

DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY

Detailed sections from auger holes and outcrops in the  
Pringletown, Ridgeville, Summerville Northwest, and  
Summerville quadrangles, South Carolina

by

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Open-File Report 87-524

Prepared in cooperation with  
the Nuclear Regulatory Commission

This report is preliminary and has not been reviewed  
for conformity with U.S. Geological Survey editorial  
standards and stratigraphic nomenclature

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## Introduction

In the course of preparing detailed geologic maps for the Pringletown, Ridgeville, Summerville Northwest, and Summerville quadrangles, sediments from numerous auger holes and outcrops were studied to determine their lithologic characteristics, spatial distribution, and temporal framework. While the major geologic boundaries will be summarized on a forthcoming geologic map of these quadrangles (Weems, Lemon, and Nelson in preparation), much of the more detailed stratigraphic information could not be shown easily on a map and therefore is included in this Open-File Report. Information is included for 105 localities within these four quadrangles.

A few of the localities (so indicated) were natural outcrops, excavation pits, or ditch banks, but because exposures are rare the majority of the localities were logged by augering. These auger holes were drilled with a truck-mounted, Mobile Drill B-40 power auger, using 5-foot stem sections. One stem was augered into the ground and then pulled to describe the soil profile. After this, a second run was made in which additional stems were added until either a chattering sound followed by a sudden tightening of the drill string occurred (penetration of the Ashley Formation) or until the vacated 5 feet of the first auger run was filled by rising sediment from the newly

penetrated section. In the latter case (usually 4-6 flights, depending on the density of the material being augered), the stems were pulled and described (allowing for 5 feet of total rise during drilling). In most cases the base of the Pleistocene section was penetrated by the third run; in exceptionally thick sections, the rest of the section was augered in 20 to 30 foot runs.

Although the outcrop and auger hole sections vary considerably in thickness, from 2 feet (SN-4) to 145 feet (RI-15, SU-5) most fall in the range of 30-50 feet. Most of the Quaternary and upper Tertiary shallow subsurface units are thin (less than 50 feet total thickness) and poorly consolidated down to the upper Oligocene Ashley Formation of the Cooper Group (locally called the "Cooper Marl"). In contrast, the Ashley is often 100 feet or more thick and firmly compacted. It was impractical in many instances to try to drill through the Ashley with the power auger, so those drill holes were filled and abandoned as soon as we penetrated this unit. In the northern parts of the Pringletown and Summerville Northwest quadrangles, however, the Ashley begins to pinch out updip and penetration in that area was often to the top of the Cross Limestone of the Santee Limestone Group.

No attempt was made to describe sediments in any great detail. Grain sizes and sediment colors were estimated visually without aid of grain-size or color charts. It is

possible, therefore, that units described as "clays" may include clayey silts or clayey sands. Unit names conform to those used by Weems and Lemon (1984a, 1984b). Three units, present within these four quadrangles but not in other parts of the Charleston region, are the "Pringletown beds", the "Salkehatchie beds", and the "Rudd Branch beds".

The "Pringletown beds" are composed of blue, sandy, micaceous clay to clayey sand which was encountered in three holes in the Pringletown and Summerville Northwest quadrangles. It is not readily confused with any other unit in the area, being only similar to bluish parts of the Daniel Island beds and the Parkers Ferry Formation (the latter being distinguished readily because it is very calcareous). It unconformably underlies, and therefore is older than, the early Pleistocene Waccamaw Formation; it unconformably overlies, and therefore is younger than, the Pliocene "Salkehatchie beds". A more precise age determination is not possible at the present time. It could be a nearshore equivalent of the Goose Creek Limestone, but positive evidence for this is lacking. Possibly it represents a transgression otherwise unknown in the Charleston region.

The "Salkehatchie beds" are Pliocene in age, and correspond in their description (soft, dark-gray-green, glauconitic and phosphatic sand) and their stratigraphic position (beneath the seaward edge of the Wicomico terrace)

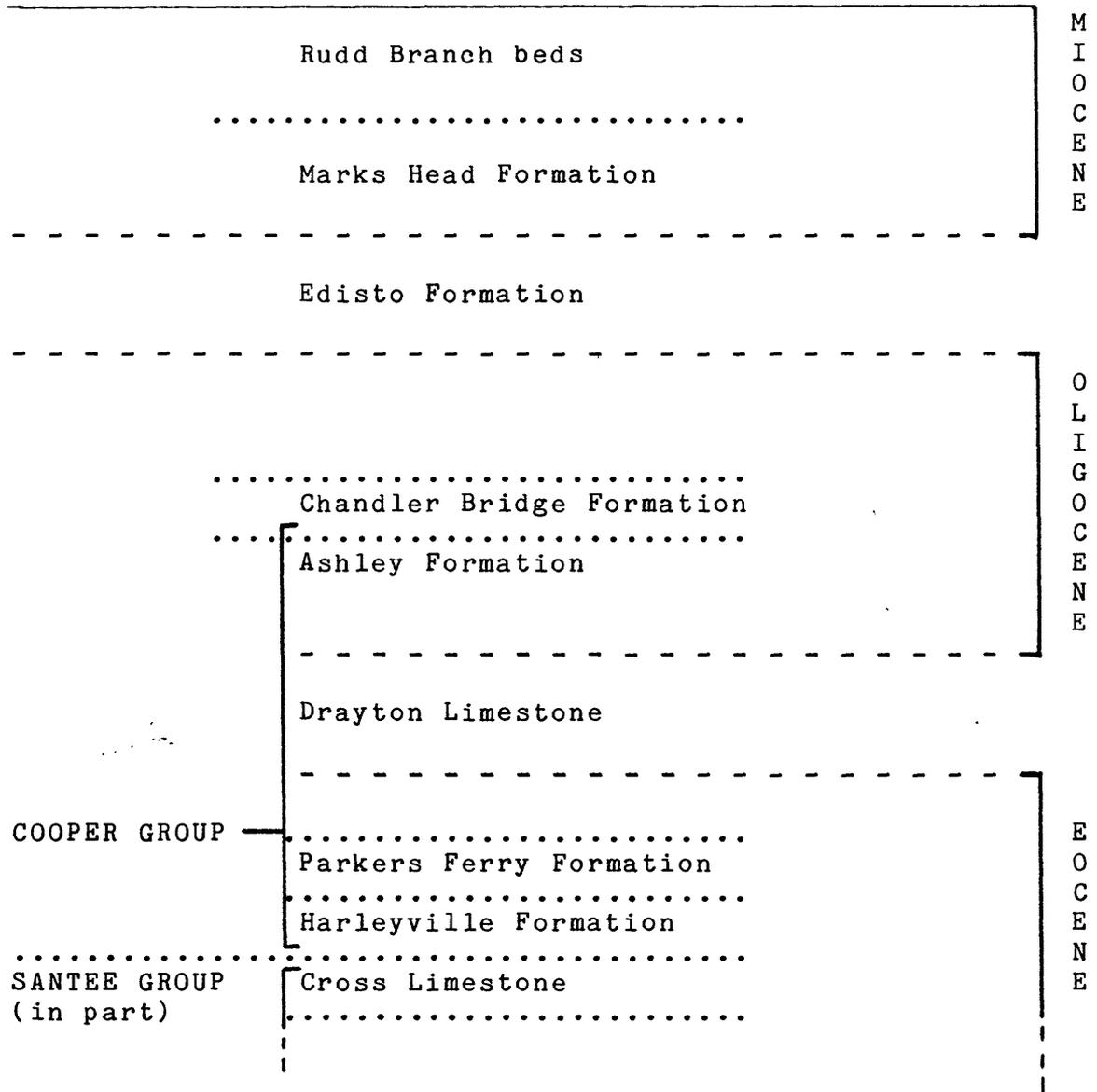
to the "Salkehatchie Phase" of Sloan (1908). This unit might be equivalent to the early Pliocene Raysor Formation of Blackwelder and Ward (1979), but its color and lower calcium carbonate content are strikingly different.

The "Rudd Branch beds", named informally for Rudd Branch Creek in the vicinity of auger holes SN-14 and SN-20, contains dinoflagellates which indicate this unit falls in the vicinity of the middle/upper Miocene boundary (Lucy Edwards, USGS, written communication, Report on Shipment Number ERG-84-12, 1984). Based on the dinoflagellates, it is too young to be a facies of the Marks Head Formation or the Chandler Bridge Formation, and too old to be a facies of the Raysor Formation. These are the only local units which lithologically resemble it. So far, it differs from the Chandler Bridge in that it usually has a basal phosphate bed and lacks a basal clay bed, from the Marks Head in that it lacks the brown hues and dense, sticky clay beds typical of that unit, and from the Raysor in that it is denser and usually less shelly. Possibly it is an updip equivalent of the middle Miocene Coosawatchie Clay, present in southern South Carolina.

References cited

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PRINGLETOWN QUADRANGLE

(depths in feet)

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PR-1: 2.15 mi. E of west quad. border, 0.9 mi. N of south quad.  
border. Surface elevation 50 feet.

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|              |       |   |       |
|--------------|-------|---|-------|
| FILL         | 0-4   | Sand, road fill   | ..... |
| HOLOCENE     | 4-5   | Clay, dark-gray, soft, contains roots   | ..... |
| LADSON<br>FM | 5-11  | Sand, very fine-grained, medium-gray,<br>silty, clayey, wood fragments present                |       |
|              | 11-16 | Sand, medium-grained, medium-gray, well-<br>sorted, contains very fine-grained heavies        | ..... |
| ASHLEY FM    | 16-25 | Calcarenite, fine-grained, light-brown<br>grading down to olive-green, thin shells<br>present |       |

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Base of Holocene: +45 feet above sea level  
Base of Ladson Formation: +34 feet above sea level  
Bottomed in Ashley Formation

PR-2: 0.5 mi. E of west quad. border, 2.3 mi. S of north quad. border. Surface elevation 87 feet.

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|             |       |   |
|-------------|-------|---|
| WACCAMAW FM | 0-7   | Sand, fine-grained, medium-orange and medium-gray, well sorted, clayey, grades downward to sandy clay                           |
|             | 7-17  | Sand, fine-grained, white grading down to pale-yellow, gets poorly sorted with some medium- and coarse-grained fraction by base |
|             | 17-19 | Clay, medium-gray and reddish-orange mottled  |
|             | 19-24 | Sand, medium-grained, bright-orange, silty, well-sorted, medium-gray clay beds interspersed, grades to coarse-grained by base   |

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|                   |       |                  |
|-------------------|-------|------------------|
| SALKEHATCHIE BEDS | 24-26 | Clay, dark-green |
|-------------------|-------|------------------|

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|           |       |   |
|-----------|-------|---|
| ASHLEY FM | 26-30 | Calcarenite, fine-grained, olive-brown, contains quartz grains and large forams, recrystallized calcareous nodules in upper two feet, shell fragments in basal foot |
|-----------|-------|---|

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Base of Waccamaw Formation: +63 feet above sea level  
Base of Salkehatchie beds: +61 feet above sea level  
Bottomed in Ashley Formation



PR-4: 2.2 mi. W of east quad. border, 2.35 mi. S of north quad. border. Surface elevation 95 feet.

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|                |       |  |
|----------------|-------|--|
| WACCAMAW<br>FM | 0-6   | Sand, fine-grained, brownish-orange grading down to reddish-orange and medium-gray mottled   |
|                | 6-19  | Sand, medium-grained, white, well-sorted, contains abundant very fine-grained heavies, interbedded with thin light-gray clay laminae, sand turns medium-orange below 15 feet |
|                | 19-26 | Clay, medium-bluish-gray, soft, greasy   |
|                | 26-32 | Silt, sandy, grading to sand, fine-grained, silty, medium-yellowish-brown  |
|                | 32-34 | Sand, coarse-grained, medium-orange, contains subangular quartz pebbles, sharp basal contact   |

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|                     |       |  |
|---------------------|-------|--|
| PRINGLETOWN<br>BEDS | 34-42 | Sand, fine-grained, light-orange grading by 35 feet to medium-blue, silty, clayey, grades downward to medium-grained and micaceous |
|---------------------|-------|--|

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|           |       |   |
|-----------|-------|---|
| ASHLEY FM | 42-60 | Calcarenite, fine-grained, medium-brown, contains quartz and phosphate sand |
|-----------|-------|---|

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|                              |                          |
|------------------------------|--------------------------|
| Base of Waccamaw Formation:  | +61 feet above sea level |
| Base of Pringletown beds:    | +53 feet above sea level |
| Bottomed in Ashley Formation |                          |

PR-5: 2.8 mi. E of west quad. border, 0.5 mi. S of north quad. border. Surface elevation 81 feet.

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|                |       |   |
|----------------|-------|---|
| WACCAMAW<br>FM | 0-6   | Sand, medium-grained, medium-brown, medium-orange, and light-gray mottled, poorly sorted, very clayey               |
|                | 6-7   | Clay, light-gray and medium-red mottled   |
|                | 7-12  | Sand, coarse-grained, medium-brown, medium-orange and light-gray mottled, poorly sorted, subangular                 |
|                | 12-17 | Sand, dominantly medium-grained, pale-brownish-orange, poorly sorted, silty, thin bed of medium-orange clay at base |

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|                      |       |  |
|----------------------|-------|--|
| SALKEHATCHIE<br>BEDS | 17-22 | Sand, medium-grained, dark-greenish-gray, silty, very abundant sand-size phosphate, subangular |
|----------------------|-------|--|

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|           |       |   |
|-----------|-------|---|
| ASHLEY FM | 22-29 | Calcarenite, fine- to medium-grained, light-brown, contains shell fragments including small pectens |
|-----------|-------|---|

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|          |       |   |
|----------|-------|---|
| CROSS LS | 29-35 | Calcarenite, fine-grained, white, glauconitic |
|----------|-------|---|

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|                             |                          |
|-----------------------------|--------------------------|
| Base of Waccamaw Formation: | +64 feet above sea level |
| Base of Salkehatchie beds:  | +59 feet above sea level |
| Base of Ashley Formation:   | +52 feet above sea level |
| Bottomed in Cross Limestone |                          |

PR-6: 0.3 mi. E of west quad. border, 0.6 mi. N of south quad. border. Surface elevation 94 feet.

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WACCAMAW FM            0-4.5    Sand, fine-grained, light-orange, very fine grained heavies present below 3 feet and some feldspar grains

                          4.5-5    Clay, light-gray with light-orange mottles, rapid gradation from above

                          5-25    Sand, fine-grained, light-yellowish-brown, contains abundant very fine-grained heavies, slightly micaceous, silty, grades to

                          25-29    Sand, fine-grained, bright medium-orange, more angular than above, some coarse-grains present, contains abundant very fine-grained heavies

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SALKEHATCHIE BEDS    29-40    Sand, fine- to medium-grained, dark-brown grading to dark-greenish-gray by 32 feet, very fine-grained heavies abundant, sparse aragonitic shells present, sparse phosphate pebbles at base, burrows in unit below filled with this lithology

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ASHLEY FM            40-50    Calcarenite, very fine-grained, light-olive-gray grading down to medium-olive, phosphate sand content increases downward, a few phosphate and calcite-cemented lumps present

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Base of Waccamaw Formation: +65 feet above sea level  
Base of Salkehatchie beds: +54 feet above sea level  
Bottomed in Ashley Formation

PR-7: 1.9 mi. E of west quad. border, 3.15 mi. N of south quad. border. Surface elevation 102 feet.

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WACCAMAW FM            0-23    Sand, fine-grained, medium-yellowish-orange grading through medium-brownish-orange to light-brownish-gray by 5 feet, well-sorted, very slightly silty, very fine-grained heavies abundant, slightly micaceous (2-3 mm flakes)

                          at 23    Clay, light-gray, present in thin lense

                          23-36    Sand, fine-grained, light-brownish-gray, silty

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SALKEHATCHIE BEDS    36-41    Sand, fine- to medium-grained, medium-gray (36-37 feet) grading to dark-brownish-gray, sparse quartz and phosphate pebbles at base (mostly 1 cm, but one vein quartz pebble had 2 cm long axis)

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ASHLEY FM            41-50    Calcarenite, very fine-grained, medium-olive, contains sparse shell fragments and phosphate sand

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Base of Waccamaw Formation:            +66 feet above sea level  
Base of Salkehatchie beds:            +61 feet above sea level  
Bottomed in Ashley Formation

PR-8: 0.35 mi. E of west quad. border, 3.35 mi. N of south quad. border. Surface elevation 102 feet.

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WACCAMAW FM      0-5      Sand, fine- to medium-grained, medium-orange grading to light-orangish-gray, well-sorted, slightly silty, grades to

                  5-18      Sand, fine- to medium-grained, light-brown, micaceous (1-2 mm flakes), grades to

                  18-24      Sand, medium-grained, light-gray, more micaceous than above and contains abundant quartz granules

                  24-25      Clay, light-gray, fine- to coarse-grained sandy

---

SALKEHATCHIE BEDS      25-39      Sand, medium-grained, light-greenish-gray, very calcareous and contains quartz and phosphate sand, calcareous shell fragments (including Amusium mortoni) present, quartz and phosphate pebbles (about 1 cm diameter) present at base

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ASHLEY FM      39-40      Calcarenite, fine-grained, medium-olive-brown, contains abundant phosphate sand

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Base of Waccamaw Formation:      +77 feet above sea level  
Base of Salkehatchie beds:      +63 feet above sea level  
Bottomed in Ashley Formation

PR-9: 1.35 mi. W of east quad. border, 3.45 mi. N of south quad. border. Surface elevation about 80 feet.

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|                      |       |   |
|----------------------|-------|---|
| WACCAMAW<br>FM       | 0-5   | Sand, dominantly medium-grained, light-yellowish-orange with light-brownish-gray mottles grading down to medium-orange with light-gray mottles, very poorly sorted, silty and clayey, grades to |
|                      | 5-15  | Sand, dominantly fine-grained, light-orange grading down to light-yellowish-orange, very poorly sorted, silty and clayey, grades to   |
|                      | 15-20 | Silt, light-yellowish-orange, clayey and sandy (fine- to coarse-grained), grades to   |
|                      | 20-27 | Sand, fine-grained grading down to medium-grained, medium-yellow (lepidochrosite?), silty, phosphate pebbles at base  |
| .....                |       |   |
| SALKEHATCHIE<br>BEDS | at 27 | Clay, dark-yellowish-brown, silty, 5 cm thick   |
| .....                |       |   |
| ASHLEY FM            | 27-32 | Calcarenite, fine-grained, medium-olive-brown, abundant sand-size phosphate, contains thin shell fragments, sparse phosphate pebbles at base  |
| .....                |       |   |
| HARLEYVILLE<br>FM    | 32-35 | Calcarenite, very fine-grained, light-bluish-green, grainy, semi-lithified; contains sparse quartz and phosphate sand; burrows at top of unit are filled with Ashley matrix from above unit     |

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Base of Waccamaw Formation: +53 feet above sea level  
 Base of Salkehatchie beds: +53 feet above sea level  
 Base of Ashley Formation: +48 feet above sea level  
 Bottomed in Harleyville Formation

PR-10: 2.2 mi. W of east quad. border, 3.9 mi. S of north quad. border. Surface elevation 78 feet.

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|                |       |  |
|----------------|-------|--|
| WACCAMAW<br>FM | 0-7   | Sand, fine-grained, light-brownish-gray grading down to medium-orange and light-gray mottled, well-sorted, slightly clayey and silty   |
|                | 7-10  | Clay, bright medium-red with medium-gray to light-gray mottles grading down to light-orange and light-gray mottled, micaceous, slightly sandy grading down to abundantly sandy and subangular, quartz pebbly   |
|                | 10-23 | Sand, dominantly medium-grained, grading down to dominantly fine-grained by 18 feet, light-brownish-gray grading to medium-gray by 15 feet and to dark-gray by 18 feet, very poorly sorted, very fine-grained heavies present, slightly silty, phosphate pebbles and rounded lumps of calcarenite, (1-2 cm diameter) at base |

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|           |       |  |
|-----------|-------|--|
| ASHLEY FM | 23-30 | Calcarenite, very fine-grained, light-olive-brown, silty |
|-----------|-------|--|

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Base of Waccamaw Formation: +55 feet above sea level  
Bottomed in Ashley Formation



PR-12: 2.8 mi. W of east quad. border, 1.25 mi. S of north quad. border. Surface elevation 90 feet.

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WACCAMAW FM 0-5 Sand, fine-grained, light-orange with light-gray mottles near base, silty grading down to clayey and silty, rounded lumps of plinthite present at about 2 feet, grades to

5-14 Sand, fine-grained, light-brownish-orange grading through light-orange to light-reddish-orange by 10 feet, poorly sorted with some medium and coarse grains, silty, coarsens downward to

14-28 Sand, medium-grained, light-red grading to light-orange by 22 feet, poorly sorted, coarse grains subangular

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SALKEHATCHIE BEDS 28-29 Clay, dark-olive-green (about 5 GY 2/2), sandy, no basal pebble bed

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ASHLEY FM 29-31 Calcarenite, fine-grained, medium-olive-brown, phosphatic, grades to

31-32 Calcarenite, light-brownish-gray grading to light-yellowish-olive, phosphate sand abundant

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Base of Waccamaw Formation: +62 feet above sea level  
Base of Salkehatchie beds: +61 feet above sea level  
Bottomed in Ashley Formation

PR-13: 1.1 mi. W of east quad. border, 1.4 mi. S of north quad. border. Surface elevation 94 feet.

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|                |       |   |
|----------------|-------|---|
| WACCAMAW<br>FM | 0-18  | Sand, fine-grained, light-yellowish-gray (0-2 feet) grading to light-gray, very fine-grained heavies present, very kaolinitic (?), silty, grades to |
|                | 18-26 | Sand, medium-grained, medium-gray, scattered thin lenses of medium-gray clay  |
|                | 26-35 | Sand, medium-grained grading down to coarse-grained by base, medium-gray, calcareous and aragonitic shells present                                  |
| .....          |       |   |
| ASHLEY FM      | 35-40 | Calcarenite, fine-grained, medium-yellowish-olive, contains phosphate sand  |

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Base of Waccamaw Formation: +59 feet above sea level  
Bottomed in Ashley Formation

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PR-14: 0.65 mi. W of east quad. border, 0.8 mi. N of south quad. border. Surface elevation 65 feet.

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|                  |      |  |
|------------------|------|--|
| PENHOLOWAY<br>FM | 0-6  | Clay, light-brown and medium-gray mottled grading through light-orange and medium-gray mottled to light-gray, slightly fine-grained sandy, basal contact sharp |
| .....            |      |  |
| WACCAMAW<br>FM   | 6-9  | Sand, fine-grained grading down to fine- and medium-grained, medium-gray, 1 cm phosphate pebbles abundant at base  |
| .....            |      |  |
| ASHLEY FM        | 9-15 | Calcarenite, very fine-grained, light-gray grading down to light-orange, silty   |

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Base of Penholoway Formation: +59 feet above sea level  
Base of Waccamaw Formation: +56 feet above sea level  
Bottomed in Ashley Formation



PR-16: 0.2 mi. E of west quad. border, 3.6 mi. S of north quad. border. Surface elevation 90 feet.

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|                |         |   |
|----------------|---------|---|
| WACCAMAW<br>FM | 0-7     | Clay, light-brown and light-gray mottled with a few medium-reddish-orange mottles grading down to light-red and medium-red mottled, silty and slightly sandy, grades to |
|                | 7-10    | Silt, bright light-orange, sandy, grades rapidly to   |
|                | 10-10.5 | Clay, light-purple, silty to sandy, grades rapidly to   |
|                | 10.5-14 | Silt, bright light-orange, sandy, grades rapidly to   |
|                | 14-14.5 | Clay, light-purplish-gray, sandy, grades rapidly to   |
|                | 14.5-21 | Silt, sandy grading down to sand, fine-grained, silty, light-orange   |
|                | 21-23.5 | Clay, light-gray, contains poorly sorted sand and quartz granules   |

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|                      |         |                  |
|----------------------|---------|------------------|
| SALKEHATCHIE<br>BEDS | 23.5-24 | Clay, dark-brown |
|----------------------|---------|------------------|

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|           |       |  |
|-----------|-------|--|
| ASHLEY FM | 24-25 | Calcarenite, very fine-grained, light-gray |
|-----------|-------|--|

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Base of Waccamaw Formation: +67 feet above sea level  
Base of Salkehatchie beds: +66 feet above sea level  
Bottomed in Ashley Formation

PR-17: 0.3 mi. E of west quad. border, 0.15 mi. S of north quad. border. Surface elevation 76 feet.

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|                |       |   |
|----------------|-------|---|
| WACCAMAW<br>FM | 0-9   | Silt, medium-orange with light-gray mottles below 4 feet, slightly clayey, fine-grained sandy   |
|                | 9-10  | Clay, light-gray, sandy   |
|                | 10-14 | Sand, fine- to medium-grained, light-reddish-orange, very fine-grained black heavies abundant, grades to  |
|                | 14-26 | Sand, coarse-grained, light-reddish-orange, contains granules of quartz and feldspar and scattered laminae of light-gray clayey sand, grades to |
|                | 26-38 | Gravel, granular, light-reddish-orange, well-sorted, subrounded to subangular, dominantly quartz, clayey from 32-38                             |

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|          |       |  |
|----------|-------|--|
| CROSS LS | 38-50 | Calcarenite, very fine-grained, light-yellow grading through very-light-brown to light-gray in basal foot, silty, contains shell and sand dollar fragments |
|----------|-------|--|

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Base of Waccamaw Formation: +38 feet above sea level  
Bottomed in Cross Limestone

PR-18: 1.65 mi. E of west quad. border, 2.0 mi. N of south quad. border. Surface elevation about 87 feet.

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|                |       |  |
|----------------|-------|--|
| WACCAMAW<br>FM | 0-5   | Sand, fine-grained, light-orange grading down to white, well-sorted, very fine-grained heavies present   |
|                | 5-16  | Sand, fine-grained, light-brown, silty, more poorly sorted downward with some coarse-grained fraction coming in by 13 feet, light-gray clay laminae scattered throughout |
|                | 16-18 | Sand, dominantly fine-grained, medium-orange, clayey   |
|                | 18-24 | Sand, fine-grained, dark-brownish-green, very clayey, 1 cm phosphate pebbles at base   |

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|                      |       |   |
|----------------------|-------|---|
| SALKEHATCHIE<br>BEDS | 24-30 | Sand, fine-grained, dark-brownish-green, rich in phosphate sand, calcite-cemented lumps present, much denser than above |
|----------------------|-------|---|

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Base of Waccamaw Formation: +63 feet above sea level  
Bottomed in Salkehatchie beds

PR-19: 1.05 mi. E of west quad. border, 1.15 mi. N of south quad. border. Surface elevation 82 feet.

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WACCAMAW FM            0-14    Sand, fine-grained, light-brown (0-2 feet) grading through light-orange (2-5 feet) to light-yellowish-brown by 4 feet, clean, well-sorted, very fine-grained heavies present, sparsely scattered light-gray clay laminae present, grades to

                         14-25    Sand, medium-grained, light-yellowish-brown (14-18 feet) grading through medium-orange (18-20 feet) to dark-green, clayey (20-25 feet), sharp basal contact

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SALKEHATCHIE BEDS    25-27    Sand, fine-grained, light-gray, very calcareous, sparse oyster fragments present, abundant phosphate pebbles at base

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ASHLEY FM            27-30    Calcarenite, very fine-grained, medium-olive-brown, slightly quartz and phosphate sandy

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Base of Waccamaw Formation: +57 feet above sea level  
Base of Salkehatchie beds: +55 feet above sea level  
Bottomed in Ashley Formation





PR-22: 2.6 mi. E of west quad. border, 4.0 mi. S of north quad. border. Surface elevation about 90 feet (=RID-NE-3-H of Houser).

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|                      |        |  |
|----------------------|--------|--|
| WACCAMAW<br>FM       | 0-5    | Sand, medium-grained, medium-gray and medium-orange, clayey, slightly micaceous  |
|                      | 5-8.5  | Sand, medium- to coarse-grained, yellowish-brown, muddy, slightly micaceous  |
|                      | 8.5-26 | Sand, medium-grained grading down to coarse-grained, white grading down to medium-gray (23-26 feet), muddy, slightly micaceous |
|                      | 26-28  | Sand, fine- to medium-grained, dark-gray, sparse phosphate pebbles at base   |
| .....                |        |  |
| SALKEHATCHIE<br>BEDS | 28-30  | Sand, fine- to medium-grained, dark-olive-green  |
| .....                |        |  |
| ASHLEY FM            | 30-81  | Calcarenite, fine-grained, olive-green to olive-brown, sand-size phosphate mostly rare but increases to abundant near base     |
| .....                |        |  |
| HARLEYVILLE<br>FM    | 81-86  | Calcilutite, olive-green to olive-brown, stiff   |
| .....                |        |  |
| CROSS LS             | 86-125 | Calcarenite, fine-grained, white to pale-yellowish-brown   |

---

Base of Waccamaw Formation: +62 feet above sea level  
 Base of Salkehatchie beds: +60 feet above sea level  
 Base of Ashley Formation: +9 feet above sea level  
 Base of Harleyville Formation: +4 feet above sea level  
 Bottomed in Cross Limestone

PR-23: 0.95 mi. E of west quad. border, 1.8 mi. N of south quad. border. Surface elevation 52 feet.

---

|           |       |   |
|-----------|-------|---|
| FILL      | 0-6   | Road fill   |
| .....     |       |   |
| HOLOCENE  | 6-7   | Sand, medium- to coarse-grained, medium-brownish-orange, subangular   |
| .....     |       |   |
| LADSON FM | 7-15  | Sand, dominantly fine-grained, light-brown, poorly sorted, grading to dominantly medium-grained, poorly sorted, woody and peaty brown in basal foot |
| .....     |       |   |
| ASHLEY FM | 15-20 | Calcarenite, very fine-grained, light-yellowish-brown grading down to light-olive   |

---

Base of Holocene: +45 feet above sea level  
Base of Ladson Formation: +37 feet above sea level  
Bottomed in Ashley Formation





RI-3: 2.4 mi. E of west quad. border, 2.5 mi. S of north quad. border. Surface elevation 82 feet.

---

|                   |       |   |
|-------------------|-------|---|
| PENHOLLOWAY<br>FM | 0-3   | Sand, medium-grained, medium-orange, silty  |
|                   | 3-6   | Clay, medium-orange, medium-gray and brownish-orange mottled, sandy   |
|                   | 6-10  | Sand, fine- to medium-grained, light orange, contains a subordinate coarse-grained fraction                           |
|                   | 10-12 | Sand, fine-grained, light-orange and medium-orange mottled, contains numerous very fine-grained heavies               |
|                   | 12-32 | Clay, medium-gray, medium-red and orangish-brown mottled, grading to medium-blue by 23 feet                           |
|                   | 32-33 | Sand, fine-grained, dark-gray, micaceous, silty   |
|                   | 33-39 | Sand, medium-grained, medium-green, poorly sorted, shell fragments present (mostly oyster), phosphate pebbles at base |

---

|              |       |   |
|--------------|-------|---|
| ASHLEY<br>FM | 39-50 | Calcarenite, fine-grained, light-brown rapidly grading to olive-brown |
|--------------|-------|---|

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Base of Penholoway Formation: +43 feet above sea level  
Bottomed in Ashley Formation

RI-4: 2.6 mi. E of west quad. border, 3.25 mi. N of south quad. border. Surface elevation 57 feet.

---

|                   |       |   |
|-------------------|-------|---|
| PENHOLLOWAY<br>FM | 0-5   | Clay, reddish-orange, medium-orange and medium-gray mottled, slightly sandy   |
|                   | 5-7   | Sand, fine- to coarse-grained, white, poorly sorted, silty, pebbly  |
|                   | 7-16  | Clay, light-gray, dense   |
|                   | 16-31 | Sand, fine-grained grading through medium- to coarse-grained by base, light-gray, well-sorted, silty, contains abundant very fine-grained heavies |
|                   | 31-34 | Sand, coarse-grained, dark-greenish-gray, subangular, poorly sorted, discoidal phosphate pebbles in basal foot                                    |

---

|                       |       |   |
|-----------------------|-------|---|
| CHANDLER<br>BRIDGE FM | 34-35 | Sand, fine-grained, dark-greenish-gray, dense (22 cm) overlying clay, dark brown (8 cm) |
|-----------------------|-------|---|

---

|              |       |  |
|--------------|-------|--|
| ASHLEY<br>FM | 35-50 | Calcarenite, fine-grained, olive-brown, abundant sand-size phosphate, phosphate pebbles and bone fragments in basal foot |
|--------------|-------|--|

---

Base of Penholoway Formation: +23 feet above sea level  
Base of Chandler Bridge Formation: +22 feet above sea level  
Bottomed in Ashley Formation

RI-5: 3.65 mi. W of east quad border, 3.3 mi. S of north quad.  
border. Surface elevation 62 feet.

---

|                       |       |  |
|-----------------------|-------|--|
| PENHOLLOWAY<br>FM     | 0-5   | Clay, medium-orange grading down to medium-orange and medium-gray mottled, stiff, dense                            |
|                       | 5-8   | Sand, fine-grained, medium-orange, silty   |
|                       | 8-12  | Clay, light-gray with medium-purple mottles, dense, stiff  |
|                       | 12-24 | Sand, fine-grained, light-yellow, silty, contains abundant very fine-grained heavies, phosphate pebble bed at base |
| .....                 |       |  |
| CHANDLER<br>BRIDGE FM | 24-25 | Sand, fine-grained, dark-greenish-gray, contains abundant sand-size phosphate                                      |
| .....                 |       |  |
| ASHLEY<br>FM          | 25-35 | Calcarenite, fine-grained, olive-green, contains abundant sand-size phosphate                                      |

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Base of Penholoway Formation: +38 feet above sea level  
Base of Chandler Bridge Formation: +37 feet above sea level  
Bottomed in Ashley Formation



RI-7: 0.15 mi. E of west quad. border, 1.1 mi. N of south quad. border. Surface elevation 64 feet.

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|                   |       |  |
|-------------------|-------|--|
| PENHOLLOWAY<br>FM | 0-3   | Silt, dull medium-orange, fine-grained sandy, sand well-rounded and well sorted, |
|                   | 3-6   | Clay, light-gray with medium-red mottles abundant                                |
|                   | 6-17  | Sand, very fine-grained, light-reddish-orange grading down to light-brown, silty |
|                   | 17-24 | Clay, light-gray rapidly grading down to light-bluish-gray                       |
|                   | 24-25 | Sand, very fine-grained, light-yellowish-gray, silty                             |
|                   | 25-26 | Clay light-yellowish-gray, silty, contains sparse lumps of clay                  |

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|              |       |   |
|--------------|-------|---|
| ASHLEY<br>FM | 26-30 | Calcarenite, very fine-grained, light-brown |
|--------------|-------|---|

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Base of Penholoway Formation: +38 feet above sea level  
Bottomed in Ashley Formation

RI-8: 0.45 mi. E of west quad. border, 4.0 mi. N of south quad. border. Surface elevation 58 feet.

---

PENHOLOWAY 0-5 Clay, light- to medium-orange with sparse  
FM light-gray mottles, sandy (mostly fine- but  
some medium-grained)

5-10 Clay, light-greenish-gray with sparse  
light-orange mottles, thinly layered in  
sheets that tear apart, sparse fine-grained  
sand present, medium-bluish-green mottles  
present below 8 feet, no basal pebble bed

---

ASHLEY 10-20 Calcarenite, very fine-grained, pale-gray  
FM (10-16 feet) grading through light-  
yellowish-olive (16-18 feet) and light-  
brownish-gray (18-19 feet) to medium-brown,  
large forams present in basal foot

---

Base of Penholoway Formation: +48 feet above sea level  
Bottomed in Ashley Formation

---

RI-9: 3.4 mi. E of west quad. border, 2.7 mi. N of south quad. border. Surface elevation 48 feet.

---

LADSON 0-4 Silt, medium-orange, sparsely fine-grained  
FM(?) sandy

---

PENHOLOWAY 4-25 Clay, light-gray with medium-red mottles in  
FM upper foot, fine- to coarse-grained sandy,  
contains scattered laminae of fine-grained  
sand, sparse quartz and phosphate pebbles  
at base

---

ASHLEY FM at 25 Calcarenite, very fine-grained, light-gray

---

Base of Ladson Formation?: +44 feet above sea level  
Base of Penholoway Formation: +23 feet above sea level  
Bottomed in Ashley Formation



RI-12: 1.9 mi. W of east quad. border, 2.3 mi. N of south quad. border. Surface elevation 52 feet.

---

|                   |      |   |
|-------------------|------|---|
| PENHOLLOWAY<br>FM | 0-6  | Clay, bright medium-red with light-gray and light-orange mottles, dense and massive   |
|                   | 6-8  | Clay, bright medium-orange, silty, fine-grained sandy   |
|                   | 8-16 | Clay, light-orangish-gray, contains medium- to coarse-grained quartz sand, white phosphate lumps and smears of carbon in basal 4 inches |

---

|                       |       |   |
|-----------------------|-------|---|
| CHANDLER<br>BRIDGE FM | 16-20 | Sand, very fine-grained, light-gray, silty, white grains of phosphate present, 3 cm of greasy medium-brown clay at base |
|-----------------------|-------|---|

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|              |       |  |
|--------------|-------|--|
| ASHLEY<br>FM | 20-35 | Calcarenite, very fine-grained, light-brown grading down to medium-brown |
|--------------|-------|--|

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Base of Penholloway Formation: +36 feet above sea level  
Base of Chandler Bridge Formation: +32 feet above sea level  
Bottomed in Ashley Formation

RI-13: On west quad. border, 2.8 mi. S of north quad. border.  
Surface elevation 40 feet.

---

LADSON                    0-5      Sand, fine-grained, dark-gray and light-  
FM    brown mottled grading down to medium-gray,  
   well-sorted, slightly clayey in upper 3  
   feet

---

WACCAMAW                5-15      Sand, medium-grained, dark-gray, contains a  
FM    feldspathic coarse-grained fraction, grades  
   to

   15-19      Sand, medium- to coarse-grained, dark-  
   brown, contains wood fragments, grades to

   19-23      Sand, medium-grained, dark-brown, grades to

   23-29      Sand, medium- to coarse-grained, dark-  
   brown, phosphate pebbles and quartz  
   granules present in basal foot

---

ASHLEY                    29-35      Calcarenite, very fine-grained, light-  
FM    yellowish-green, fragments of thin bivalve  
   shells present

---

Base of Ladson Formation:      +35 feet above sea level

Base of Waccamaw Formation:    +11 feet above sea level

Bottomed in Ashley Formation

RI-14: 1.4 mi. E of west quad. border, 3.0 mi. S of north quad. border. Surface elevation 79 feet (=CRVSE-1-D of McCartan).

---

|                   |       |  |
|-------------------|-------|--|
| PENHOLLOWAY<br>FM | 0-14  | Sand, fine- to medium-grained, light-brown grading through light-olive-gray to medium-reddish-orange, clay laminae present near base |
|                   | 14-23 | Clay, medium-greenish-gray, silty, sandy   |
|                   | 23-28 | Sand, fine-grained to coarse-grained, medium-greenish-gray, clayey, micaceous, pebbly at base  |

.....

|              |       |  |
|--------------|-------|--|
| ASHLEY<br>FM | 28-32 | Calcarenite, fine-grained, light-olive-green grading through medium-brown and dark-brown to dark-olive-brown |
|--------------|-------|--|

---

Base of Penholoway Formation: +51 feet above sea level  
Bottomed in Ashley Formation

RI-15: 3.25 mi. W of east quad. border, 0.6 mi. S of north quad. border. Surface elevation 55 feet. (=RID-SE-2-H of Houser)

---

|                  |         |  |
|------------------|---------|--|
| FILL             | 0-3     | Mottled clay and sand  |
| .....            |         |  |
| PENHOLLOWAY FM   | 3-10    | Clay, fine-grained sandy, medium-orange (3-8 feet) grading down to light-gray and medium-brownish-green, phosphate pebbles at base   |
| .....            |         |  |
| ASHLEY FM        | 10-119  | Calcarenite, fine-grained, light-brown (10-12 feet) grading down to medium- to dark-olive-green, contains quartz, phosphate, and glauconite sand; phosphate pebble bed at base |
| .....            |         |  |
| PARKERS FERRY FM | 119-126 | Calcarenite, fine-grained, medium-bluish-olive, stiff, phosphate sand abundant   |
| .....            |         |  |
| HARLEYVILLE FM   | 126-145 | Calcarenite, very fine-grained, very light-greenish-gray   |

---

Base of Penholoway Formation: +45 feet above sea level  
Base of Ashley Formation: -64 feet below sea level  
Base of Parkers Ferry Formation: -71 feet below sea level  
Bottomed in Harleyville Formation

RI-16: 3.35 mi. E of west quad. border, 1.8 mi. N of south quad. border, surface elevation 33 feet.

-----

TEN MILE HILL BEDS            0-5        Clay, medium-gray with medium-orange and medium-olive-gray mottles, stiff, basal foot has 1-3 cm rounded phosphate pebbles and 0.5 cm subrounded quartz pebbles

.....

PENHOLLOWAY FM            5-8        Sand, fine-grained, light-bluish-gray, well sorted, 2 cm-thick layer of dark-brown sandy clay at base

.....

EDISTO FM                8-15        Calcarenite, fine-grained, light-yellowish-brown grading down to light-yellowish-gray, bryozoan fragments abundant, partly medium-grained in basal foot

.....

ASHLEY FM                15-20        Calcarenite, very fine-grained, medium-olive-brown, slightly clayey

-----

Base of Ten Mile Hill beds:        +28 feet above sea level  
Base of Penholoway Formation:    +25 feet above sea level  
Base of Edisto Formation:        +18 feet above sea level  
Bottomed in Ashley Formation

RI-17: 1.95 mi. W of east quad. border, 2.25 mi. S of north quad. border. Surface elevation 56 feet.

---

|                   |       |   |
|-------------------|-------|---|
| PENHOLLOWAY<br>FM | 0-2   | Sand, fine-grained but poorly sorted, medium-yellowish-orange, silty, grading to  |
|                   | 2-5   | Clay, medium-orange mottled dark-red, dark-pink, and light-gray, fine-grained sandy   |
|                   | 5-8   | Clay, light-gray, coarse-grained sandy grading down to fine-grained sandy   |
|                   | 8-13  | Sand, fine-grained, light-yellowish-gray, silty, with interbeds of sandy light-gray clay  |
|                   | 13-25 | Sand, medium-grained, light-yellowish-gray, poorly sorted, micaceous, silty, very fine-grained heavies present grading down to coarse-grained, poorly sorted, subrounded, quartz pebbly; 15 cm of light-brownish-gray clay with olive-brown mottles at base |

---

|              |       |   |
|--------------|-------|---|
| ASHLEY<br>FM | 25-30 | Calcarenite, very fine-grained, medium-olive-brown grading down to dark-olive-green, phosphate and glauconite sand abundant |
|--------------|-------|---|

---

Base of Penholoway Formation: +31 feet above sea level  
Bottomed in Ashley Formation



RI-19: 2.15 mi. E of west quad. border, 0.1 mi. N of south quad. border. Surface elevation 57 feet.

---

PENHOLOWAY      0-8      Clay, medium-orange, basal foot medium-orange with dark-pink, dark-red, and light-gray mottles, dense, slightly sandy

                  8-19      Sand, very fine-grained, light-orange, very silty grading down to fine-grained, light-yellowish-orange, silty, calcite-cemented lumps (1-2 cm diameter) common in basal foot

---

EDISTO            19-30      Calcarenite, fine-grained, light-yellowish-brown, shell fragments and bryozoan fragments abundant to very abundant at base, small phosphate pebbles (0.25-0.50 cm) concentrated in basal burrows, medium-yellow subangular 2-3 cm diameter calcite lumps in basal two feet

---

ASHLEY            at 30      About 8 cm of calcarenite, very fine-grained, medium-olive-brown, burrowed from above

---

Base of Penholoway Formation: +38 feet above sea level  
Base of Edisto Formation:      +27 feet above sea level  
Bottomed in Ashley Formation

RI-20: 1.75 mi. E of west quad. border, 2.25 mi. N of south quad. border. Surface elevation 62 feet.

-----

|                   |       |   |
|-------------------|-------|---|
| PENHOLLOWAY<br>FM | 0-8   | Clay, medium-orange with light-yellowish-orange and light-gray mottles grading down to light-gray with light-orange and medium-red mottles, slightly fine-grained sandy grading down to fine- to coarse-grained and subrounded sandy                          |
|                   | 8-10  | Sand, dominantly fine-grained, medium-orange and light-gray mottled, poorly sorted to coarse-grained, slightly micaceous  |
|                   | 10-31 | Sand, fine- to medium-grained grading down to fine- to coarse-grained but dominantly fine-grained, light-yellowish-orange grading through light-grayish-brown to medium-olive-gray, poorly sorted, coarse grains subrounded, sparse phosphate pebbles at base |

.....

|                       |       |   |
|-----------------------|-------|---|
| CHANDLER<br>BRIDGE FM | 31-35 | Sand, fine-grained, medium-greenish-gray grading down to dark-greenish-gray |
|-----------------------|-------|---|

|  |       |                                    |
|--|-------|------------------------------------|
|  | 35-36 | Clay, dark-chocolate-brown, greasy |
|--|-------|------------------------------------|

.....

|              |       |   |
|--------------|-------|---|
| ASHLEY<br>FM | 36-40 | Calcarenite, very fine-grained, medium-olive-brown, contains large forams |
|--------------|-------|---|

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|                                    |                          |
|------------------------------------|--------------------------|
| Base of Penholoway Formation:      | +31 feet above sea level |
| Base of Chandler Bridge Formation: | +26 feet above sea level |
| Bottomed in Ashley Formation       |                          |





SN-2: On west quad. border, 2.45 mi. S of north quad. border.  
 Surface elevation 88 feet.

---

|                      |       |  |
|----------------------|-------|--|
| WACCAMAW<br>FM       | 0-5   | Sand, medium- to coarse-grained, medium-reddish-orange grading down to pinkish-red and light-gray mottled, clayey  |
|                      | 5-8   | Sand, coarse-grained, bright pinkish-orange, poorly sorted, silty, pebbly, grains subangular to angular  |
|                      | at 8  | Clay, light-gray, sticky, 8 cm thick   |
|                      | 8-28  | Sand, fine- to medium-grained, light-orangish-brown, clean, very fine-grained heavies sprinkled throughout, pebbly at base   |
| .....                |       |  |
| PRINGLETOWN<br>BEDS  | 28-29 | Clay, medium-blue, sticky, contains quartz and phosphate pebbles, burrows filled with sand from above  |
| .....                |       |  |
| SALKEHATCHIE<br>BEDS | 29-35 | Sand, black, medium-grained, contains sparse shell fragments and abundant sand-size phosphate; contains dinoflagellates which collectively indicate a Pliocene age for this unit |
| .....                |       |  |
| ASHLEY FM            | 35-61 | Calcarenite, very fine-grained, olive-brown, sparse thin shells present, phosphate pebbles in basal foot   |
| .....                |       |  |
| PARKERS<br>FERRY FM  | 61-75 | Calcilutite, medium-greenish-gray, dense, sticky, phosphate pebbles and bones in basal foot  |
| .....                |       |  |
| CROSS LS             | 75-90 | Calcarenite, fine-grained, white to pale-yellowish-brown, contains abundant sand-size phosphate  |

---

|                                  |                          |
|----------------------------------|--------------------------|
| Base of Waccamaw Formation:      | +60 feet above sea level |
| Base of Pringletown beds:        | +59 feet above sea level |
| Base of Salkehatchie beds:       | +53 feet above sea level |
| Base of Ashley Formation:        | +27 feet above sea level |
| Base of Parkers Ferry Formation: | +13 feet above sea level |
| Bottomed in Cross Limestone      |                          |

SN-3: 1.55 mi. E of west quad. border, 1.35 mi. S of north quad. border. Surface elevation 86 feet.

---

|                |       |   |
|----------------|-------|---|
| WACCAMAW<br>FM | 0-7   | Sand, medium-grained, medium-brown (0-1 foot) grading through medium-orangish-brown and medium-gray mottled (1-4 feet) to light-gray, subangular, poorly sorted, grading to |
|                | 7-10  | Sand, fine-grained, white, poorly sorted silty  |
|                | 10-11 | Clay, light-gray  |
|                | 11-22 | Sand, fine-grained, white (11-17 feet) grading through medium-orange (17-19 feet) to light-brown (19-22 feet), silty, better sorted than above, grades to                   |
|                | 22-29 | Sand, medium-grained, medium-gray, subangular, contains subangular quartz pebbles   |

---

|                      |       |  |
|----------------------|-------|--|
| SALKEHATCHIE<br>BEDS | 29-32 | Sand, fine-grained, dark-brownish-green, well sorted, fish scales and teeth present near base; dries to light-gray |
|----------------------|-------|--|

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|           |       |  |
|-----------|-------|--|
| ASHLEY FM | 32-35 | Calcarenite, very fine-grained, light-olive-brown, contains large forams |
|-----------|-------|--|

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Base of Waccamaw Formation: +57 feet above sea level  
Base of Salkehatchie beds: +54 feet above sea level  
Bottomed in Ashley Formation

---

SN-4: 2.95 mi. W of east quad. border, 1.75 mi. N of south quad. border. Surface elevation about 30 feet (outcrop).

---

|          |     |  |
|----------|-----|--|
| ALLUVIUM | 0-2 | Sand, medium-grained, light-gray, subangular, very clean, sparse carbon in upper 3 inches, no soil profile |
|----------|-----|--|

---

Base of section in Alluvium

SN-5: 0.4 mi. E of west quad. border, 0.4 mi. S of north quad. border. Surface elevation about 95 feet.

-----

|                |      |   |
|----------------|------|---|
| WACCAMAW<br>FM | 0-9  | Sand, fine- to medium-grained, light-orange grading down to light-gray by 5 feet, well sorted, micaceous  |
|                | 9-33 | Clay, light-gray, grading to medium-gray by 15 feet, silty, sandy, slick, medium- to coarse-grained subangular sand grains present from 30-33 feet, quartz (1 cm) and phosphate (1-2 cm) pebbles at base. |

.....

|           |       |   |
|-----------|-------|---|
| ASHLEY FM | 33-40 | Calcarenite, very fine-grained, light-greenish-gray grading down to medium-olive-brown, phosphate sand and large forams present |
|-----------|-------|---|

-----

Base of Waccamaw Formation: +62 feet above sea level  
Bottomed in Ashley Formation

---

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SN-6: 1.5 mi. E of west quad. border, 1.9 mi. S of north quad. border. Surface elevation 81 feet.

-----

|                   |       |  |
|-------------------|-------|--|
| PENHOLLOWAY<br>FM | 0-5   | Clay, medium-orange with light-gray mottles, silty, contains poorly sorted sand grains |
|                   | 5-16  | Clay grading down to silt; sandy, light-orange   |
|                   | 16-18 | Clay, medium-gray, massive   |

.....

|                |       |  |
|----------------|-------|--|
| WACCAMAW<br>FM | 18-26 | Sand, coarse-grained, light-greenish-gray, poorly sorted (fine to granules), silty |
|----------------|-------|--|

.....

|              |       |   |
|--------------|-------|---|
| ASHLEY<br>FM | 26-30 | Calcarenite, very fine-grained, dark-olive-brown grading rapidly to medium-olive-brown, phosphate sand and large forams present |
|--------------|-------|---|

-----

Base of Penholoway Formation: +63 feet above sea level  
Base of Waccamaw Formation: +55 feet above sea level  
Bottomed in Ashley Formation

SN-7: 2.85 mi. E of west quad. border, 3.55 mi. S of north quad. border. Surface elevation 63 feet.

---

|                  |       |   |
|------------------|-------|---|
| FILL             | 0-2   | Road fill   |
| .....            |       |   |
| PENHOLOWAY<br>FM | 2-7   | Clay, medium-reddish-orange with light-gray mottles, fine- to coarse-grained sandy, quartz (1 cm) pebbles at base                       |
| .....            |       |   |
| WACCAMAW<br>FM   | 7-13  | Sand, very fine- to medium-grained, light-gray, clayey, grading down to medium-gray and clean   |
|                  | 13-16 | Sand, fine-grained, light-brownish-gray, very calcareous, contains pecten fragments phosphate sand and sparse phosphate pebbles at base |
| .....            |       |   |
| ASHLEY<br>FM     | 16-20 | Calcarenite, very fine-grained, medium-olive-brown, much denser than above, contains phosphate sand and large forams                    |

---

Base of Penholoway Formation: +56 feet above sea level  
Base of Waccamaw Formation: +47 feet above sea level  
Bottomed in Ashley Formation

---

SN-8: 2.0 mi. W of east quad. border, 2.3 mi. S of north quad. border. Surface elevation 50 feet.

---

|              |      |   |
|--------------|------|---|
| FILL         | 0-1  | Road fill   |
| .....        |      |   |
| LADSON<br>FM | 1-6  | Sand, medium- to coarse-grained, clayey, grading down to clay, medium- to coarse-grained sandy, dark-gray grading down to light-gray and light-orange mottled |
| .....        |      |   |
| ASHLEY<br>FM | 6-15 | Calcarenite, very fine-grained, light-brown grading through medium-brown to medium-olive-green  |

---

Base of Ladson Formation: +44 feet above sea level  
Bottomed in Ashley Formation

SN-9: 1.3 mi. W of east quad. border, 2.9 mi. S of north quad. border. Surface elevation 41 feet.

---

|              |      |   |
|--------------|------|---|
| FILL         | 0-5  | Road fill   |
| .....        |      |   |
| ALLUVIUM     | 5-8  | Sand, medium-grained, medium-gray, light-gray sandy clay (5 cm) at base   |
| .....        |      |   |
| ASHLEY<br>FM | 8-15 | Calcarenite, very fine-grained, light-brown grading rapidly to medium-olive-brown, contains phosphate sand and thin bivalve fragments |

---

Base of alluvium (Holocene): +33 feet above sea level  
Bottomed in Ashley Formation

---

SN-10: 1.75 mi. W of east quad. border, 2.05 mi. S of north quad. border. Surface elevation about 55 feet.

---

|                 |      |  |
|-----------------|------|--|
| LADSON<br>FM    | 0-5  | Clay, light-brown and light-gray mottled grading down to light-orange and light-gray mottled, fine- to coarse-grained sandy, quartz pebbles and bone fragments at base |
| .....           |      |  |
| PENHLOWAY<br>FM | 5-6  | Clay, medium-gray with medium-orange mottles, fine- to coarse-grained sandy, some sand laminae near base   |
| .....           |      |  |
| ASHLEY<br>FM    | 6-25 | Calcarenite, very fine-grained, light-gray grading through light-olive-green to medium-olive-green   |

---

Base of Ladson Formation: +50 feet above sea level  
Base of Penholoway Formation: +49 feet above sea level  
Bottomed in Ashley Formation

SN-11: 1.95 mi. W of east quad. border, 0.6 mi. S of north quad. border. Surface elevation 59 feet.

---

FILL 0-1 Road fill

---

PENHOLLOWAY 1-6 Clay, medium-orange, bright-medium-red and FM light-gray mottled, very sandy (fine- to coarse-grained, subangular), some sand laminae present

---

ASHLEY FM 6-20 Calcarenite, very fine-grained, light-brown grading to medium-olive-green, contains phosphate sand

---

Base of Penholoway Formation: +53 feet above sea level  
Bottomed in Ashley Formation

---

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SN-12: 3.4 mi. W of east quad. border, 2.4 mi. S of north quad. border. Surface elevation 62 feet. (See SN-7 for nearly identical section)

---

PENHOLLOWAY 0-5 Sand, mostly medium-grained, poorly sorted, FM grading down to clay, sandy (fine- to coarse-grained), medium-orange and light-gray mottled

---

5-7 Sand, mostly medium-grained, poorly sorted, light-gray, slightly clayey and silty, subrounded quartz pebbles (0.5 cm) at base

---

WACCAMAW 7-11 Sand, fine-grained, light-gray, very FM calcareous, phosphate sand abundant, pectenid fragments present, sparse phosphate pebbles (0.25-0.50 cm) at base, sharp contact with below

---

ASHLEY 11-15 Calcarenite, very fine-grained, olive- FM brown, much denser than above

---

Base of Penholoway Formation: +55 feet above sea level  
Base of Waccamaw Formation: +51 feet above sea level  
Bottomed in Ashley Formation

SN-13: 3.15 mi. W of east quad. border, 3.65 mi. N of south quad. border. Surface elevation 63 feet.

---

|                   |     |  |
|-------------------|-----|--|
| PENHOLLOWAY<br>FM | 0-5 | Sand, fine- to medium-grained, medium-orange grading through medium-orange and light-gray mottled to light-gray, clay content increases downward |
|                   | 5-9 | Clay, medium-orange and light-gray grading down to medium-gray, dense, sandy at top but less so downward   |

---

|                     |      |   |
|---------------------|------|---|
| RUDD BRANCH<br>BEDS | 9-13 | Silt, medium-olive-green grading to dark-green, sandy (fine- to medium-grained), sharp contact with below |
|---------------------|------|---|

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|              |       |  |
|--------------|-------|--|
| ASHLEY<br>FM | 13-20 | Calcarenite, very fine-grained, medium-olive-brown |
|--------------|-------|--|

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Base of Penholoway Formation: +54 feet above sea level  
Base of Rudd Branch beds: +50 feet above sea level  
Bottomed in Ashley Formation

SN-14: 2.75 mi. E of west quad. border, 3.6 mi. N of south quad. border. Surface elevation 63 feet.

---

|                     |       |   |
|---------------------|-------|---|
| FILL                | 0-1   | Road fill   |
| .....               |       |   |
| PENHOLOWAY<br>FM    | 1-7   | Clay, light-orange and light-gray mottled, grading down to light-gray, sandy (fine- to medium-grained), micaceous, a few quartz pebbles to base                       |
| .....               |       |   |
| WACCAMAW<br>FM      | 7-15  | Sand, mostly fine- to medium-grained, dark-gray, slightly silty, upper foot contains burrows filled with light-gray sand from above, sparse phosphate pebbles at base |
| .....               |       |   |
| RUDD BRANCH<br>BEDS | 15-24 | Sand, fine-grained, dark-green, sparse rotten shells present, grades to medium-grained by base and a 2 cm diameter phosphate pebble present                           |
| .....               |       |   |
| ASHLEY FM           | 24-30 | Calcarenite, very fine-grained, light-yellowish-olive   |

---

Base of Penholoway Formation: +56 feet above sea level  
Base of Waccamaw Formation: +48 feet above sea level  
Base of Rudd Branch beds: +39 feet above sea level  
Bottomed in Ashley Formation



SN-16: 1.65 mi. W of east quad. border, 1.85 mi. N of south quad. border. Surface elevation 69 feet.

---

|                   |         |   |
|-------------------|---------|---|
| PENHOLLOWAY<br>FM | 0-3     | Sand, fine-grained, light-brownish-orange, silty and slightly clayey, grading to          |
|                   | 3-5     | Sand, fine-grained, light-orange and light-gray mottled, clayey and slightly silty        |
|                   | 5-14    | Clay, light-gray (5-6 feet) grading to light-pink, silty and sandy                        |
|                   | 14-14.5 | Clay, light-gray, denser than above, sandy  |
|                   | 14.5-15 | Sand, fine- to medium-grained, light-yellowish-orange, poorly sorted, slightly silty      |
|                   | 15-18   | Clay, light-pink, sandy and silty   |
|                   | 18-18.5 | Clay, light-gray, stiff   |
|                   | 18.5-22 | Silt, light-brown, sandy; coarse grains, quartz pebbles and phosphate lumps in basal foot |

---

|              |       |  |
|--------------|-------|--|
| ASHLEY<br>FM | 22-25 | Calcarenite, very fine-grained, light-brown, contains phosphate sand |
|--------------|-------|--|

---

Base of Penholoway Formation: +47 feet above sea level  
Bottomed in Ashley Formation





SN-20: 0.15 mi. E of west quad. border, 0.1 mi. N of south quad. border. Surface elevation 71 feet.

---

|                     |       |   |
|---------------------|-------|---|
| PENHOLLOWAY<br>FM   | 0-1   | Sand, fine-grained, light-brown, well sorted  |
|                     | 1-5   | Clay, medium-orange and light-gray mottled, silty and fine-grained sandy              |
|                     | 5-13  | Clay, light-gray (5-9 feet) grading to medium-gray (9-13 feet), massive, dense, lumpy |
| .....               |       |   |
| WACCAMAW<br>FM      | 13-19 | Silt, light-greenish-gray, contains phosphate sand and shell fragments, grading to    |
|                     | 19-29 | Sand, fine-grained, light-greenish-gray, sparsely shelly                              |
| .....               |       |   |
| RUDD BRANCH<br>BEDS | 29-33 | Sand, fine-grained, dark-green, phosphate pebbles in basal foot                       |
| .....               |       |   |
| ASHLEY FM           | 33-35 | Calcarenite, very fine-grained, light-brown   |

---

Base of Penholoway Formation: +58 feet above sea level  
Base of Waccamaw Formation: +42 feet above sea level  
Base of Rudd Branch beds: +38 feet above sea level  
Bottomed in Ashley Formation

SN-21: 2.85 mi. W of east quad. border, 4.05 mi. N of south quad. border. Surface elevation 43 feet. (=SUM-NW-1-H of Houser)

-----  
PENHOLLOWAY 0-8 Sand, medium-grained, light-purplish-brown,  
FM clean, grading down to clay, medium-gray  
with medium-orange mottles, medium-grained  
sandy, stiff  
.....

ASHLEY 8-16 Calcarenite, very fine-grained, olive-  
FM brown, phosphate sand abundant  
.....

PARKERS 16-20 Calcilutite, medium-greenish-gray, very  
FERRY FM stiff  
-----

Base of Penholoway Formation: +35 feet above sea level  
Base of Ashley Formation: +27 feet above sea level  
Bottomed in Parkers Ferry Formation

-----  
SN-22: 2.7 mi. W of east quad. border, 1.55 mi. N of south quad. border. Surface elevation about 44 feet (=SUM-NW-2-H of Houser).  
-----

PENHOLLOWAY 0-3 Sand, medium-grained, medium-brown, clean  
FM  
3-8 Clay, medium-greenish-gray and medium-  
orange inter-layered, stiff, contains  
white, noncalcareous chips and grains, wood  
and twigs present near top  
.....

ASHLEY FM 8-46 Calcarenite, very fine-grained, medium-  
brown (8-11 feet) grading down to olive-  
brown, sand-size phosphate increasingly  
abundant downward  
.....

PARKERS 46-63 Calcilutite, medium-greenish-gray, stiff  
FERRY FM  
-----

Base of Penholoway Formation: +36 feet above sea level  
Base of Ashley Formation: -2 feet below sea level  
Bottomed in Parkers Ferry Formation

SN-23: 1.75 mi. W of east quad. border, 0.95 mi. N of south quad. border. Surface elevation 76 feet (=CSVNW-1-D of McCartan).

---

PENHOLOWAY 0-26 Sand, medium-grained grading down to  
FM coarse-grained, gray, red, and yellow, with  
clay layers at 8, 13, and 18 feet,  
phosphate at base

.....

ASHLEY 26-27 Calcarenite, very fine-grained, yellowish-  
FM gray

---

Base of Penholoway Formation: +50 feet above sea level  
Bottomed in Ashley Formation

---

SN-24: 3.45 mi. W of east quad. border, 2.2 mi. N of south quad. border. Surface elevation 66 feet (=CSVNW-2-D of McCartan).

---

PENHOLOWAY 0-10 Sand, medium-grained, and clay, sandy,  
FM interbedded, medium-orange grading down  
through yellowish-orange

10-18 Sand, medium- to coarse-grained, white,  
clean

.....

ASHLEY FM 18-22 Calcarenite, very fine-grained, yellowish-  
orange; large forams and shell fragments  
abundant

---

Base of Penholoway Formation: +48 feet above sea level  
Bottomed in Ashley Formation

SN-25: 0.35 mi. E of west quad. border, 3.5 mi. S of north quad. border. Surface elevation about 75 feet. (=CSVNW-3-D of McCartan)

---

|               |       |  |
|---------------|-------|--|
| FILL          | 0-5   | Fill   |
| .....         |       |  |
| PENHOLOWAY FM | 5-14  | Sand, medium-grained, light-green, clayey, grading down to clay, sandy, dark-yellowish-brown, woody near base  |
|               | 14-17 | Sand, medium- to coarse-grained, greenish-gray, clean, woody; contains obvious biotite, rutile and blue quartz |
| .....         |       |  |
| ASHLEY FM     | 17-20 | Calcarenite, very fine-grained, light-yellow grading down to olive-brown                                       |

---

Base of Penholoway Formation: +58 feet above sea level  
Bottomed in Ashley Formation

---

SN-26: 3.6 mi. E of the west quad. border, 1.0 m. S of north quad. border. Surface elevation 63 feet.

---

|               |      |   |
|---------------|------|---|
| PENHOLOWAY FM | 0-1  | Sand, fine- to medium-grained, medium-brownish-orange, subangular, poorly sorted  |
|               | 1-3  | Sand, fine- to medium-grained, medium-gray, subangular, poorly sorted, clayey   |
|               | 3-5  | Sand, fine- to medium-grained, bright medium-yellowish-orange, subangular, poorly sorted, clayey                        |
|               | 5-7  | Sand, dominantly fine-grained, light-greenish-gray, poorly sorted, pebbles of quartz, phosphate and calcarenite present |
| .....         |      |   |
| ASHLEY FM     | 7-25 | Calcarenite, fine-grained, olive-brown, sand-size phosphate abundant  |

---

Base of Penholoway Formation: +56 feet above sea level  
Bottomed in Ashley Formation

SN-27: 2.25 mi. E of west quad. border, 2.6 mi. S of north quad. border. Surface elevation 71 feet.

---

|                   |       |  |
|-------------------|-------|--|
| PENHOLLOWAY<br>FM | 0-4   | Sand, fine-grained, dark-brown grading through dark-gray to light-gray, clayey toward base   |
|                   | 4-6   | Clay, bright medium-yellowish-orange with streaks of light-gray, fine-grained sandy; sand laminae present in lower foot  |
|                   | 6-15  | Sand, fine-grained, light-gray (6-9 feet) grading through light-yellowish-gray (9-12 feet) to light-orangish-gray and medium-grained (12-15 feet), poorly sorted, silty; some quartz pebbles scattered throughout              |
| .....             |       |  |
| WACCAMAW<br>FM    | 15-19 | Sand, fine-grained, medium-yellowish-gray grading down to medium-yellowish-brown; better sorted than above but still sparsely quartz pebbly; very fine-grained heavies abundant; lumps of calcarenite present on basal contact |
| .....             |       |  |
| ASHLEY<br>FM      | 19-25 | Calcarenite, very fine-grained, light-brownish-gray grading down to medium-yellowish-olive-gray  |

---

Base of Penholoway Formation: +56 feet above sea level  
Base of Waccamaw Formation: +52 feet above sea level  
Bottomed in Ashley Formation





SN-30: 0.85 mi. E of west quad. border, 2.65 mi. N of south quad. border. Surface elevation 71 feet.

---

|                   |       |  |
|-------------------|-------|--|
| PENHOLLOWAY<br>FM | 0-1   | Soil, sandy and clayey, dark-gray  |
|                   | 1-10  | Sand, fine-grained, medium-gray grading down to medium-brownish-orange (1-5 feet) then back to medium-gray and to light-gray (5-6 feet) then back to medium-brownish-orange (6-10 feet), clayey, grades rapidly to |
|                   | 10-15 | Clay, medium-bluish-gray with medium-green mottles grading down to medium-green with medium-gray mottles, very dense, sandy laminae present in basal 15 cm   |
|                   | 15-19 | Sand, fine- to medium-grained, medium-greenish-gray, black phosphate pebbles (1-2 cm diam) in basal foot   |

---

|              |       |  |
|--------------|-------|--|
| ASHLEY<br>FM | 19-25 | Calcarenite, very fine-grained, light-yellowish-gray (19-22 feet) grading through medium-yellowish-brown (22-23 feet) back to light-yellowish-gray (23-25 feet), very tough to drill |
|--------------|-------|--|

---

Base of Penholoway Formation: +52 feet above sea level  
Bottomed in Ashley Formation

SN-31: 2.3 mi. E of west quad. border, 0.6 mi. N of south quad. border. Surface elevation 74 feet.

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|                  |       |  |
|------------------|-------|--|
| PENHOLOWAY<br>FM | 0-8   | Sand, fine-grained, medium-orange (0-4 feet) grading down through medium-orange with light-gray mottles (4-5 feet) through medium-red and light-gray mottled (5-7 feet) to medium-orange (7-8 feet), silty |
|                  | 8-18  | Clay, light-gray (with medium-orange mottles from 8-12 feet), stiff, grades to   |
|                  | 18-25 | Sand, fine-grained, light-yellowish-gray, silty, some laminae clay-rich  |
|                  | 25-27 | Sand, fine-grained, medium-gray, silty, 1-2 cm diameter black phosphate lumps and discoids present   |

---

|              |       |  |
|--------------|-------|--|
| ASHLEY<br>FM | 27-30 | Calcarenite, very fine-grained, medium-olive-gray, dense |
|--------------|-------|--|

---

Base of Penholoway Formation: +47 feet above sea level  
Bottomed in Ashley Formation

---

SN-32: 1.75 mi. W of east quad. border, 3.4 mi. N of south quad. border. Surface elevation about 55 feet.

---

|              |     |  |
|--------------|-----|--|
| LADSON<br>FM | 0-6 | Sand, dominantly fine-grained but contains medium- and coarse-grains and some subrounded quartz pebbles, light-orangish-gray and light-gray mottled, silty |
|--------------|-----|--|

---

|                  |     |   |
|------------------|-----|---|
| PENHOLOWAY<br>FM | 6-9 | Clay, bright medium-orangish-yellow with streaks of medium-gray, sandy and pebbly (0.5 to 2 cm, subangular, quartz), platy grains (gibbsite?) present |
|------------------|-----|---|

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|              |      |  |
|--------------|------|--|
| ASHLEY<br>FM | 9-10 | Calcarenite, very fine-grained, light-yellow, partially recrystallized |
|--------------|------|--|

---

Base of Ladson Formation: +49 feet above sea level  
Base of Penholoway Formation: +46 feet above sea level  
Bottomed in Ashley Formation

SN-33: 1.95 miles E of west quad. border, 0.3 mile N of south quad. border. Surface elevation 74 feet.

---

|                   |       |   |
|-------------------|-------|---|
| PENHOLLOWAY<br>FM | 0-0.5 | Sand, fine-grained, dark-brown, well sorted   |
|                   | 0.5-5 | Sand, fine-grained, clayey, dark-gray, medium-gray, light-gray and medium-reddish-orange mottled, grades rapidly to |
|                   | 5-6   | Sand, fine-grained, clayey, light-pink, micaceous, grades rapidly to  |
|                   | 6-18  | Clay, light-gray, stiff, grades to  |
|                   | 18-20 | Silt, light-gray to medium-gray, soft, grades to  |
|                   | 20-26 | Sand, fine-grained, silty, medium-gray grading down to dark-gray  |
|                   | at 26 | Clay, white, dense, stiff   |

---

|              |       |  |
|--------------|-------|--|
| ASHLEY<br>FM | 26-30 | Calcarenite, fine-grained, light-olive-brown, phosphatic |
|--------------|-------|--|

---

Base of Penholoway Formation: +48 feet above sea level  
Bottomed in Ashley Formation

SN-34: 3.2 miles E of west quad. border, 1.5 miles N. of south quad. border. Surface elevation 53 feet.

---

LADSON                    0-5      Sand, fine- to medium-grained, light-yellowish-brownish-orange grading down to medium-gray, medium-orange, medium-yellow, and dark-reddish-orange mottled, stiff, clayey below 2 feet

                             5-7      Sand, stiff, clayey, coarse-grained with subangular to subrounded 0.25-1.0 cm diameter quartz pebbles

---

PENHOLLOWAY            7-10     Clay, medium-orangish-gray; contains numerous grains and lumps of phosphate weathered to a white color, scattered throughout the layer and not concentrated at its base

---

ASHLEY                    10-15    Calcarenite, fine-grained, light-brown grading down to medium-brown

---

Base of Ladson Formation:            +46 feet above sea level  
Base of Penholoway Formation:        +43 feet above sea level  
Bottomed in Ashley Formation

---

SN-35: 3.0 miles E of west quad. border, 1.0 miles N of south quad. border. Surface elevation about 45 feet (outcrop).

---

ASHLEY                    0-3      Calcarenite, fine-grained, light-yellowish-brown, massive

---

Exposed section entirely of Ashley Formation



SU-2: 3.4 miles E of west quad. border, 2.95 miles S of north quad. border. Surface elevation 71 feet.

---

|                   |       |   |
|-------------------|-------|---|
| PENHOLLOWAY<br>FM | 0-2   | Sand, fine-grained, medium-orange, clayey   |
|                   | 2-17  | Clay, medium-gray and medium-purple mottled (2-5 feet) grading to medium-gray and medium-orange mottled (5-17 feet); micaceous below five feet; iron-hydroxide cemented lumps present below 10 feet |
|                   | 17-25 | Sand, mostly fine-grained with sparse medium and coarse grains, medium-gray and medium-orange mottled, silty  |
|                   | 25-29 | Clay, medium-gray, stiff, dense, lumpy grading down to greasy and micaceous; lumps of reworked Ashley present along basal contact   |

---

|              |       |  |
|--------------|-------|--|
| ASHLEY<br>FM | 29-35 | Calcarenite, fine-grained, olive-brown grading down to olive-green |
|--------------|-------|--|

---

Base of Penholoway Formation: +42 feet above sea level  
Bottomed in Ashley Formation

SU-3: 0.3 miles E of west quad. border, 2.0 miles N of south quad. border. Surface elevation 35 feet (=RID-SE-1-H of Houser).

-----  
PENHOLOWAY 0-10 Clay, medium-gray and light-olive-brown (0-5 feet) grading down to light-olive-brown (5-10 feet), stiff

10-13 Sand, fine-grained, yellowish-brown, muddy,  
.....

ASHLEY 13-112 Calcarenite, fine-grained, olive-brown to FM olive-green, scattered intervals have abundant quartz and phosphate sand, phosphate pebble conglomerate at base  
.....

PARKERS 112-130 Calcilutite, medium-greenish-gray, stiff  
FERRY FM

-----  
Base of Penholoway Formation: +22 feet above sea level  
Base of Ashley Formation: -77 feet below sea level  
Bottomed in Parkers Ferry Formation

-----  
SU-4: 0.35 miles E of west quad. border, 3.4 miles S of north quad. border. Surface elevation 31 feet. (=SUMM-1-H of Houser)

-----  
FILL 0-5 Road fill  
.....

PENHOLOWAY 5-8 Clay, light-gray, medium-grained, sandy FM  
.....

ASHLEY 8-105 Calcarenite, fine-grained, olive-brown to FM olive-green, sand-size phosphate locally abundant

-----  
Base of Penholoway Formation: +23 feet above sea level  
Bottomed in Ashley Formation

SU-5: 0.8 miles W of east quad. border, 2.9 miles N of south quad. border. Surface elevation 64 feet. (=SUMM-2-H of Houser)

---

|                   |        |  |
|-------------------|--------|--|
| ALLUVIUM          | 0-1    | Sandy swamp muck   |
| .....             |        |  |
| PENHOLLOWAY<br>FM | 1-5    | Clay, medium-gray and medium-orange, stiff, sandy  |
|                   | 5-15   | Clay, sandy, grading down to sand, fine-grained, silty, light-brownish-gray grading through medium-greenish-gray to dark-olive-gray, contains angular fragments of opalized clay |
|                   | 15-32  | Clay, medium-greenish-gray grading down to medium-gray, sandy, shelly, phosphate pebble bed at base  |
| .....             |        |  |
| ASHLEY<br>FM      | 32-145 | Calcarenite, fine-grained, olive-brown to olive-green, abundant sand-size phosphate  |

---

Base of alluvium (Holocene): +63 feet above sea level  
 Base of Penholoway Formation: +32 feet above sea level  
 Bottomed in Ashley Formation

SU-6: 0.8 miles S of north quad. border, 2.4 miles E of west quad. border. Surface elevation 30 feet (= SUMM-3-H of Houser).

---

TEN MILE HILL BEDS            0-7        Clay, medium-gray and medium-orange, fine-grained sandy

---

ASHLEY FM                7-85        Calcarenite, fine-grained, olive-brown to olive-green, sand-size phosphate sparse to abundant

---

PARKERS FERRY FM        85-105      Calcilutite, medium-greenish-gray, stiff, dry

---

Base of Ten Mile Hill beds: +23 feet above sea level  
Base of Ashley Formation: -55 feet below sea level  
Bottomed in Parkers Ferry Formation

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---

SU-7: 0.6 miles W of east quad. border, 0.75 miles S of north quad. border. Surface elevation 85 feet. (=CSV-1-0 of McCartan)

---

PENHOLLOWAY FM        0-33        Sand, fine- to medium-grained, clayey grading down to fine-grained sandy silt and fine-grained silty sand, light-greenish-gray grading down to dark-greenish-gray, micaceous below 12 feet

---

                          33-40        Sand, fine-grained, dark-greenish-gray, shelly

---

ASHLEY FM                40-45        Calcarenite, fine-grained, olive-green

---

Base of Penholoway Formation: +45 feet above sea level  
Bottomed in Ashley Formation

---

SU-8: 2.8 miles E of west quad. border, 0.1 miles N of south quad. border. Surface elevation about 75 feet. (=CSV-2-D of McCartan)

-----  
PENHOLLOWAY      0-27      Sand, fine-grained, clayey, and clay, fine-grained, sandy, interbedded, dark-yellowish-orange, light-yellowish-orange, light-greenish-gray, and medium-red (0-20 feet) grading down to medium-bluish-gray and medium-greenish-gray  
.....

SALKEHATCHIE    28-32      Clay, dark-greenish-gray, shelly, sandier downward, phosphate pebble bed at base  
.....

ASHLEY            32-35      Calcarenite, fine-grained, light-olive-gray, abundant sand-size phosphate and large foraminifera

-----  
Base of Penholoway Formation:    +48 feet above sea level  
Base of Salkehatchie beds:        +43 feet above sea level  
Bottomed in Ashley Formation

SU-9: 2.15 miles E of west quad. border, 2.25 miles N of south quad. border. Surface elevation 65 feet.

---

|                   |       |   |
|-------------------|-------|---|
| PENHOLLOWAY<br>FM | 0-7   | Clay, light-gray and medium-orange mottled with a few medium-red mottles, stiff and massive, lumps of light-bluish-gray to light-greenish-gray clay present in basal 2 feet |
|                   | 7-20  | Sand, fine-grained, light-greenish-gray grading down to light-bluish-gray, very fine-grained heavies abundant; lower part contains oyster fragments                         |
|                   | 20-25 | Clay, medium-bluish-gray, lumpy, contains oyster fragments  |
|                   | 25-31 | Sand, fine-grained grading down to medium-grained, medium-gray, phosphate sand and pebbles at base  |

---

|              |       |   |
|--------------|-------|---|
| ASHLEY<br>FM | 31-35 | Calcarenite, very fine-grained, light-brown grading down to medium-brown, contains large foraminifera |
|--------------|-------|---|

---

Base of Penholoway Formation: +34 feet above sea level  
Bottomed in Ashley Formation

SU-10: 3.35 miles E of west quad. border, 3.85 miles N of south quad. border. Surface elevation 74 feet.

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|                   |       |  |
|-------------------|-------|--|
| PENHOLLOWAY<br>FM | 0-5   | Sand, fine-grained with some medium-grained fraction, light-gray sparsely mottled light-orange, silty grading down to clayey |
|                   | 5-9   | Clay, light-gray with medium-orange fine-grained sandy and micaceous streaks, grades to                                      |
|                   | 9-25  | Clay, medium-bluish-gray, contains 1 mm flakes of mica, grades to  |
|                   | 25-30 | Clay, medium-bluish-gray, silty, shelly ( <u>Mulinia</u> , etc.), not as sticky as above, grades to                          |
|                   | 30-34 | Clay, medium-bluish- to medium-greenish-gray, lumpy, massive, very sticky, basal foot full of phosphate pebbles              |

.....

|              |       |   |
|--------------|-------|---|
| ASHLEY<br>FM | 34-35 | Ashley, fine-grained, light-brown, contains abundant phosphate sand |
|--------------|-------|---|

---

Base of Penholoway Formation: +40 feet above sea level  
Bottomed in Ashley Formation

SU-11: 2.85 miles W of east quad. border, 1.4 miles S of north quad. border. Surface elevation 64 feet.

---

|                   |       |  |
|-------------------|-------|--|
| PENHOLLOWAY<br>FM | 0-6   | Silt, medium-orange, clayey grading down to clay, medium-orange and light-gray mottled grading down to light-gray, silty   |
|                   | 6-13  | Sand, fine-grained, light-yellowish-brown, silty, grades to  |
|                   | 13-22 | Silt, light-greenish-gray, slightly clayey, contains a bimodal medium- and fine-grained sand fraction, some coarse-grains present near base, sharp basal contact |

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| CHANDLER<br>BRIDGE FM | 22-23 | Clay, dark-yellowish-brown, silty, contains small forams and a calcareous sponge spicule, dense, very sticky |
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| ASHLEY FM | 23-25 | Calcarenite, very fine-grained, light-brown, contains burrows filled with clay from unit above |
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Base of Penholoway Formation: +42 feet above sea level  
Base of Chandler Bridge Formation: +41 feet above sea level  
Bottomed in Ashley Formation

SU-12: 1.1 miles W of east quad. border, 1.8 miles N of south quad. border. Surface elevation 79 feet.

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| PENHOLLOWAY<br>FM | 0-2   | Sand, fine- to medium-grained, dark-brown, humic   |
|                   | 2-7   | Sand, fine- to medium-grained, medium-orange and light-brownish-gray, slightly clayey (possibly in thin laminae)               |
|                   | 7-35  | Silt, light-gray, clayey, sandy in upper 4 feet and occasional sandy horizons farther down, grades to                          |
|                   | 35-38 | Sand, medium-grained, dark-gray, contains phosphatized shell molds and lumps of phosphate, grades to                           |
|                   | 38-51 | Sand, fine-grained, dark-gray with some white layers, shelly, 2-3 mm muscovite in white fraction, phosphate pebble bed at base |

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| ASHLEY<br>FM | 51-55 | Calcarenite, very fine-grained, medium-olive-green, sparse shell fragments and large foraminifera present, some calcite-cemented lumps |
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Base of Penholoway Formation: +28 feet above sea level  
Bottomed in Ashley Formation

SU-13: 1.65 miles W of east quad. border, 3.45 miles S of north quad. border. Surface elevation 90 feet.

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|-------------------|-------|---|
| PENHOLLOWAY<br>FM | 0-8   | Sand, mostly fine-grained, medium-orangish-brown (0-1 foot) grading through medium-yellowish- to orangish-brown (1-3 feet) and medium-orange and light-gray banded (3-4 feet) and bright dark-orange and light-gray banded (4-5 feet) to light-yellowish-brown (5-8 feet) |
|                   | 8-31  | Clay, medium-orange in upper 2 inches and medium-bluish-gray below that, silty and sandy, very micaceous (2-4 mm flakes) in upper few feet, sticky and not sandy or micaceous between 11 feet and 29 feet, micaceous, sandy, and shelly below 29 feet, grades to          |
|                   | 31-47 | Sand, fine-grained, medium-gray, shelly (snails, bivalves including <u>Mulinia</u> ), clayey and contains oyster fragments between 36 and 38 feet   |
|                   | 47-49 | Sand, medium- to coarse-grained, bright medium-orange to medium-yellow, phosphate lumps, quartz pebbles (about 0.5 cm diameter) and a quartz discoid (about 1 x 2 x 0.25 cm) present  |

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| ASHLEY<br>FM | 49-50 | Calcarenite, very fine-grained, light-brownish-gray |
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Base of Penholoway Formation: +41 feet above sea level  
Bottomed in Ashley Formation

SU-14: 0.65 miles E of west quad. border, 1.3 miles S of north quad. border. Surface elevation about 35 feet.

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TEN MILE HILL BEDS            0-1     Sand, fine-grained, light-gray grading down to light-gray with medium-reddish-brown mottles; discoidal, flat, rounded quartz pebble present near base

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LADSON FM                    1-5     Clay, sandy, stiff, medium-gray and dark-reddish-brown mottled, white phosphate grains present near base, grades down to

                              5-8     Sand, medium-grained, clayey, subangular; shell casts and rock lumps at base (lithified Ashley Formation or Edisto Formation); basal contact sharp

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PENHOLLOWAY FM            8-10    Clay, sandy, medium-gray and medium-orange mottled, rock lumps abundant at base

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ASHLEY FM                   10-18   Calcarenite, fine-grained, light-yellowish-gray, phosphatic; contains numerous cemented lumps, grades to

                              18-70   Calcarenite, fine-grained, light-brown grading down to medium-olive-gray; contains calcite-cemented lumps in upper foot

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Base of Ten Mile Hill beds:        +34 feet above sea level  
Base of Ladson Formation:        +27 feet above sea level  
Base of Penholoway Formation:    +25 feet above sea level  
Bottomed in Ashley Formation

SU-15: 1.65 miles E of west quad. border, 1.7 miles S of north quad. border. Surface elevation 48 feet.

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LADSON                    0-4        Sand, fine-grained, dark-gray (0-2 feet) grading through light-gray (2-3 feet) to medium-orange (3-4 feet), clean, well sorted, grades rapidly to

                             4-6        Sand, clayey, light-gray, medium-orange and dark-reddish-brown mottled, stiff and dense; subrounded to subangular quartz granules abundant at base

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PENHLOWAY                6-12       Clay, silty and sandy, light-yellowish-brown, dense, stiff, grades to clayey and silty sand, fine-grained, medium-brownish-gray; some quartz granules present near base

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EDISTO                    12-20       Calcarenite, fine-grained, light-brown grading through medium-brown to medium-brownish-olive, sparsely phosphatic; calcite-cemented lumps abundant

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Base of Ladson Formation:        +42 feet above sea level  
Base of Penholoway Formation:    +36 feet above sea level  
Bottomed in Edisto Formation

SU-16: 2.1 miles W of east quad. border, 2.4 miles S of north quad. border. Surface elevation 76 feet.

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|-------------------|-------|---|
| PENHOLLOWAY<br>FM | 0-5   | Sand, fine-grained, medium-reddish-orange, clayey, dense, stiff; medium-gray streaks present in basal foot; grades to:  |
|                   | 5-15  | Clay, fine-grained sandy, dark-reddish-orange and medium gray mottled (5-8 feet) grading through medium-orange and medium-gray mottled (8-13 feet) to dark-bluish-gray (13-15 feet) |
|                   | 15-19 | Silt, sandy and clayey, dark-bluish-gray; looser than above   |
|                   | 19-25 | Sand, very fine-grained grading down through fine-grained to fine/medium-grained, dark-bluish-gray  |
|                   | 25-32 | Clay, fine-grained sandy, dark-bluish-gray, dense; acquires a greenish cast around 29 feet  |
|                   | 32-44 | Sand, fine-grained, well-sorted, phosphate sand abundant  |

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| SALKEHATCHIE<br>BEDS | 44-45 | Sand, fine-grained, dark-olive-gray, contains rotten aragonitic and calcitic shells, phosphate pebble bed at base |
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| EDISTO<br>FM | 45-47 | Calcarenite, fine-grained, light-olive-brown, shelly; phosphate pebble bed at base with sharks teeth; base of unit very hard; burrows filled with this material penetrate underlying unit |
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| ASHLEY<br>FM | 47-50 | Calcarenite, fine-grained, medium-olive-brown; smooth drilling and no cemented lumps or layers |
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Base of Penholoway Formation: +32 feet above sea level  
 Base of Salkehatchie beds: +31 feet above sea level  
 Base of Edisto Formation: +29 feet above sea level  
 Bottomed in Ashley Formation











SU-23: 1.95 miles E of west quad. border, 2.95 miles N of south quad. border. Surface elevation 65 feet.

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PENHOLLOWAY      0-11      Clay, medium-reddish-orange, light-gray, and dark-red mottled, sandy in upper 4 feet, grades to:  
FM

                  11-17      Clay, light-gray with sparse medium-brown mottles, stiff

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EDISTO            17-18      Sand, fine/medium-grained, medium-brown, grades to:  
FM

                  18-26      Sand, fine/medium-grained, light-olive-gray, silty; sting-ray barb present at 24 feet, grades to:

                  26-30      Sand, fine/medium-grained, medium-greenish-bluish-gray grading down to light-gray near base, very calcareous and contains calcite-cemented lumps; basal contact indistinct

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ASHLEY            30-35      Calcarenite, fine-grained, medium-brown grading down to medium-olive-brown  
FM

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Base of Penholoway Formation:    +48 feet above sea level  
Base of Edisto Formation:        +35 feet above sea level  
Bottomed in Ashley Formation

SU-24: 3.3 miles W of east quad. border, 2.45 miles N of south quad. border. Surface elevation 84 feet.

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|-------------------|-------|---|
| PENHOLLOWAY<br>FM | 0-9   | Sand, medium-grained, light-gray and medium-orange mottled (0-6 feet) grading down to medium-gray (6-9 feet)                          |
|                   | 9-10  | Clay, medium-gray, stiff, sticky  |
|                   | 10-31 | Clay, medium-bluish-gray, micaceous   |
|                   | 31-39 | Sand, fine-grained, medium-bluish-gray, silty and clayey, shelly (includes snails and <u>Mercenaria</u> )                             |
|                   | 39-44 | Clay, medium-bluish-gray, stiff   |
|                   | 44-51 | Sand, fine-grained, medium-bluish-gray, clayey and silty, sparsely shelly; rounded, calcite-cemented lumps abundant in basal two feet |

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|--------|-------|--|
| ASHLEY | 51-60 | Calcarenite, fine-grained, yellowish-olive, glauconitic and phosphatic |
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Base of Penholoway Formation: +33 feet above sea level  
Bottomed in Ashley Formation





