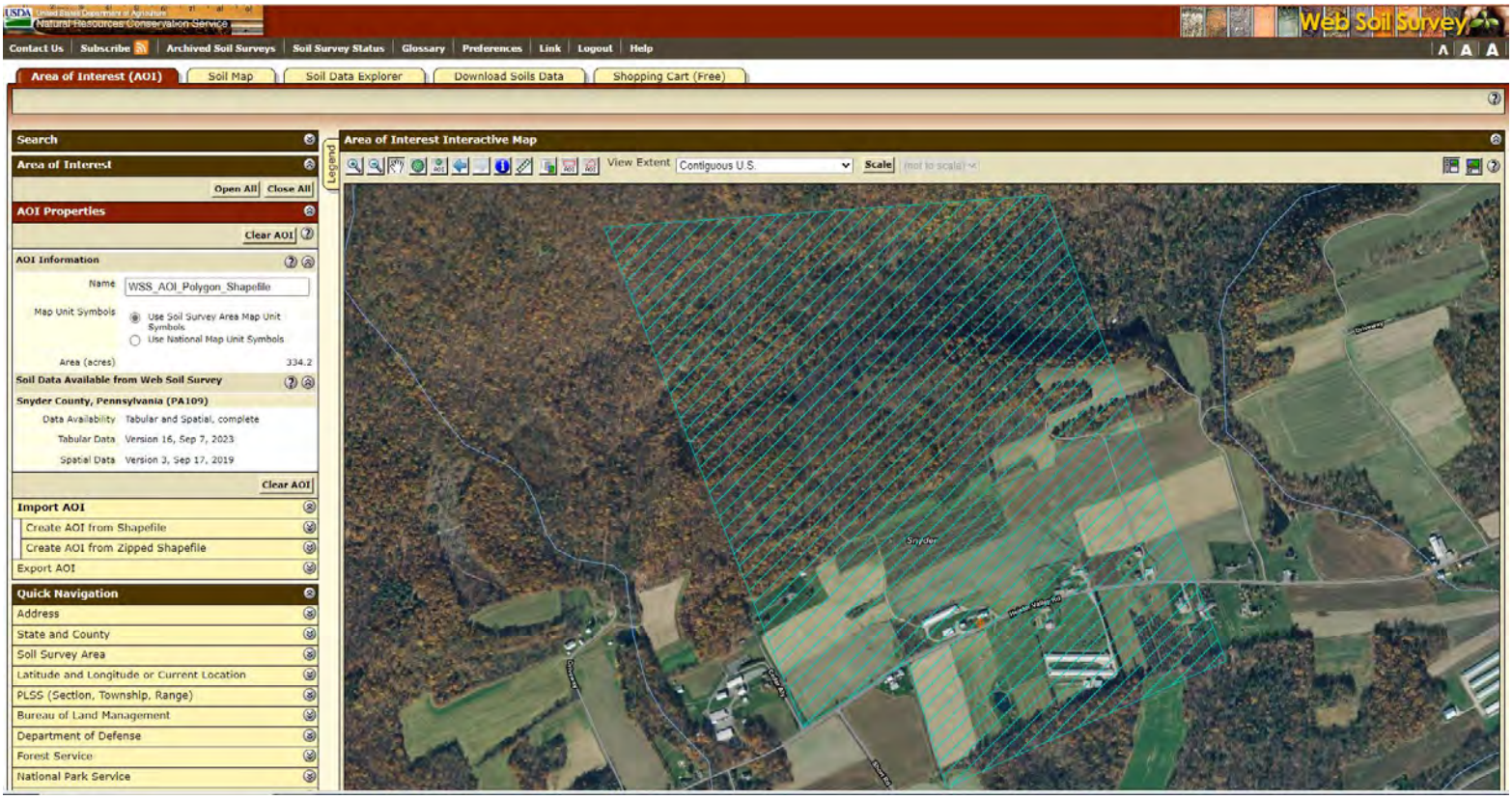


Soil Survey

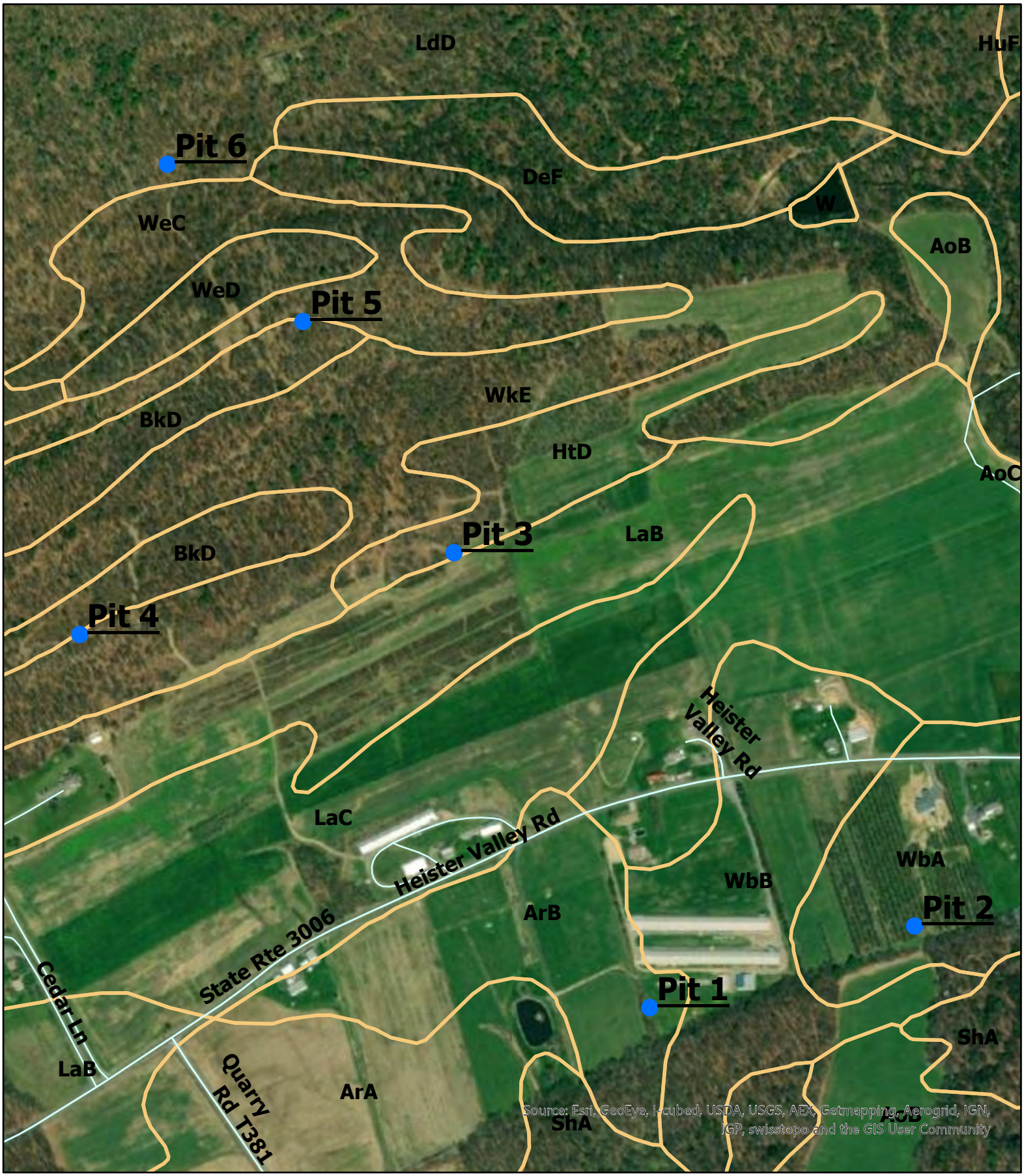
Included at the end of this study guide is a soil survey report for the area where the soil profile descriptions were collected. This soil survey report includes the soil map of the area as well as the map unit descriptions.

When looking at the soil map included in the study guide you will notice that Pit 1 is located within an ArB mapunit, which is Alvira silt loam, 3 to 8 percent slopes. Soil Pit 1 is described as a Watson soil. This might lead to some questions. Is the soil survey wrong, was the soil profile described incorrectly?? This is where looking at the soil survey report and the map unit descriptions is important. You will notice for the ArB map unit, that Watson is described as a minor component within this map unit. Alvira and Watson are very similar soils with the major difference between the two being the drainage class. Alvira is somewhat poorly drained, and Watson is moderately well drained. This soil profile was collected in a location where the drainage class turned out to be moderately well drained and the soil is Watson, a minor component in the overall map unit. The same thing happened with Soil Pit 2 where the soil is described as an Allenwood soil (well drained) in a Watson map unit and in Soil Pit 6 where the soil is described as Hazleton in a Laidig and Meckesville map unit. Both described soils are minor components in these map units. Soil Pit 3 is near the line between two soil polygons and the soil is described as Laidig soil even though the location is slightly over the line into the Hartleton map unit. It is important to understand that the soil lines on a map can serve as a sort of transition zone between 2 soil types and are not necessarily exact boundaries. Just because you cross a soil line does not necessarily mean the soil type will break right at that line and be something different on each side of the line. Soil Pit 3 is a Buchanan soil and the soil pit is located on the line between a Berks and Weikert map unit. Buchanan is not a named component in either map unit and would be an inclusion in this particular map unit. It is important to understand that soil surveys are completed at certain scales and every different soil type is not always able to be delineated at the scale of mapping. Soil Pit 5 is a Berks soil and is in a Berks map unit. The fact that several of these soil pits are located in map units where the soils described are minor components, etc. serves as a good example of why on-site investigations are important for site specific land uses such as building a house.

It would be good to go to Web Soil Survey (WSS) and create an area of interest for the location where the soil pits are located. You can either use the provided shapefile to set your area of interest or search using coordinates and draw your own area of interest to cover the location of the soil pits. The coordinates to use are latitude 40.7267 and longitude -77.0511. Create the area of interest and explore all the soils data that are available. (See screenshot below)


Natural Resources Conservation Service
Web Soil Survey
Contact Us | Subscribe | Archived Soil Surveys | Soil Survey Status | Glossary | Preferences | Link | Logout | Help
Area of Interest (AOI)
Soil Map
Soil Data Explorer
Download Soils Data
Shopping Cart (Free)
Search
Area of Interest
Open All
Close All
AOI Properties
Clear AOI
AOI Information
Name
WSS_AOI_Polygon_Shapefile
Map Unit Symbols
Use Soil Survey Area Map Unit Symbols
Use National Map Unit Symbols
Area (acres)
334.2
Soil Data Available from Web Soil Survey
Snyder County, Pennsylvania (PA109)
Data Availability
Tabular and Spatial, complete
Tabular Data
Version 16, Sep 7, 2023
Spatial Data
Version 3, Sep 17, 2019
Clear AOI
Import AOI
Create AOI from Shapefile
Create AOI from Zipped Shapefile
Export AOI
Quick Navigation
Address
State and County
Soil Survey Area
Latitude and Longitude or Current Location
PLSS (Section, Township, Range)
Bureau of Land Management
Department of Defense
Forest Service
National Park Service
Area of Interest Interactive Map
Legend
View Extent
Contiguous U.S.
Scale
Snyder

Soil Pit Locations- Soil Map
Snyder County, PA

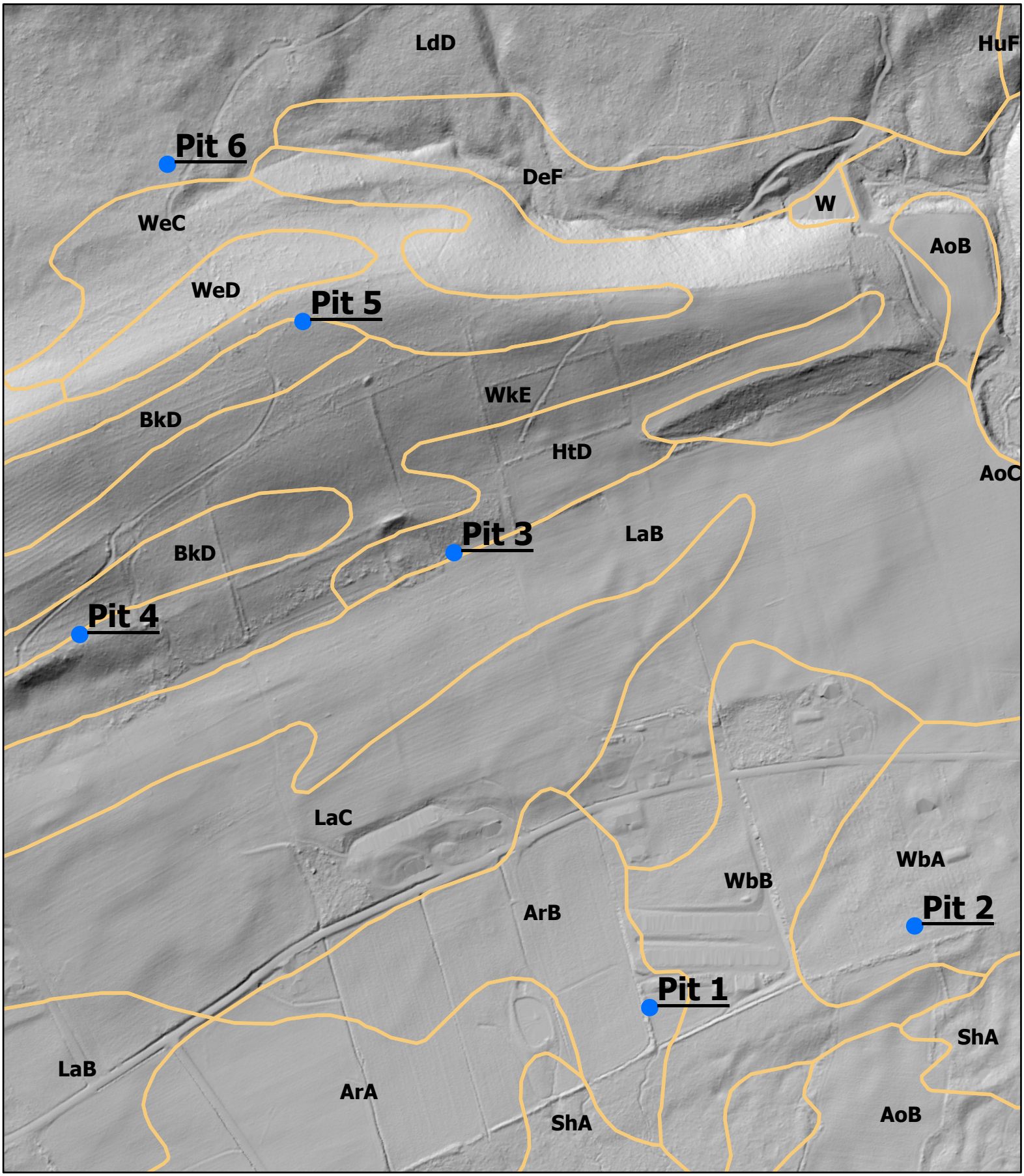


0 0.05 0.1 0.2 Miles

Scale: 1:7,200

N W E S

Soil Pit Locations- Soil Map with Hillshade
Snyder County, PA

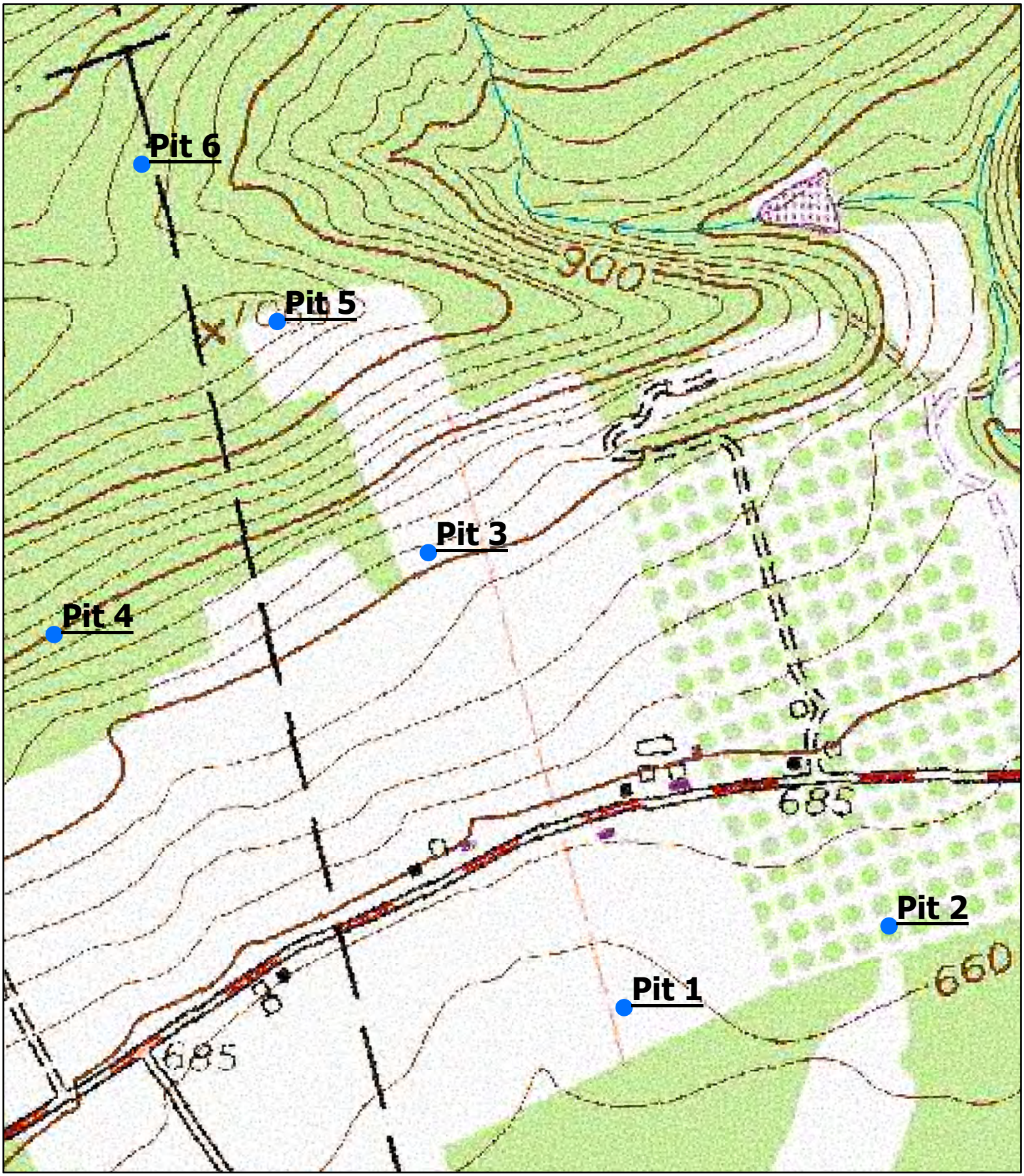


0 0.05 0.1 0.2 Miles

Scale: 1:7,200

N
W E
S

Soil Pit Locations- Topo Map
Snyder County, PA



0 0.05 0.1 0.2 Miles

Scale: 1:7,200

N
W E
S

Depth and Drainage Classes

Depth Classes
(in inches)

Depth Class	Depth
Very deep	> 60”
Deep	40 - 60”
Moderately Deep	20 - 40’’
Shallow	10 - 20”
Very Shallow	0 - 10”

Drainage

Drainage	Depth to Evidence of Wetness (in inches)
excessively drained	> 60”
somewhat excessively drained	> 60”
well-drained	> 40” (or 36”)
moderately well-drained*	20-40’’(or 18-36”)
somewhat poorly drained	8-20”
poorly drained	0-8”
very poorly drained	0

*In Pennsylvania, moderately well drained soils sometimes have some redoximorphic features (mottles) between 10 and 20”, but < 2% of the matrix.

Pit 1 - Watson

USDA - NATURAL RESOURCES CONSERVATION SERVICE

PEDON DESCRIPTION

Print Date: 10/12/2023

Description Date: 6/1/2023 12:00:00 AM

Describer: Keith Shadle

User Site ID: 2023PA109001

User Pedon ID: 2023PA109001

Soil Name as Described/Sampled: Watson

Taxon Kind as Sampled: series

Sampled as Classification: Fine-loamy, mixed, active, mesic Typic Fragiudults

Pedon Purpose: technical soil services

Location Information:

State: Pennsylvania

County: Snyder

MLRA: 147 -- Northern Appalachian Ridges and Valleys

Quad Name: Richfield, Pennsylvania

Location Description: At the edge of a crop field on the South side of Heister Valley Road.

Latitude: 40.725125 Longitude: -77.048933

Landscape: hills Landform: valley floor

Upslope Shape: linear Cross Slope Shape: linear

Primary Earth Cover: Grass/herbaceous cover

Secondary Earth Cover: Other grass/herbaceous cover

Parent Material: till

Particle Size Control Section: 14.2 to 29.9 in.

Diagnostic Features: argillic horizon 14 to 63 in.

fragipan 30 to 63 in.

Restriction: fragipan 30 to 63 in

Slope: 2 %

Drainage: Moderately Well Drained

Ap1--0 to 10 centimeters (0 to 4 inches); dark brown (10YR 3/3) silt loam, yellowish brown (10YR 5/4), dry; 18 percent clay; moderate fine granular structure, and moderate medium granular structure; very friable; many fine roots and few medium roots and few coarse roots and many very fine roots; 10 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 5.8, pH indicator solutions; ; clear wavy boundary.

Ap2--10 to 36 centimeters (4 to 14 inches); brown (10YR 4/3) gravelly silt loam; 22 percent clay; moderate medium subangular blocky structure parts to moderate medium granular structure; friable; common fine roots and few medium roots and few coarse roots and few very coarse roots and common very fine roots; 5 percent nonflat 76- to 250-millimeter unspecified fragments and 20 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 5.8, pH indicator solutions; clear smooth boundary.

Bt1--36 to 51 centimeters (14 to 20 inches); yellowish brown (10YR 5/4) gravelly silt loam; 26 percent clay; moderate medium subangular blocky structure; friable; common fine roots and few medium roots; 4 percent medium distinct strong brown (7.5YR 5/6), moist, masses of oxidized iron in matrix; 10 percent nonflat 76- to 250-millimeter unspecified fragments and 20 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 5.6, pH indicator solutions; ; clear wavy boundary.

Bt2--51 to 76 centimeters (20 to 30 inches); brown (7.5YR 5/4) very gravelly silty clay loam; 30 percent clay; moderate medium subangular blocky structure, and moderate coarse subangular blocky structure; friable; common fine roots and few medium roots; 1 percent fine faint grayish brown (10YR 5/2), moist, iron depletions in matrix and 15 percent medium distinct strong brown (7.5YR 5/6), moist, masses of oxidized iron in matrix; 15 percent nonflat 76- to 250-millimeter unspecified fragments and 25 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 5.6, pH indicator solutions; ; clear wavy boundary.

Btx--76 to 157 centimeters (30 to 63 inches); brown (7.5YR 5/4) very cobbly clay loam; 30 percent clay; weak coarse prismatic structure parts to weak coarse subangular blocky structure; very firm; brittle; few fine roots between peds; 15 percent coarse distinct yellowish red (5YR 5/6), moist,masses of oxidized iron in matrix and 15 percent coarse distinct light olive gray (5Y 6/2), moist, iron depletions between peds; 15 percent nonflat 2- to 76-millimeter unspecified fragments and 30 percent nonflat 76- to 250-millimeter unspecified fragments; moderately acid, pH 5.8, pH indicator solutions.

Pit 2 - Allenwood

USDA - NATURAL RESOURCES CONSERVATION SERVICE

PEDON DESCRIPTION

Print Date: 10/12/2023

Description Date: 6/7/2023 12:00:00 AM

Describer: Chris Seitz, Lauren Turner, Keith Shadle

User Site ID: 2023PA109002

User Pedon ID: 2023PA109002

Soil Name as Described/Sampled: Allenwood

Taxon Kind as Sampled: series

Sampled as Classification: Fine-loamy, mixed, semiactive, mesic Typic Hapludults

Pedon Purpose: technical soil services

Location Information:

State: Pennsylvania

County: Snyder

MLRA: 147 -- Northern Appalachian Ridges and Valleys

Quad Name: Richfield, Pennsylvania

Location Description: In old orchard on the South side of Heister Valley Road.

Latitude: 40.725938 Longitude: -77.045453

Landscape: hills Landform: valley floor

Upslope Shape: linear Cross Slope Shape: linear

Primary Earth Cover: Tree cover

Secondary Earth Cover: Crop trees

Parent Material: till

Particle Size Control Section: 7.1 to 26.8 in.

Diagnostic Features: argillic horizon 7 to 64 in.

Slope: 2%

Drainage: Well Drained

Ap1--0 to 7 centimeters (0 to 3 inches); dark brown (10YR 3/3) silt loam, brown (10YR 4/3), dry; 16 percent clay; moderate fine granular structure, and moderate medium granular structure; very friable; many fine roots and common medium roots and few coarse roots and many very fine roots; 10 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 6.0, pH indicator solutions; abrupt smooth boundary.

Ap2--7 to 18 centimeters (3 to 7 inches); brown (10YR 4/3) gravelly silt loam; 18 percent clay; moderate medium subangular blocky structure; friable; many fine roots and common medium roots and few coarse roots and many very fine roots; 15 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 6.0, pH indicator solutions; clear smooth boundary.

Bt1--18 to 40 centimeters (7 to 16 inches); dark yellowish brown (10YR 4/6) gravelly silty clay loam; 30 percent clay; moderate medium subangular blocky structure, and moderate coarse subangular blocky structure; friable; common fine roots and few medium roots; 5 percent nonflat 76- to 250-millimeter unspecified fragments and 20 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 6.0, pH indicator solutions; clear smooth boundary.

Bt2--40 to 60 centimeters (16 to 24 inches); strong brown (7.5YR 5/6) gravelly clay loam; 33 percent clay; moderate coarse subangular blocky structure; friable; few fine roots and few medium roots; 5 percent nonflat 76- to 250-millimeter unspecified fragments and 20 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 6.0, pH indicator solutions; abrupt smooth boundary.

Bt3--60 to 99 centimeters (24 to 40 inches); yellowish red (5YR 4/6) very gravelly clay loam; 35 percent clay; moderate medium subangular blocky structure; friable; few fine roots; 3 percent fine distinct black (10YR 2/1), moist, iron-manganese masses in matrix; 20 percent nonflat 76- to 250-millimeter unspecified fragments and 25 percent nonflat 2- to 76-millimeter unspecified fragments; slightly acid, pH 6.2, pH indicator solutions; gradual smooth boundary.

Bt4--99 to 159 centimeters (40 to 64 inches); yellowish red (5YR 4/6) gravelly silty clay; 40 percent clay; moderate medium subangular blocky structure; firm; brittle; few fine roots and few medium roots; 5 percent fine distinct black (10YR 2/1), moist, iron-manganese masses in matrix; 5 percent nonflat 76- to 250-millimeter unspecified fragments and 15 percent nonflat 2- to 76-millimeter unspecified fragments; slightly acid, pH 6.2, pH indicator solutions; clear wavy boundary.

Bt5--159 centimeters (64 inches); yellowish brown (10YR 5/6) gravelly silty clay loam; 35 percent clay; moderate medium subangular blocky structure; firm; 8 percent fine distinct black (10YR 2/1), moist, iron-manganese masses in matrix and 10 percent fine distinct strong brown (7.5YR 5/6), moist, masses of oxidized iron in matrix; 5 percent nonflat 76- to 250-millimeter unspecified fragments and 20 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 6.0, pH indicator solutions; .

Pit 3 - Laidig

USDA - NATURAL RESOURCES CONSERVATION SERVICE

PEDON DESCRIPTION

Print Date: 10/12/2023

Description Date: 6/7/2023 12:00:00 AM

Describer: Chris Seitz, Lauren Turner, Keith Shadle

User Site ID: 2023PA109003

User Pedon ID: 2023PA109003

Soil Name as Described/Sampled: Laidig

Taxon Kind as Sampled: series

Sampled as Classification: Fine-loamy, siliceous, active, mesic Typic Fragiudults

Pedon Purpose: technical soil services

Location Information:

State: Pennsylvania

County: Snyder

MLRA: 147 -- Northern Appalachian Ridges and Valleys

Quad Name: Richfield, Pennsylvania

Location Description: At upper edge of field along the woods on North side of Heister Valley Road.

Latitude: 40.729655 Longitude: -77.051504

Landscape: hills Landform: hill

Upslope Shape: concave Cross Slope Shape: linear

Primary Earth Cover: Grass/herbaceous cover

Secondary Earth Cover: Other grass/herbaceous cover

Parent Material: colluvium

Particle Size Control Section: 21.3 to 35.8 in.

Diagnostic Features: argillic horizon 22 to 60 in.

fragipan 36 to 60 in.

Restriction: fragipan 36 to 60 in.

Slope: 18%

Drainage: Well Drained

Ap--0 to 20 centimeters (0 to 8 inches); dark yellowish brown (10YR 3/4) gravelly silt loam; 18 percent clay; strong medium granular structure; very friable; many fine roots and few medium roots and few coarse roots and many very fine roots; 2 percent nonflat 76- to 250-millimeter unspecified fragments and 20 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 6.0, pH indicator solutions; clear smooth boundary.

BA--20 to 54 centimeters (8 to 22 inches); dark brown (10YR 3/3) gravelly silt loam; 17 percent clay; moderate medium subangular blocky structure; friable; common fine roots and common very fine roots; 5 percent nonflat 76- to 250-millimeter unspecified fragments and 20 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 5.8, pH indicator solutions; gradual wavy boundary.

Bt--54 to 91 centimeters (22 to 36 inches); yellowish brown (10YR 5/6) gravelly silty clay loam; 32 percent clay; moderate medium subangular blocky structure; friable; few fine roots and few very fine roots; 5 percent strong brown (7.5YR 5/6), moist, masses of oxidized iron in matrix; 2 percent nonflat 76- to 250-millimeter unspecified fragments and 15 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 5.8, pH indicator solutions; clear smooth boundary.

Btx--91 to 149 centimeters (36 to 60 inches); brown (7.5YR 5/4) gravelly silty clay loam; 38 percent clay; moderate coarse subangular blocky structure; firm; brittle; few very fine roots; 10 percent strong brown (7.5YR 5/6), moist, masses of oxidized iron in matrix and 10 percent black (10YR 2/1), moist, iron-manganese masses in matrix and 15 percent grayish brown (2.5Y 5/2), moist, iron depletions in matrix; 3 percent nonflat 76- to 250-millimeter unspecified fragments and 20 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 5.8, pH indicator solutions; clear smooth boundary.

C--149 centimeters (60 inches); strong brown (7.5YR 5/6) very gravelly silty clay loam; 38 percent clay; structureless massive structure; firm; 15 percent gray (10YR 5/1), moist, iron depletions in matrix and 20 percent yellowish red (5YR 5/6), moist, masses of oxidized iron in matrix and 20 percent black (10YR 2/1), moist, iron-manganese masses in matrix; 40 percent flat 2- to 150-millimeter unspecified fragments; moderately acid, pH 5.6, pH indicator solutions.

Pit 4 - Buchanan

USDA - NATURAL RESOURCES CONSERVATION SERVICE

PEDON DESCRIPTION

Print Date: 10/12/2023

Description Date: 6/8/2023 12:00:00 AM

Describer: Keith Shadle

User Site ID: 2023PA109004

User Pedon ID: 2023PA109004

Soil Name as Described/Sampled: Buchanan

Taxon Kind as Sampled: taxadjunct

Sampled as Classification: Fine-loamy, mixed, semiactive, mesic Typic Fragiudults

Pedon Purpose: technical soil services

Location Information:

State: Pennsylvania

County: Snyder

MLRA: 147 -- Northern Appalachian Ridges and Valleys

Quad Name: Richfield, Pennsylvania

Location Description: On the North side of the woods road on the North side of Heister Valley Road.

Latitude: 40.728840 Longitude: -77.056420

Landscape: hills Landform: hill

Upslope Shape: linear Cross Slope Shape: convex

Primary Earth Cover: Tree cover

Secondary Earth Cover: Hardwoods

Parent Material: colluvium

Particle Size Control Section: 11.0 to 30.7 in.

Diagnostic Features: argillic horizon 11.0 to 72.0 in.

fragipan 38.0 to 72.0 in.

Restriction: fragipan 38.0 to 72.0 inches

Slope: 15 %

Drainage: Moderately Well Drained

A--0 to 15 centimeters (0 to 6 inches); dark brown (10YR 3/3) gravelly silt loam, brown (10YR 5/3), dry; 17 percent clay; weak fine granular structure; very friable; many fine roots and common medium roots and many very fine roots; 25 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 5.8, pH indicator solutions; clear smooth boundary.

AB--15 to 28 centimeters (6 to 11 inches); brown (7.5YR 4/4) gravelly silt loam; 22 percent clay; moderate medium subangular blocky structure; friable; common fine roots and few medium roots and common very fine roots; 30 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 5.6, pH indicator solutions; clear smooth boundary.

Bt1--28 to 58 centimeters (11 to 23 inches); reddish brown (5YR 5/4) gravelly silty clay loam; 30 percent clay; moderate medium subangular blocky structure; friable; common fine roots and few medium roots and common very fine roots; 30 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 5.8, pH indicator solutions; clear wavy boundary.

Bt2--58 to 94 centimeters (23 to 38 inches); brown (7.5YR 5/4) very gravelly silty clay loam; 38 percent clay; moderate medium subangular blocky structure, and moderate coarse subangular blocky structure; firm; few fine roots; 10 percent yellowish red (5YR 5/6), moist, masses of oxidized iron in matrix and 10 percent gray (10YR 6/1), moist, iron depletions in matrix; 5 percent nonflat 76- to 250-millimeter unspecified fragments and 35 percent nonflat 2- to 76-millimeter unspecified fragments; moderately acid, pH 5.8, pH indicator solutions; clear wavy boundary.

Btx1--94 to 135 centimeters (38 to 54 inches); yellowish brown (10YR 5/6) gravelly silty clay loam; 38 percent clay; weak coarse subangular blocky structure; firm; brittle; few fine roots between peds; 20 percent strong brown (7.5YR 5/6), moist, masses of oxidized iron in matrix and 20 percent gray (10YR 6/1), moist, iron depletions in matrix;15 percent nonflat 2- to 76-millimeter unspecified fragments; strongly acid, pH 5.2, pH indicator solutions; clear wavy boundary.

Btx2--135 to 183 centimeters (54 to 72 inches); 50 percent strong brown (7.5YR 5/6) and 50 percent gray (10YR 6/1) extremely gravelly silty clay loam; 38 percent clay; weak coarse subangular blocky structure; very firm; brittle; 25 percent nonflat 76- to 250-millimeter unspecified fragments and 40 percent nonflat 2- to 76-millimeter unspecified fragments; strongly acid, pH 5.2, pH indicator solutions.

Pit 5 - Berks

USDA - NATURAL RESOURCES CONSERVATION SERVICE

PEDON DESCRIPTION

Print Date: 10/12/2023

Description Date: 6/7/2023 12:00:00 AM

Describer: Chris Seitz, Lauren Turner, Keith Shadle

User Site ID: 2023PA109005

User Pedon ID: 2023PA109005

Soil Name as Described/Sampled: Berks

Taxon Kind as Sampled: series

Sampled as Classification: Loamy-skeletal, mixed, active, mesic Typic Dystrudepts

Pedon Purpose: technical soil services

Location Information:

State: Pennsylvania

County: Snyder

MLRA: 147 -- Northern Appalachian Ridges and Valleys

Quad Name: Richfield, Pennsylvania

Location Description: At the Southern edge of a clearing on the top of the ridge East of the woods road to the North of Heister Valley Road.

Latitude: 40.731957 Longitude: -77.053489

Landscape: hills Landform: hill

Upslope Shape: convex Cross Slope Shape: linear

Primary Earth Cover: Tree cover

Secondary Earth Cover: Hardwoods

Parent Material: residuum

Bedrock Data: 22.0 inches -shale

Particle Size Control Section: 9.8 to 22.0 in.

Diagnostic Features: cambic horizon 7 to 22.0 in.

lithic contact 22.0 in.

Restriction: bedrock, lithic 22 inches

Slope: 14.0 %

Drainage: Well drained

Oe--0 to 5 centimeters (0 to 2 inches); black (10YR 2/1); weak fine granular structure; very friable; many fine roots and common medium roots and many very fine roots; moderately acid, pH 5.6, pH indicator solutions; clear smooth boundary.

A--5 to 18 centimeters (2 to 7 inches); dark yellowish brown (10YR 4/4); 23 percent clay; moderate medium granular structure; very friable; many fine roots and common medium roots and few coarse roots and many very fine roots; 50 percent flat 2- to 150-millimeter unspecified fragments; moderately acid, pH 5.6, pH indicator solutions; clear smooth boundary.

Bw--18 to 56 centimeters (7 to 22 inches); strong brown (7.5YR 4/6); 22 percent clay; weak medium subangular blocky structure; very friable; common fine roots and few medium roots and common very fine roots; 15 percent flat 150- to 380-millimeter unspecified fragments and 50 percent flat 2- to 150-millimeter unspecified fragments; moderately acid, pH 5.6, pH indicator solutions; clear wavy boundary.

R--56 centimeters (22 inches).

Pit 6 - Hazleton

USDA - NATURAL RESOURCES CONSERVATION SERVICE

PEDON DESCRIPTION

Print Date: 10/12/2023

Description Date: 6/8/2023 12:00:00 AM

Describer: Keith Shadle

User Site ID: 2023PA109006

User Pedon ID: 2023PA109006

Soil Name as Described/Sampled: Hazleton

Taxon Kind as Sampled: series

Sampled as Classification: Loamy-skeletal, siliceous, active, mesic Typic Dystrudepts

Pedon Purpose: technical soil services

Location Information:

State: Pennsylvania

County: Snyder

MLRA: 147 -- Northern Appalachian Ridges and Valleys

Quad Name: Richfield, Pennsylvania

Location Description: In a small clearing along an old logging road on the top of the ridge North of the woods road to the North of Heister Valley Road.

Latitude: 40.733523 Longitude: -77.055269

Landscape: hills Landform: hill

Upslope Shape: linear Cross Slope Shape: linear

Primary Earth Cover: Tree cover

Secondary Earth Cover: Hardwoods

Parent Material: residuum

Surface Fragments: 12.0 percent nonflat 380- to 600-millimeter

Particle Size Control Section: 9.8 to 39.4 in.

Diagnostic Features: cambic horizon 8 to 43 in.

Slope: 9 %

Drainage: Well Drained

Oe--0 to 8 centimeters (0 to 3 inches); black (7.5YR 2.5/1) extremely stony moderately decomposed plant material; weak fine granular structure; very friable; many fine roots and common medium roots and few coarse roots and many very fine roots; 80 percent nonflat 250- to 600-millimeter unspecified fragments; strongly acid, pH 5.2, pH indicator solutions; clear wavy boundary.

E--8 to 20 centimeters (3 to 8 inches); gray (10YR 6/1) extremely stony fine sandy loam, white (10YR 8/1), dry; 10 percent clay; weak fine granular structure; very friable; many fine roots and common medium roots and few coarse roots and many very fine roots; 80 percent nonflat 250- to 600-millimeter unspecified fragments; strongly acid, pH 5.2, pH indicator solutions; clear wavy boundary.

Bw1--20 to 58 centimeters (8 to 23 inches); yellowish brown (10YR 5/4) extremely gravelly loam; 14 percent clay; weak medium subangular blocky structure; friable; common fine roots and few medium roots and common very fine roots; 10 percent nonflat 76- to 250-millimeter unspecified fragments and 20 percent nonflat 250- to 600-millimeter unspecified fragments and 40 percent nonflat 2- to 76-millimeter unspecified fragments; strongly acid, pH 5.2, pH indicator solutions; clear wavy boundary.

Bw2--58 to 107 centimeters (23 to 43 inches); brown (7.5YR 5/4) extremely gravelly loam; 14 percent clay; weak medium subangular blocky structure; friable; few fine roots; 5 percent nonflat 250- to 600-millimeter unspecified fragments and 10 percent nonflat 76- to 250-millimeter unspecified fragments and 50 percent nonflat 2- to 76-millimeter unspecified fragments; strongly acid, pH 5.2, pH indicator solutions; clear wavy boundary.

C--107 to 152 centimeters (43 to 61 inches); strong brown (7.5YR 5/6) extremely stony sandy loam; 10 percent clay; structureless massive structure; firm; 2 percent strong brown (7.5YR 5/8), moist, masses of oxidized iron in matrix and 2 percent strong brown (7.5YR 5/6), moist, iron depletions in matrix; 10 percent nonflat 76- to 250-millimeter unspecified fragments and 30 percent nonflat 250- to 600-millimeter unspecified fragments and 30 percent nonflat 2- to 76-millimeter unspecified fragments; strongly acid, pH 5.4, pH indicator solutions.

Soil Pit # 1 Photos

Soil Studies

Answer the questions for each of the 6 soil profiles. Use the soil posters and the information included in this study guide to answer the questions. Included in this guide are the pedon description reports for each profile and there is a soil survey report attached for the location of the soils. For Profile 1 there is not an associated soil poster, so the included photographs are to be used when answering the questions.

When looking at these soil profile posters be thinking about the 5 soil forming factors: climate, living organisms, time, topography/landscape position, and parent material. All the soils formed under the same climatic conditions and were influenced by the same living organisms. The climate is considered humid temperate and historically the area was under mixed dominantly hardwood forests. The soils are on different landscape positions. Think about how this affects the time that soils had to develop, with the more stable positions having older more well-developed soils. The parent materials also differ among the profiles. The position you are at on the landscape also influences the parent material at that location. Consider how these 5 factors are interrelated and one factor can have an influence on another factor.

Student Study Sheets

Soil Pit # 1

Watson- Use the Pedon Description Report, the attached photographs, and the soil pit location maps. Use the Web Soil Survey report if needed.

1. What is the parent material of this soil?

   _____

2. What is the depth class of this soil?

   _____

3. Out of the 6 soil pits that were described on this property, is this the lowest one on the landscape?

   _____

4. The first 2 horizons in this profile are Ap horizons. What are some noticeable differences between these 2 horizons?

   _____

5. This location is currently alongside of an active crop field. Do you think this location has been used for agriculture/crop production in the past?

   _____

Student Study Sheets

Soil Pit # 2

Allenwood- Use the Pedon Description Report, the Pit 2 poster, and the soil pit location maps. Use the Web Soil Survey report if needed.

1. What is the parent material of this soil?

   _____

2. What is the depth class of this soil?

   _____

3. Looking at the rock fragments in this profile, how would you describe them: subrounded, angular, or a mix of both?

   _____

4. The first 2 horizons in this profile are Ap horizons. What are 3 soil characteristics that are different between these 2 horizons?

   _____

5. Looking at the soil poster and the horizon between 24 and 40 inches, what do you notice when comparing this horizon to the one above and below it?

   _____

6. Are there any restrictions within 60 inches that have restricted root growth?

   _____

Student Study Sheets

Soil Pit # 3

Laidig- Use the Pedon Description Report, the Pit 3 poster, and the soil pit location maps. Use the Web Soil Survey report if needed.

1. What is the parent material of this soil?

   _____

2. What is the depth class of this soil?

   _____

3. Looking at the soil poster, there is a soil horizon from 8 to 22 inches and another horizon from 22 to 36 inches. How would you describe this horizon break? Is it an abrupt break?

   _____

4. In which horizon do you notice redoximorphic features? Redoximorphic features are orange and gray mottles that form when iron-based minerals within the soil undergo a chemical transition when anaerobic conditions occur. This transition leads to the formation of orange and/or red features that are iron concentrations and gray colors that have a color of chroma 2 or less and are iron depletions.

   _____

5. What is the drainage class of this soil?

   _____

Student Study Sheets

Soil Pit # 4

Buchanan- Use the Pedon Description Report, the Pit 4 poster, and the soil pit location maps. Use the Web Soil Survey report if needed.

1. What is the parent material of this soil?

   _____

2. What is the depth class of this soil?

   _____

3. Looking at the poster, approximately how many soil horizons does this profile have? Use changes in soil color as the most distinguishing factor.

   _____

4. Looking at this poster, on the right side of the tape at the 32 inch mark and to left of the tape at the 40 inch mark, what unique soil features do you see?

   _____

5. Why do you think these features are present at these depths within this soil profile?

   _____

6. What change do you notice in the soil at around the 56 inch mark on the tape?

   _____

Soil Pit # 5

Berks- Use the Pedon Description Report, the Pit 5 poster, and the soil pit location maps. Use the Web Soil Survey report if needed.

1. What is the parent material of this soil?

   _____

2. What is the depth class of this soil?

   _____

3. Using the Pit locations topographic map, approximately what is the elevation of this soil profile?

   _____

4. Using the topographic map and hillshade map for assistance, how would you describe this landform position? The summit or top of the hill, side slope, or foot slope?

   _____

5. Soils that are classified as loamy-skeletal have greater than 35% rock fragments in their control section. If the control section of this soil is from 8 to 20 inches, do you think this soil would meet the above criteria for loamy-skeletal?

   _____

6. Looking at the rock fragments in this soil, how would you best describe them? Flat and angular; flat and rounded; or not flat and subangular?

   _____

7. Based on your above description of the rock fragments in this soil, do you think this material has been transported and moved around much by natural forces?

   _____

Soil Pit # 6

Hazleton- Use the Pedon Description Report, the Pit 6 poster, and the soil pit location maps. Use the Web Soil Survey report if needed.

1. What is the parent material of this soil?

   _____

2. What is the depth class of this soil?

   _____

3. What is the surface horizon of this profile?

   _____

4. Observe the rock fragments in the first 2 soil horizons from 0 to 8 inches and the rock fragments in the 4th horizon from 23 to 43 inches. What do you notice when comparing these 2 locations?

   _____

5. There is a horizon break at 23 inches. This is not a real obvious break, but what are some soil characteristics that separate the horizon above 23 inches from the one below 23 inches?

   _____

6. Does there appear to be any root restrictive layer in the upper 36 inches of this soil?

   _____

7. This soil profile and soil profile #4, Buchanan soil, are both located in the forested area of the property they were collected on. You would like to clear a small area to establish a wildlife food plot. Based off of your observations of the soils and information, which location do you think would be most suitable for this activity?

   _____

Soil Pit Profile – Soil Suitability Exercise

Not all soils are created equal for all purposes and should be evaluated for different uses. If a soil is unsuitable, it might still be usable but costs will increase in order to accommodate the natural limitations of the site. For example, a stony, acidic, shallow soil is not well suited for crops. But adding lime, fertilizer, and installing an irrigation system will make production possible but at much higher cost than a naturally good farm soil. Evaluate each soil pit profile for the following uses: a home site with basement and for a septic tank with disposal field.

Soil suitability for a conventional in ground septic system with disposal field

1. Slope of 25% or less

2. Soil is deeper than 20 inches

3. Flood plain sites and flood plain soils are unsuitable

4. Rock fragments within the profile in excess of 50% by volume (visual estimate) is a limitation or makes site unsuitable

5. There cannot be a limiting zone within 60 inches of the mineral soil surface (Limiting zones are seasonal high water tables indicated by redoximorphic features, bedrock, or soil layers that effectively limit the downward movement of water such as fragipans)

Soil suitability for home site with basement

1. Depth to bedrock should be greater than 60 inches

2. Water table should be greater than 20 inches depth

3. Heavy soils such as clay, sandy clay, or silty clay are not suitable

4. Areas on flood plains are generally not suitable

5. Soil stoniness and large stones can cause problems and generally are not suitable

Guidance Adapted from the FFA Land Use and Management Contest Manual and the DEP SEO Field Manual

Soil Type	Land Use	Suitable	Unsuitable	Why?
Watson	Septic with Disposal Field			
Watson	Home site with basement			
Allenwood	Septic with Disposal Field			
Allenwood	Home site with basement			
Laidig	Septic with Disposal Field			
Laidig	Home site with basement			
Buchanan	Septic with Disposal Field			
Buchanan	Home site with basement			
Berks	Septic with Disposal Field			
Berks	Home site with basement			
Hazleton	Septic with Disposal Field			
Hazleton	Home site with basement			

Student Study Sheets

Answer Key

Student Study Sheets

Soil Pit # 1

Watson- Use the Pedon Description Report, the attached photographs, and the soil pit location maps. Use the Web Soil Survey report if needed.

1. What is the parent material of this soil?

   Looking at the pedon description, the parent material is glacial till, this is old Pre-Illinoian glacial till deposits.

2. What is the depth class of this soil?

   There is no bedrock observed in the profile within 60 inches, so using depth class chart it is very deep

3. Out of the 6 soil pits that were described on this property, is this the lowest one on the landscape?

   Yes, using the Topographic map with the pit locations this pit is lowest in elevation, less than 660 feet

4. The first 2 horizons in this profile are Ap horizons. What are some noticeable differences between these 2 horizons?

   Looking at the photo and description you can see there is slight color difference, there are more rock fragments in the Ap2, and there is a structure difference

5. This location is currently alongside of an active crop field. Do you think this location has been used for agriculture/crop production in the past?

   Yes, the surface horizon is described as an Ap horizon. An Ap horizon indicates crop production or past agricultural use and disturbance. The "p" horizon suffix indicates a plow layer. Also, the depth of the A horizon is another indicator. (14 inches thick) Soils not used for agriculture generally have thin A horizons

Student Study Sheets

Soil Pit # 2

Allenwood- Use the Pedon Description Report, the Pit 2 poster, and the soil pit location maps. Use the Web Soil Survey report if needed.

1. What is the parent material of this soil?

   Looking at the pedon description, the parent material is glacial till, this is old Pre-Illinoian glacial till deposits.

2. What is the depth class of this soil?

   There is no bedrock observed in the profile within 60 inches, so using depth class chart it is very deep

3. Looking at the rock fragments in this profile, how would you describe them: subrounded, angular, or a mix of both?

   The fragments are a mix of both, some are more rounded others are more angular. This serves as an indication of glacial till material, rounded fragments indicate the material was moved around.

4. The first 2 horizons in this profile are Ap horizons. What are 3 soil characteristics that are different between these 2 horizons?

   Color difference, rock fragment difference and texture modifier, clay percentage difference, structure difference, consistence difference (any 3 are correct)

5. Looking at the soil poster and the horizon between 24 and 40 inches, what do you notice when comparing this horizon to the one above and below it?

   There are more rock fragments in this horizon than the horizons above and below it

6. Are there any restrictions within 60 inches that have restricted root growth?

   No, If you look closely at the poster you can see roots extending to this depth

Student Study Sheets

Soil Pit # 3

Laidig- Use the Pedon Description Report, the Pit 3 poster, and the soil pit location maps. Use the Web Soil Survey report if needed.

1. What is the parent material of this soil?

   Looking at the pedon description, the parent material is colluvium- (material that has moved due to the forces of gravity)

2. What is the depth class of this soil?

   There is no bedrock observed in the profile within 60 inches, so using depth class chart it is very deep

3. Looking at the soil poster, there is a soil horizon from 8 to 22 inches and another horizon from 22 to 36 inches. How would you describe this horizon break? Is it an abrupt break?

   No, it is not abrupt. There is not a clear line where observable soil characteristics change, it just transitions into the next horizon. Looking at the description, the boundary is described as gradual, which means it changes anywhere within a zone from 2 to 6 inches.

4. Approximately what depth do you notice redoximorphic features? Redoximorphic features are orange and gray mottles that form when iron-based minerals within the soil undergo a chemical transition when anaerobic conditions occur. This transition leads to the formation of orange and/or red features that are iron concentrations and gray colors that have a color of chroma 2 or less which are iron depletions.

   Redoximorphic features (mottles) do not become noticeable till around 40 inches and below. Looking at the description they (concentrations and depletions) are not described until the Btx horizon from 36 to 60 inches.

5. What is the drainage class of this soil?
   Well Drained, redoximorphic features do not occur until deeper than 36 inches. Using the drainage guide, this classifies as well drained. There is water in the bottom of the pit and redoximorphic features are present, but there is no evidence of wetness within 36 inches of the surface. Redox probably are not present until deeper than 40 inches.

Student Study Sheets

Soil Pit # 4

Buchanan- Use the Pedon Description Report, the Pit 4 poster, and the soil pit location maps. Use the Web Soil Survey report if needed.

1. What is the parent material of this soil?

   Looking at the pedon description, the parent material is colluvium- (material that has moved due to the forces of gravity)

2. What is the depth class of this soil?

   There is no bedrock observed in the profile within 60 inches, so using depth class chart it is very deep

3. Looking at the poster, approximately how many soil horizons does this profile have? Use changes in soil color as the most distinguishing factor.

   There are 5 or 6 easily distinguished horizons. Looking at the description there are 6 horizons described in this profile.

4. Looking at this poster, on the right side of the tape at the 32 inch mark and to left of the tape at the 40 inch mark, what unique soil features do you see?

   Gray and orange colors, indicating redoximorphic features(mottling) which are evidence of a seasonal water table

5. Why do you think these features are present at these depths within this soil profile?

   There is a restrictive layer, you will see in the description starting at 38 inches there is a fragipan. The redox features are found in the horizon above and within the fragipan. The fragipan restricts the downward movement of water. Also notice how the root growth pretty much ends at this depth

6. What change do you notice in the soil at around the 56 inch mark on the tape?

   There is a large increase in rock fragments. On the description it goes from 15% to 65% fragments between Btx1 and Btx2 at 54 inches.

Soil Pit # 5

Berks- Use the Pedon Description Report, the Pit 5 poster, and the soil pit location maps. Use the Web Soil Survey report if needed.

1. What is the parent material of this soil?

   Looking at the pedon description, the parent material is residuum- (material that has weathered in place)

2. What is the depth class of this soil?

   There is shale bedrock observed in the profile at 22 inches, so using depth class chart it is moderately deep

3. Using the Pit locations topographic map, approximately what is the elevation of this soil profile?

   Approximately 1060 feet. It is just above the 1060 contour on the topo map

4. Using the topographic map and hillshade map for assistance, how would you describe this landform position? The summit or top of the hill, side slope, or foot slope?

   This location is at the summit or top of a ridge or hill that is oriented is a general East-West direction.

5. Soils that are classified as loamy-skeletal have greater than 35% rock fragments in their control section. If the control section of this soil is from 8 to 20 inches, do you think this soil would meet the above criteria for loamy-skeletal?

   Yes, there are more than 35% fragments in this zone, description has 65% frags in Bw

6. Looking at the rock fragments in this soil, how would you best describe them? Flat and angular; flat and rounded; or not flat and subangular?

   Flat and Angular

7. Based on your above description of the rock fragments in this soil, do you think this material has been transported and moved around much by natural forces?
   No, due to the very angular nature of the fragments they have not been moved much. They appear like and are oriented almost the same as the underlying shale bedrock

Soil Pit # 6

Hazleton- Use the Pedon Description Report, the Pit 6 poster, and the soil pit location maps. Use the Web Soil Survey report if needed.

1. What is the parent material of this soil?

   Looking at the pedon description, the parent material is residuum- (material that has weathered in place)

2. What is the depth class of this soil?

   There is no bedrock observed in the profile within 60 inches, so using depth class chart it is very deep

3. What is the surface horizon of this profile?

   Oe horizon, this is a moderately decomposed organic horizon from 0 to 3 inches

4. Observe the rock fragments in the first 2 soil horizons from 0 to 8 inches and the rock fragments in the 4th horizon from 23 to 43 inches. What do you notice when comparing these 2 locations?

   The fragments in the first 2 horizons are much larger in size than in the 4th horizon

5. There is a horizon break at 23 inches. This is not a real obvious break, but what are some soil characteristics that separate the horizon above 23 inches from the one below 23 inches?

   There is a color difference between the 2 horizons and also there are more large fragments above 23 inches (look at description)

6. Does there appear to be any root restrictive layer in the upper 36 inches of this soil?

   No, roots are observed to this depth.

7. This soil profile and soil profile #4, Buchanan soil, are both located in the forested area of the property they were collected on. You would like to clear a small area to establish a wildlife food plot. Based off of your observations of the soils and information, which location do you think would be most suitable for this activity?
   Profile #4 location, this soil does not contain the large fragments in the surface horizons

Soil Type	Land Use	Suitable	Unsuitable	Why?
Watson	Septic with Disposal Field		X	Redoximorphic features within 60 inches. Fragipan within 60 inches.
Watson	Home site with basement		X	There are redoximorphic features starting in horizon at 20 inches in description
Allenwood	Septic with Disposal Field	X		From what we can tell, there are no soil restrictions within 60 inches
Allenwood	Home site with basement		X	The Bt4 horizon from 40 to 64 inches has a texture of silty clay otherwise this soil would be suitable
Laidig	Septic with Disposal Field		X	Redoximorphic features within 60 inches. Fragipan within 60 inches.
Laidig	Home site with basement	X		From what we can tell, this location would be suitable
Buchanan	Septic with Disposal Field		X	Redoximorphic features within 60 inches. Fragipan within 60 inches.
Buchanan	Home site with basement	X		From what we can tell, this location would be suitable, redoximorphic features are over 20 inches deep
Berks	Septic with Disposal Field		X	Bedrock is at 22 inches
Berks	Home site with basement		X	Bedrock is at 22 inches
Hazleton	Septic with Disposal Field		X	There are more than 50% rock fragments within the profile
Hazleton	Home site with basement		X	The surface horizons of this profile and the C horizon are extremely stony

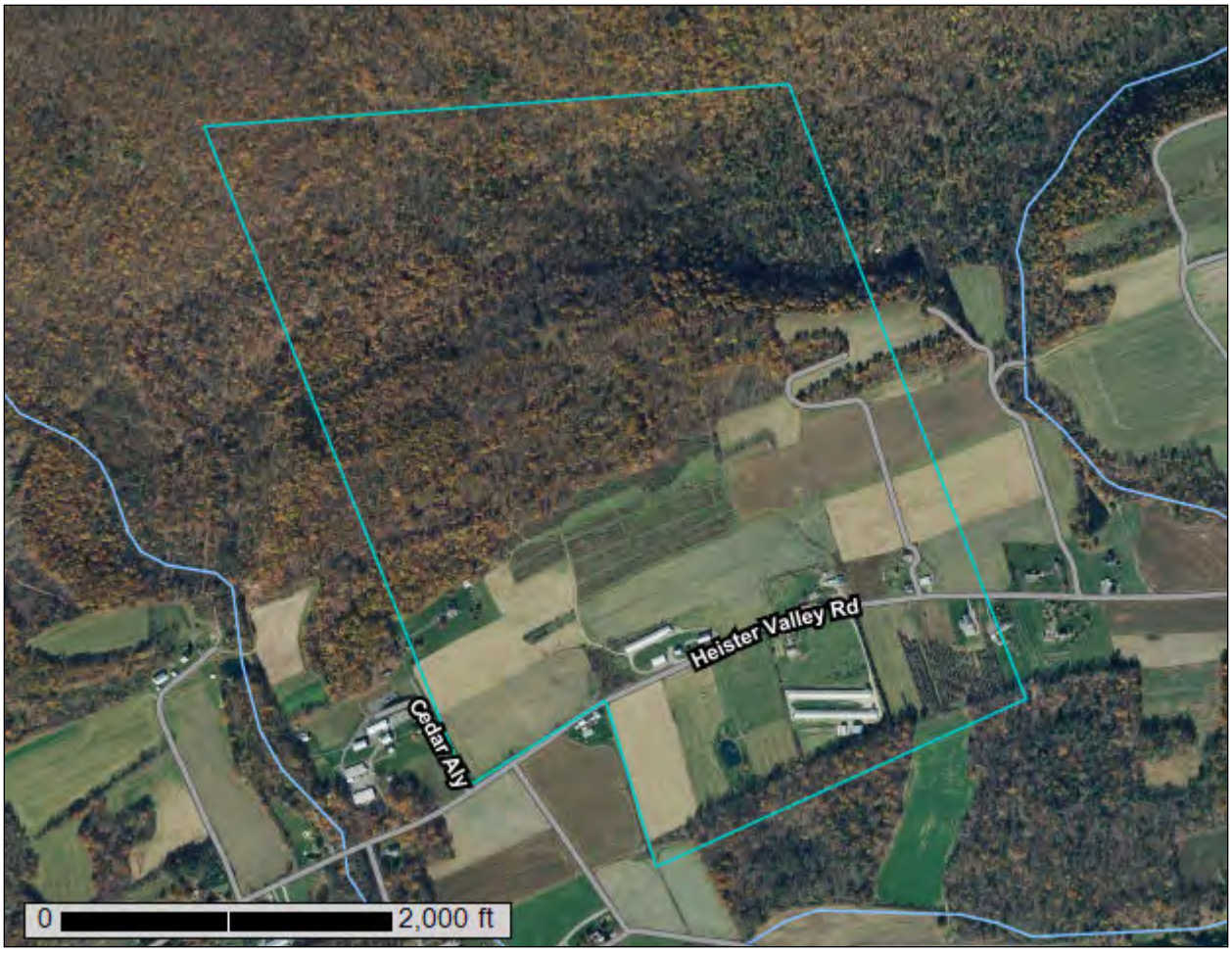
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Snyder County, Pennsylvania



December 13, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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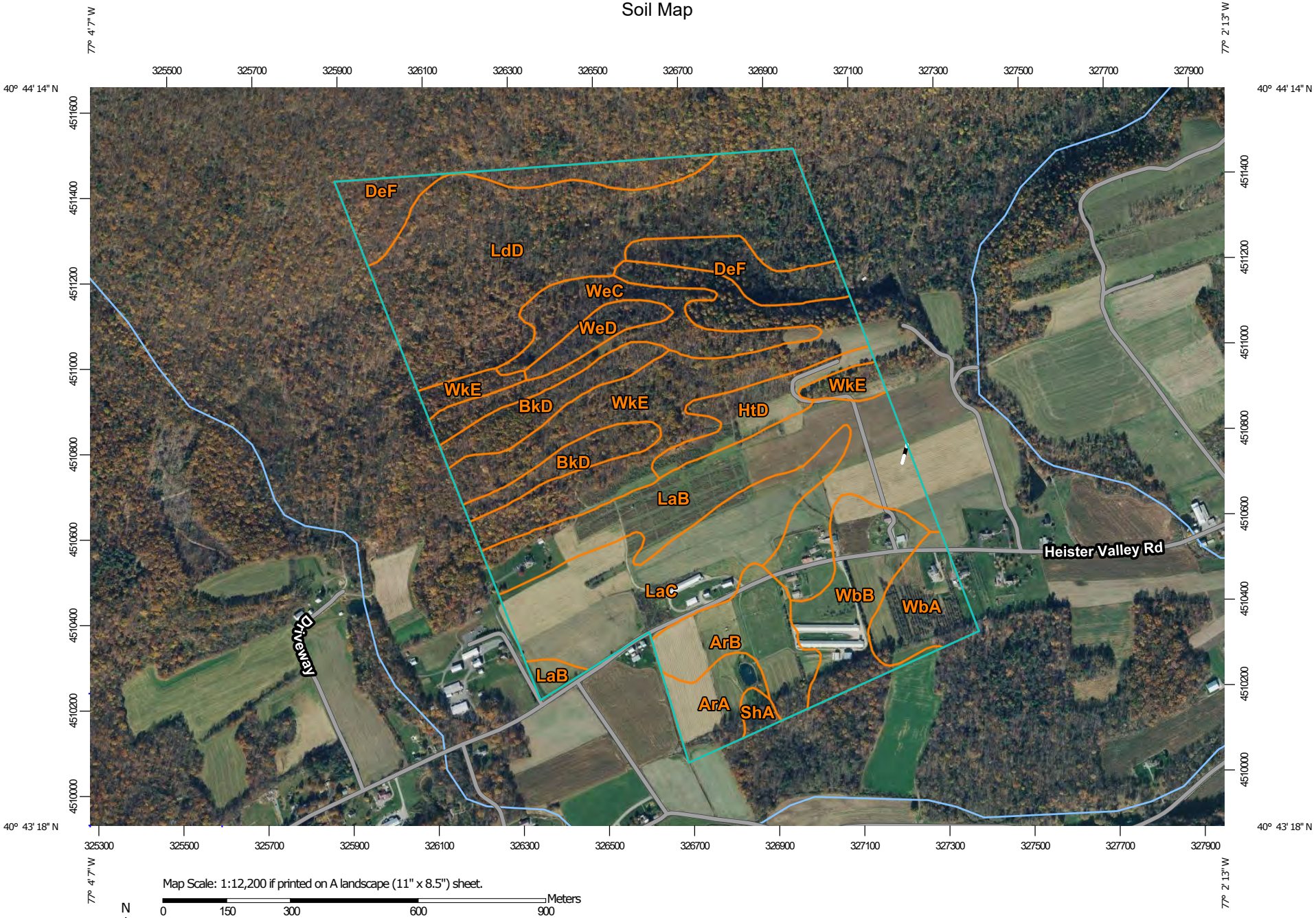
Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Snyder County, Pennsylvania
Survey Area Data: Version 17, Sep 7, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 6, 2020—Nov 7, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ArA	Alvira silt loam, 0 to 3 percent slopes	8.7	2.6%
ArB	Alvira silt loam, 3 to 8 percent slopes	16.4	4.9%
BkD	Berks channery silt loam, 15 to 25 percent slopes	16.0	4.8%
DeF	Dekalb very channery sandy loam, 25 to 80 percent slopes, rubbly	23.4	7.0%
HtD	Hartleton channery silt loam, 15 to 25 percent slopes	9.9	3.0%
LaB	Laidig gravelly loam, 3 to 8 percent slopes	44.7	13.4%
LaC	Laidig gravelly loam, 8 to 15 percent slopes	37.5	11.2%
LdD	Laidig and Meckesville extremely stony soils, 8 to 25 percent slopes	69.2	20.7%
ShA	Shelmadine silt loam, 0 to 3 percent slopes	1.7	0.5%
WbA	Watson silt loam, 0 to 3 percent slopes	11.8	3.5%
WbB	Watson silt loam, 3 to 8 percent slopes	19.5	5.8%
WeC	Weikert channery silt loam, 8 to 15 percent slopes	20.0	6.0%
WeD	Weikert channery silt loam, 15 to 25 percent slopes	5.3	1.6%
WkE	Weikert and Klinesville shaly silt loams, steep	50.1	15.0%
Totals for Area of Interest		**334.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some

observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The

pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Snyder County, Pennsylvania

ArA—Alvira silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: l4qm
Elevation: 410 to 1,380 feet
Mean annual precipitation: 36 to 56 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Alvira and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alvira

Setting

Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Till

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 21 inches: gravelly silt loam
H3 - 21 to 60 inches: very gravelly silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 15 to 28 inches to fragipan
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F147XY006PA - Mixed Limestone Lower Slope
Hydric soil rating: No

Minor Components

Shelmadine

Percent of map unit: 10 percent
Landform: Drainageways

Hydric soil rating: Yes

Watson

Percent of map unit: 10 percent
Hydric soil rating: No

ArB—Alvira silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: l4qn
Elevation: 390 to 1,870 feet
Mean annual precipitation: 36 to 56 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Alvira and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alvira

Setting

Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Till

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 21 inches: gravelly silt loam
H3 - 21 to 60 inches: very gravelly silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 15 to 28 inches to fragipan
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: D
Ecological site: F147XY006PA - Mixed Limestone Lower Slope
Hydric soil rating: No

Minor Components

Watson
Percent of map unit: 10 percent
Hydric soil rating: No

Shelmadine
Percent of map unit: 8 percent
Landform: Drainageways
Hydric soil rating: Yes

BkD—Berks channery silt loam, 15 to 25 percent slopes

Map Unit Setting
National map unit symbol: 2sgb7
Elevation: 320 to 3,630 feet
Mean annual precipitation: 37 to 50 inches
Mean annual air temperature: 47 to 56 degrees F
Frost-free period: 148 to 192 days
Farmland classification: Not prime farmland

Map Unit Composition
Berks and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berks

Setting
Landform: Mountain slopes, ridges
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Upper third of mountainflank, side slope
Down-slope shape: Convex
Across-slope shape: Convex, linear
Parent material: Residuum weathered from shale and siltstone and/or fine grained sandstone

Typical profile
Ap - 0 to 7 inches: channery silt loam
Bw1 - 7 to 14 inches: very channery silt loam
Bw2 - 14 to 21 inches: extremely channery silt loam
C - 21 to 36 inches: extremely channery silt loam
R - 36 to 46 inches: bedrock

Properties and qualities
Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock

Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland
Other vegetative classification: Dry Uplands (DU2)
Hydric soil rating: No

Minor Components

Weikert

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Other vegetative classification: Droughty Shales (SD2)
Hydric soil rating: No

Brinkerton

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: Yes

DeF—Dekalb very channery sandy loam, 25 to 80 percent slopes, rubbly

Map Unit Setting

National map unit symbol: 2w6nh
Elevation: 440 to 2,120 feet
Mean annual precipitation: 37 to 50 inches
Mean annual air temperature: 50 to 55 degrees F
Frost-free period: 155 to 177 days

Farmland classification: Not prime farmland

Map Unit Composition

Dekalb and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dekalb

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 4 inches: very channery sandy loam
E - 4 to 7 inches: very channery sandy loam
Bw - 7 to 26 inches: very channery sandy loam
C - 26 to 34 inches: extremely channery sandy loam
R - 34 to 44 inches: bedrock

Properties and qualities

Slope: 25 to 80 percent
Surface area covered with cobbles, stones or boulders: 30.0 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F147XY004PA - Sandstone Upland
Hydric soil rating: No

Minor Components

Clymer

Percent of map unit: 10 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Lehew

Percent of map unit: 10 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Hazleton

Percent of map unit: 10 percent
Landform: Mountain slopes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

HtD—Hartleton channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: l4rp
Elevation: 300 to 1,600 feet
Mean annual precipitation: 35 to 50 inches
Mean annual air temperature: 45 to 57 degrees F
Frost-free period: 120 to 217 days
Farmland classification: Not prime farmland

Map Unit Composition

Hartleton and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hartleton

Setting

Landform: — error in exists on —
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 8 inches: channery silt loam
H2 - 8 to 45 inches: very channery silty clay loam
H3 - 45 to 50 inches: very channery loam
R - 50 to 54 inches: weathered bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 40 to 80 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F147XY002PA - Mixed Sedimentary Upland
Hydric soil rating: No

Minor Components

Weikert

Percent of map unit: 10 percent
Hydric soil rating: No

Bedington

Percent of map unit: 5 percent
Hydric soil rating: No

Berks

Percent of map unit: 5 percent
Hydric soil rating: No

Allenwood

Percent of map unit: 5 percent
Hydric soil rating: No

LaB—Laidig gravelly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: l4rz
Elevation: 400 to 3,800 feet
Mean annual precipitation: 34 to 60 inches
Mean annual air temperature: 46 to 59 degrees F
Frost-free period: 120 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Laidig and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Laidig

Setting

Landform: Mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Colluvium derived from sandstone and siltstone

Typical profile

H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 33 inches: channery loam
H3 - 33 to 65 inches: very channery loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 30 to 50 inches to fragipan
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 28 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F147XY002PA - Mixed Sedimentary Upland
Hydric soil rating: No

Minor Components

Meckesville

Percent of map unit: 10 percent
Landform: Mountain valleys
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Buchanan

Percent of map unit: 10 percent
Landform: Valley sides, mountain slopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

LaC—Laidig gravelly loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: l4s0
Elevation: 400 to 3,800 feet
Mean annual precipitation: 34 to 60 inches
Mean annual air temperature: 46 to 59 degrees F
Frost-free period: 120 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Laidig and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Laidig

Setting

Landform: Mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Colluvium derived from sandstone and siltstone

Typical profile

H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 33 inches: channery loam
H3 - 33 to 65 inches: very channery loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 30 to 50 inches to fragipan
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 28 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F147XY002PA - Mixed Sedimentary Upland
Hydric soil rating: No

Minor Components

Buchanan

Percent of map unit: 10 percent
Landform: Valley sides, mountain slopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Meckesville

Percent of map unit: 10 percent
Landform: Mountain valleys
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

LdD—Laidig and Meckesville extremely stony soils, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: l4s2
Elevation: 400 to 3,800 feet
Mean annual precipitation: 34 to 60 inches
Mean annual air temperature: 45 to 59 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Laidig and similar soils: 45 percent
Meckesville and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Laidig

Setting

Landform: Mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Colluvium derived from sandstone and siltstone

Typical profile

H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 33 inches: channery loam

H3 - 33 to 65 inches: very channery loam

Properties and qualities

Slope: 8 to 25 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 30 to 50 inches to fragipan
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 28 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F147XY002PA - Mixed Sedimentary Upland
Hydric soil rating: No

Description of Meckesville

Setting

Landform: Mountain valleys
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Lower third of mountainflank
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandstone, siltstone and shale colluvium derived from sedimentary rock

Typical profile

H1 - 0 to 4 inches: gravelly silt loam
H2 - 4 to 36 inches: silt loam
H3 - 36 to 60 inches: gravelly silty clay loam

Properties and qualities

Slope: 8 to 25 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 25 to 48 inches to fragipan
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 28 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F147XY002PA - Mixed Sedimentary Upland
Hydric soil rating: No

Minor Components

Hazleton
Percent of map unit: 10 percent
Hydric soil rating: No

Clymer
Percent of map unit: 5 percent
Hydric soil rating: No

Buchanan
Percent of map unit: 5 percent
Hydric soil rating: No

ShA—Shelmadine silt loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: l4sl
Elevation: 410 to 1,900 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 40 to 60 degrees F
Frost-free period: 130 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition
Shelmadine and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Shelmadine

Setting
Landform: Drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy till

Typical profile
H1 - 0 to 7 inches: silt loam
H2 - 7 to 24 inches: silty clay loam
H3 - 24 to 50 inches: channery loam
H4 - 50 to 70 inches: channery loam

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: 18 to 30 inches to fragipan
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F147XY011PA - Poorly Drained Fine Mixed Floodplain
Hydric soil rating: Yes

Minor Components

Alvira

Percent of map unit: 10 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Albrights

Percent of map unit: 5 percent
Hydric soil rating: No

Watson

Percent of map unit: 5 percent
Hydric soil rating: No

WbA—Watson silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: l4sx
Elevation: 440 to 1,540 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 40 to 60 degrees F
Frost-free period: 130 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Watson and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Watson

Setting

Landform: Valley sides
Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Old till derived from sedimentary rock

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 27 inches: gravelly silty clay loam
H3 - 27 to 45 inches: gravelly clay loam
H4 - 45 to 61 inches: channery loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 33 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F147XY006PA - Mixed Limestone Lower Slope
Hydric soil rating: No

Minor Components

Allenwood

Percent of map unit: 10 percent
Hydric soil rating: No

Shelmadine

Percent of map unit: 5 percent
Landform: Drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Alvira

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

WbB—Watson silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: l4sy
Elevation: 430 to 1,850 feet
Mean annual precipitation: 36 to 46 inches
Mean annual air temperature: 40 to 60 degrees F
Frost-free period: 130 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Watson and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Watson

Setting

Landform: Valley sides
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Old till derived from sedimentary rock

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 27 inches: gravelly silty clay loam
H3 - 27 to 45 inches: gravelly clay loam
H4 - 45 to 61 inches: channery loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 33 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F147XY006PA - Mixed Limestone Lower Slope
Hydric soil rating: No

Minor Components

Allenwood
Percent of map unit: 10 percent
Hydric soil rating: No

Shelmadine
Percent of map unit: 5 percent
Landform: Drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Alvira
Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

WeC—Weikert channery silt loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 2v4w5
Elevation: 360 to 3,410 feet
Mean annual precipitation: 37 to 50 inches
Mean annual air temperature: 47 to 56 degrees F
Frost-free period: 148 to 192 days
Farmland classification: Not prime farmland

Map Unit Composition
Weikert and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Weikert

Setting
Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Gray and brown acid residuum weathered from shale and siltstone and/or fine grained sandstone

Typical profile
Ap - 0 to 7 inches: channery silt loam

Bw - 7 to 10 inches: extremely channery silt loam
C - 10 to 15 inches: extremely channery silt loam
R - 15 to 25 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland
Other vegetative classification: Droughty Shales (SD2)
Hydric soil rating: No

Minor Components

Berks

Percent of map unit: 9 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Bedington

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Brinkerton

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

WeD—Weikert channery silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2v4vs
Elevation: 340 to 4,040 feet
Mean annual precipitation: 37 to 50 inches
Mean annual air temperature: 47 to 56 degrees F
Frost-free period: 148 to 192 days
Farmland classification: Not prime farmland

Map Unit Composition

Weikert and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Weikert

Setting

Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Gray and brown acid residuum weathered from shale and siltstone and/or fine grained sandstone

Typical profile

A - 0 to 6 inches: channery silt loam
Bw - 6 to 12 inches: very channery silt loam
C - 12 to 15 inches: extremely channery silt loam
R - 15 to 25 inches: bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland

Other vegetative classification: Droughty Shales (SD3)
Hydric soil rating: No

Minor Components

Berks
Percent of map unit: 9 percent
Landform: Ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Ernest
Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Wharton
Percent of map unit: 2 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve, side slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Hartleton
Percent of map unit: 1 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: No

WkE—Weikert and Klinesville shaly silt loams, steep

Map Unit Setting
National map unit symbol: l4t3
Elevation: 300 to 1,600 feet
Mean annual precipitation: 36 to 50 inches
Mean annual air temperature: 45 to 57 degrees F
Frost-free period: 120 to 217 days
Farmland classification: Not prime farmland

Map Unit Composition

Weikert and similar soils: 40 percent
Klinesville and similar soils: 30 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Weikert

Setting

Landform: Hills
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from shale and siltstone

Typical profile

H1 - 0 to 7 inches: channery silt loam
H2 - 7 to 15 inches: very channery silt loam
H3 - 15 to 19 inches: bedrock

Properties and qualities

Slope: 25 to 75 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland
Hydric soil rating: No

Description of Klinesville

Setting

Landform: Valleys, ridges
Landform position (two-dimensional): Backslope, shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from siltstone

Typical profile

H1 - 0 to 7 inches: channery silt loam
H2 - 7 to 11 inches: very channery silt loam
H3 - 11 to 15 inches: very channery silt loam
R - 15 to 19 inches: bedrock

Properties and qualities

Slope: 25 to 75 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: F147XY008PA - Shallow Mixed Sedimentary Upland
Hydric soil rating: No

Minor Components

Berks

Percent of map unit: 10 percent
Hydric soil rating: No

Hartleton

Percent of map unit: 10 percent
Landform: — error in exists on —
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: No

Rushtown

Percent of map unit: 5 percent
Hydric soil rating: No

Leck kill

Percent of map unit: 5 percent
Hydric soil rating: No