

## Orthoquartzite Artifacts from Virginia and North Carolina

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This report presents a compilation of orthoquartzite artifacts from Virginia and North Carolina in the collections held by Nottoway River Survey. In southeastern Virginia, the material is so rare that a single, large archaeological site over many years of surface collecting may produce no projectile points or tools, and only one or two flakes, of this unusual stone.

We have observed at least two and possibly five different variations of orthoquartzite in Virginia from several different areas, Figure 1, as differentiated by different matrix and/or inclusion types. The orthoquartzite found in northeastern Virginia and the Chesapeake Bay area of Virginia and Maryland seems to be associated with Eocene Nanjemoy Formation marine deposits. These deposits are represented by highly glauconitic marls, clays, and sand. Opaline amorphous silica, chalcedony, and quartz within such deposits combine with the other minerals to form what is often referred to simply as Nanjemoy orthoquartzite (see the Lowery and Wagner Chapter 14, PREHISTORIC USE OF EOCENE ORTHOQUARTZITE, in *In the Eastern Fluted Point Tradition, Vol-II*, edited by Joseph Gingerich, 2018). This same stone is called Stafford County orthoquartzite by others. Geological samples of this type of orthoquartzite we observed from Stafford County, Virginia showed a sandy textured exterior surface deeply weathered brown, white, or yellow-white, Figure 2. In the unweathered condition, this orthoquartzite is of a slightly translucent gray-brown to purplish-green color and looks very much like ordinary quartzite as shown in the interior of this sample.

On the archaeological sites we have excavated or collected upon, primarily in southeastern Virginia, the matrix of artifacts of this type of orthoquartzite as shown in Figure 3 weathers from a slightly translucent gray (upper artifact, a Clovis point mid-section) to an opaque bone-white (lower artifact, a Clovis point basal end), and some are stained a brownish-yellow-white. The weathered white matrix of some of the older (Paleoindian and Early Archaic) artifacts has become soft, and edges of these artifacts have been observed to be crushed to a chalky substance as a result of being struck by agricultural equipment (see the crushed microstructure image inset, item numbered 18).

Included sand grains in our samples of this orthoquartzite are observed to be poorly rounded, angular to sub-angular, and they may be well sorted or poorly sorted by size within the matrix. Sand grain size varies from fine to very coarse, and this orthoquartzite often contains well-dispersed large angular fragments or rounded pebble-size pieces of quartz and rarely chert and quartzite (see microstructure image insets associated with items numbered 18, 19, 32, and 40). We have not observed any type of fossil in our samples of this material although this may simply be due to our small sample size. In the matrix of some artifacts, at a magnification of 20x, we have observed small fragments of a soft green mineral that appears to be residual, unaltered glauconite. In our opinion, examples of the typical Stafford County type of orthoquartzite are shown in this report as items numbered 1, 4, 7, 9, 18, 19, 27, 29, 30, 31, 32, 35, 39, 40, 41, 43, and 44.

On occasion, an artifact is found in southeastern Virginia of what may be a local variant of either the Stafford County, Virginia type of orthoquartzite or what is referred to as Bertie County, N.C. variety orthoquartzite, which is discussed in detail below. This variant material weathers fairly deeply, has a gray-white to blue-gray-brown colored matrix, and has well sorted angular to sub-rounded to rounded fine-to-medium sand grains but no large lithic fragments. Like the known Stafford County orthoquartzite, artifacts of this material occasionally show the soft, small, dark green mineral inclusions in the matrix, which may be unaltered glauconite. But, unlike our samples of typical Stafford County orthoquartzite, this material has fossil shell inclusions, Figure 4 and Figure 5. In our opinion, examples of this orthoquartzite with the fossil shell inclusions are also shown as items numbered 5, 11, 26, 36, 42, 47, and 50.

As noted above, there is a second major type of orthoquartzite we have found on archaeological sites we have collected upon or excavated in southeastern Virginia. This material has a distinctive blue-gray or blue-gray-brown matrix, Figure 6, which upon weathering retains these colors and remains very hard. This material is known locally to artifact collectors as Bertie County orthoquartzite because of the large number of artifacts of the material that have been found in and around Bertie County, North Carolina. However, no actual source or outcrop of this material is known to us in Bertie County.

Sand inclusions in the Bertie County orthoquartzite are usually fine to medium in size and well sorted. In cavities in the stone not filled with opaline amorphous

silica, chalcedony, or quartz, partial surfaces of sand grains can be seen as more rounded than in the Stafford County, Virginia orthoquartzite. In the Bertie County orthoquartzite, surfaces of these sand grains are often frosted as would be expected from terrestrial eolian movement in dunes or across sand sheets, but this could be heavily worn beach sand as well.

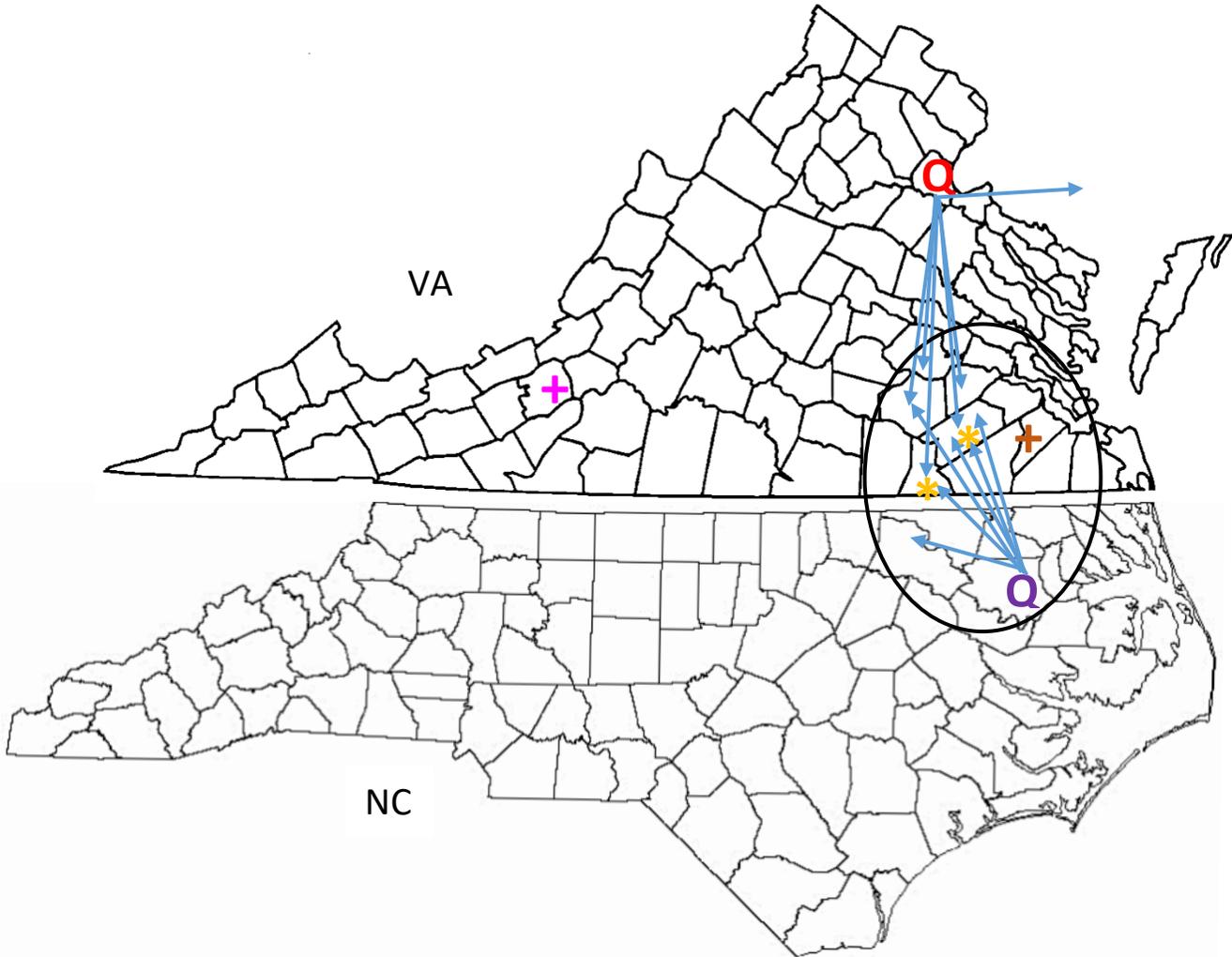
Samples of this material which we have studied show none of the particles of the soft green mineral, likely glauconite, observed in some samples of the Stafford County, Virginia variety noted above. Also, we have observed no fossils in our sample of the Bertie County type of orthoquartzite. In our opinion, examples of this type of orthoquartzite are shown in this report as items numbered 2, 3, 8, 10, 12, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 25, 33, 34, 37, 38, 46, 48, and 49.

Items in this report which we cannot reasonably categorize as to type of orthoquartzite are numbered 6, 28, and 45. Items 6 and 45 are the same type of translucent, brown matrix orthoquartzite or a type of orthoquartzite-like material with a variety of coarse inclusions of unknown types and a hard, glossy matrix that shows very little weathering. Still, this material is much more like the other varieties of orthoquartzite than the commonly encountered brown stream-cobble quartzite (metamorphosed sandstone) so often used locally for Archaic period and Woodland period artifacts. Beyond these two (items 6 and 45) shown, we have observed only a few artifacts of this type of orthoquartzite from other collections in southeastern Virginia.

Item 28 represents the most unusual piece of orthoquartzite in the collections. It is from Montgomery County, VA in the Appalachian Mountains. The artifact appears to be a Woodland age projectile point made upon an older artifact or artifact fragment. The matrix is a pink chalcedony with small white chalcedony spheres, and the included quartz sand fraction is fine and well sorted. The remaining surface from the older artifact is observed to be deeply weathered to an opaque white. We have seen no other artifacts of this type of orthoquartzite from other collections.

Most of the artifacts of the orthoquartzites discussed in this paper, or that we have seen in other collections from Virginia or North Carolina, are either of Paleoindian or Early Archaic age. But, the Bertie County, North Carolina variety is occasionally observed as Middle Archaic and Late Archaic point types.

It has also been observed that along the Potomac River in Northern Virginia and in West Virginia, Late Woodland triangle points are made from the Stafford County, Virginia variety of orthoquartzite or of an orthoquartzite similar to that material.



**Q** Stafford County, Virginia Likely Orthoquartzite Quarry Areas, and Arrows Showing Likely Directions of Movement for Artifacts in the NRS Collections.

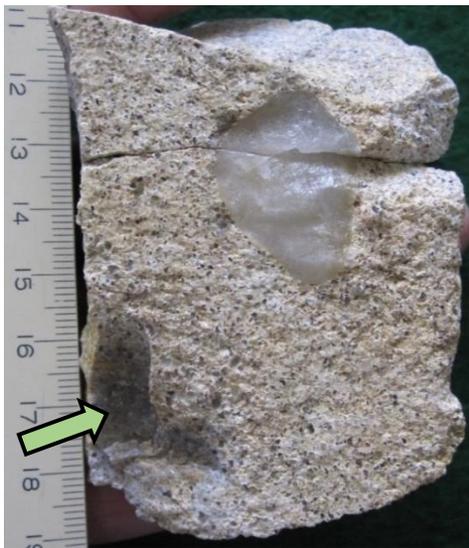
**Q** Bertie County, North Carolina Presumed Orthoquartzite Quarry Areas, and Arrows Showing Presumed Directions of Movement for Artifacts in the NRS Collections.

**\*** Stafford County-Like Orthoquartzite but Containing Fossil Shell Inclusions, Major Find Locations for Artifacts in the NRS Collections.

**+ +** Virginia Find Locations of Two Unidentified Types of Orthoquartzite for Artifacts in the NRS Collections.

**→** Distance/Direction Vectors from Possible Quarry Sites to Artifact Recovery Sites.

**Figure 1.** Orthoquartzite collection locations known to NRS in Virginia and North Carolina.



**Figure 2.** Typical Nanjemoy or Stafford County orthoquartzite with fine to large sand grain size and lithic fragments, from Stafford County, Virginia along Potomac Creek.



**Figure 3.** Nanjemoy or Stafford County orthoquartzite Clovis artifacts composed of sand grains of fine to large size, and with a weathered matrix of blue-gray (top) or gray-white to white (bottom) from the Hanover County, Virginia Little Rocky Creek Clovis site (collected by J. P. McAvoy).



**Figure 4.** Orthoquartzite Clovis side scrapers with fine to medium sand grain size and fossil shell inclusions (bottom, magnified view), Cactus Hill site, Sussex County, VA.



**Figure 5.** Orthoquartzite cobble decortication flake with fine to medium sand grain size and fossil shell inclusions (right, magnified view of shell), W. T. Fannin site, Sussex County, VA.



**Figure 6.** Orthoquartzite nodule with fine to medium sand grain size as seen in a modern flake scar, nodule recovered in a gravel deposit along the Nottoway River in Sussex County, VA.

### **Supplemental Information for Several of the Figures Above:**

**Figure 2.** large slab of typical white matrix Stafford County, VA type of orthoquartzite (five images), recently fractured weathered end of item, and a close-up view of the fracture surface showing the unweathered material to be purplish gray, views show fine to very coarse poorly-sorted sand grains with pebbles and lithic fragments, found by Mr. J. P. McAvoy in Stafford County, VA along Potomac Creek on a construction site, recently disturbed out of context.

**Figure 4.** Side scrapers (six, item 50 below, in the lower row at left, is the dorsal cortex face of one of the scrapers), Sussex County, VA, all excavated together in the same levels at the Cactus Hill site in area B, in the Clovis levels, dorsal and ventral faces (ventral faces show labels) showing non-cortex interior surfaces of the quarried piece of sandy-cortex stone, brown and white fine-grain orthoquartzite with fossil shell inclusions in the cortex portion of the stone, unknown source.

**Figure 5.** Cortex flake, the inside weathered surface of the flake, and a magnified fossil shell inclusion\_visible on the edge of the middle image (three images), from a stream-worn cobble, Sussex County, VA, W. T. Fannin site, excavated in site area B/C in situ from the Early Archaic level, orthoquartzite similar to the blue and brown fine-grain Bertie County, N.C. type, found on an elevated terrace above the Nottoway River in an eolian sand sheet.

**Figure 6.** Stream cobble/nodule and a close-up view of a modern fracture surface on the cobble (two images); recovered in a gravel deposit along the Nottoway River, Sussex County, VA, an orthoquartzite very much like the blue and brown matrix Bertie County, N.C. variety.

### **Orthoquartzite Artifacts and Rock Samples: Description of Items 1 through 50:**

- 1.** Clovis point, King George County, VA, typical white-matrix Stafford County, VA type of orthoquartzite with angular to sub-rounded, poorly-sorted, fine-to-large sand grains and included white quartz pebbles and large lithic fragments, recovered on a sandy loam terrace above the Rappahannock River.
- 2.** Clovis point, Dinwiddie County, VA, typical blue-matrix Bertie County, N.C. type of orthoquartzite with fine, rounded to sub-rounded, well-sorted sand grains, recovered on a small Clovis site on the Valinta Farm, in a gray-white sandy loam on a hill cap above a tributary swamp of Rowanty Creek, a tributary of the Nottoway River.
- 3.** Clovis point or basally thinned Appomattox River point, Greensville County, VA, blue-matrix Bertie County, N.C. type of orthoquartzite with fine, rounded to sub-rounded, well-sorted sand grains, recovered along the sloped-edge of a commercial sand pit on a terrace above the Nottoway River just across the river from Sussex County, VA.
- 4.** Clovis-like fluted point, Charles County, MD north of the Potomac above Virginia, white-matrix, likely Stafford County, VA type orthoquartzite, with well sorted, rounded to sub-rounded, fine-to-medium size sand grains, recovered in unknown soil type on a terrace just east of La Plata, MD adjacent to Zekiah Swamp, a tributary of the Wicomico River, Potomac River drainage.
- 5.** Clovis point, Greensville County, VA, heavily weathered and porous Stafford County, VA, or Bertie County, N.C., type of orthoquartzite with fine, well-sorted sand grains, but with very unusual microscopic fossil shell inclusions, recovered in unknown soil type on a low terrace above swampland just south of the Meherrin River.
- 6.** Redstone-like fluted point (two images), found in Southampton County, VA just west of the Blackwater River near the Isle of Wight County, VA line, unknown type of brown orthoquartzite or orthoquartzite-like stone with a mixture of poorly sorted, fine-to-large, angular-to-rounded sand grains and other lithic inclusions, found on a terrace above the river in loamy sand in the dark, organic-filled midden of a Late Woodland village site.
- 7.** Tip of a small Clovis point worked into an end scraper, Quail Springs Clovis site, City of Virginia Beach, VA, typical white-matrix Stafford County, VA type of orthoquartzite with poorly sorted, rounded to sub-rounded, fine-to-large sand grains and large quartz angular fragments, found on a sandy terrace above a spring on a drainage divide between the Elizabeth River and the North Landing River.
- 8.** Tip of a Paleoindian unfinished preform that failed at a cavity-type imperfection (two images), excavated in the lowest levels of the R. E. Nay site, 44SX80, in Sussex County, VA, blue-matrix Bertie County N.C. type of orthoquartzite with very well-sorted, rounded to sub-rounded and frosted, dune-like fine sand grains (see supplemental image of sand grains in a cavity in the stone), excavated in eolian sand on a low terrace above Rowanty Creek about one mile from the Nottoway River.
- 9.** Tip of a broken Clovis point preform(?), flute overshoot or reverse-hinge failure (two images), site 44SX62, Sussex County, VA, typical white-matrix Stafford County, VA type of orthoquartzite

with some yellow staining, poorly sorted, rounded to sub-rounded, fine-to-large size sand grains, found in sandy, gravelly alluvium on a low terrace above the Nottoway River.

**10.** Clovis preform biface reduction flake overshot with some of the removed edge of the biface included and showing, the striking platform is not present on this broken flake, the Williamson Clovis site, Dinwiddie County, VA, Bertie County, N.C. blue-white matrix type of orthoquartzite with well-sorted fine sand grains and sandy brown inclusions, recovered in white loamy sand on the old Lewis Farm portion of the site on a hill cap above Little Cattail Creek.

**11.** Clovis biface reduction flakes, Clovis level in excavation area B of the Cactus Hill site, Sussex County, VA, thought to be a local form or variant of Stafford County, VA orthoquartzite, brown and white matrix with fine to medium well-sorted sand grains and with fossil shell inclusions, excavated in eolian sand on a dune ridge above the Nottoway River, the exact source of this material is unknown.

**12.** Small Kirk Corner Notched point, found in the Sussex/Greensville/Southampton County, VA area by others, thought to be the Bertie County, N.C. blue matrix fine-grain type of orthoquartzite, recovered in unknown soil type, recovered somewhere within the Chowan River drainage.

**13.** Discard stage Decatur-like Early Archaic point, excavated in situ at the Stith site, Sussex County, VA, Bertie County, N.C. blue matrix type of orthoquartzite, rounded well-sorted fine sand grains, recovered in sandy, gravelly alluvium on a terrace above the Nottoway River.

**14.** Palmer point, excavated in situ at the W. T. Fannin site in Sussex County, VA, the stone appears to be a type of Bertie County, N.C. orthoquartzite, possibly an off-color brownish variety, fine well-sorted sand grains, rounded to sub-rounded, recovered in an eolian sand sheet on a second terrace above the Nottoway River.

**15.** Decatur point, excavated in situ in fluvial/eolian sand in area D of the Cactus Hill site in Sussex County, VA, light-blue-matrix Bertie County, N.C. type of orthoquartzite with fine sub-rounded to rounded sand grains, recovered along the Nottoway River.

**16.** Palmer or slightly atypical Decatur point (two images), found by others in Sussex County, VA, a well sorted, angular to sub-rounded to rounded, fine-sand-grain orthoquartzite, possibly the Stafford County, VA variety, but more likely an off-color Bertie County, N.C. type of orthoquartzite, found on an eolian sand terrace above the Nottoway River.

**17.** Kirk Serrated point (two images), found in Bertie County, N.C., Bertie County, N.C. blue-matrix type of orthoquartzite with well sorted, rounded to sub-rounded to angular, fine sand grains, found along swampland in gray-white loamy sand.

**18.** Discard stage Early Archaic Fort Nottoway point (two images) with extensive bottom-left-side plow damage revealing a completely weather and crushed chalky-white matrix, found in Prince George County, VA, typical white-matrix Stafford County, VA type of orthoquartzite, poorly sorted, fine-to-large sand grains with included white quartz lithic fragments, found in loamy sand near a spring along Second Swamp, a tributary of the Blackwater River.

**19.** Large deep-notched Palmer or Charleston Corner Notched point with a partly broken base (two images), Sussex County, VA, typical white-matrix Stafford County, VA type of orthoquartzite with large sand grains and included white quartz pebbles and white quartz lithic

fragments, found in brownish sandy loam on the old Baskerville Farm site on a terrace above the Nottoway River.

**20.** Fort Nottoway point (two images), found in Sussex County, VA, Bertie County, N.C. blue-white-matrix type of orthoquartzite with well sorted, sub-rounded to rounded fine sand grains, found in reddish-gray loamy sand near a creek on a terrace above about one-half mile east of the Nottoway River.

**21.** Large Kirk Corner Notched point (four images), found in Sussex County, VA, blue-matrix Bertie County, N.C. type of orthoquartzite with fine rounded and frosted sand grains (see the supplemental images of the very rounded, dune-like sand grains, and a view of the rounded and frosted grains in a cavity in the stone), found in sandy, gravelly alluvium on a low terrace above the Nottoway River.

**22.** Discard stage small Side Notched, or Corner Notched, Kirk-like point, the Sussex/Greenville/Southampton County, VA area, gray-blue-brown-matrix orthoquartzite similar to some of the Bertie County, N.C. blue-matrix type of orthoquartzite, sub-rounded to rounded fine sand grains, similar to that observed in the nodule recovered in Nottoway River gravel in Sussex County, VA shown as Figure 6, recovered in unknown soil type, recovered by others somewhere within the Chowan River drainage.

**23.** Stemmed point, probably of Middle or Late Archaic age, found in Sussex County, VA, Bertie County, N.C. blue-matrix orthoquartzite with sub-rounded to rounded, well sorted, fine sand grains, some brown granular cortex surface showing on the lower stem region, found on a high sandy-clay-loam terrace above the Nottoway River.

**24.** Small stemmed point, Middle or Late Archaic age, found in Bertie County, N.C., Bertie County, N.C. blue-brown-matrix orthoquartzite with sub-rounded to rounded, well sorted fine sand grains, cortex piece, found in swampland in gray-white loamy sand.

**25.** Morrow Mountain-II point with damaged base, found in Bertie County, N.C., Bertie County, N.C. type blue-matrix orthoquartzite with some brown, sub-rounded to rounded, well sorted fine-sand grains, found in swampland in gray-white loamy sand.

**26.** Small tip fragment of a projectile point of likely Archaic period age, Greensville County, VA, fine-grain blue-and-brown-matrix orthoquartzite, somewhat like the Stafford County, VA type but more like the Bertie County, N.C. variety, fine sub-rounded to rounded well-sorted sand grains with fossil shell inclusions, found on a gray-white sandy loam terrace south of the Meherrin River.

**27.** Small tip fragment of a projectile point likely of Archaic period age, Sussex County, Virginia, white-matrix Stafford County, VA type of orthoquartzite, poorly sorted large-sand-grain variety with large angular white quartz fragments and with some poorly filled cavities, found in gray-white sandy loam on a terrace above the Nottoway River.

**28.** Woodland period Rossville-like point made upon a fragment of an older, heavily weathered artifact, found in Montgomery County, VA, an unusual pinkish matrix or fire reddened fine-sand-grain piece of orthoquartzite with small white spherical chalcedony particles in the matrix, from a loamy-sand terrace above the North Fork of the Roanoke River.

**29.** End scraper of Clovis age, the Williamson Clovis site in Dinwiddie County, VA, somewhat fire-reddened white matrix Stafford County, VA type of orthoquartzite with poorly sorted fine-to-large sand grains but no included pebbles or large lithic fragments, found in red sandy-clay-loam on the Ampy Farm part of the site on a terrace above Little Cattail Creek a small tributary stream of Rowanty Creek and the Nottoway River.

**30.** End scraper of Clovis or Early Archaic age, found in Prince George County, VA, typical white matrix Stafford County, VA type of orthoquartzite, poorly sorted fine-to-large sub-rounded to angular sand grains with included lithic fragments, found at a small Clovis and Early Archaic site on the Tomko Farm on a white-sandy-loam terrace west of the Blackwater River.

**31.** End scraper of Early Archaic age, Sussex County, VA, a Stafford County, VA variety of white-matrix orthoquartzite, poorly sorted fine-to-medium angular sand grains, excavated in situ in eolian sand at area A-B/Southeast in the Fort Nottoway (point) level of the Cactus Hill site, an eolian sand (dune) ridge on a terrace above the Nottoway River.

**32.** End scraper (two images) of Paleoindian age, Point of Rocks site, (type-site for the Appomattox River point), Chesterfield County, VA, typical white matrix Stafford County, VA type of orthoquartzite, poorly sorted fine-to-large size angular sand grains, recovered in a white to reddish-brown sandy loam on a high terrace north of the Appomattox River.

**33.** Large end scraper-side scraper combination tool (two images) of Clovis age, the Williamson Clovis site in Dinwiddie County, VA, Bertie County, N.C. blue-matrix type of orthoquartzite with well sorted, rounded to sub-rounded fine sand grains, recovered in white loamy sand on a terrace above Little Cattail Creek.

**34.** End scraper-side scraper combination tool (two images) of likely Archaic period age, found in Bertie County N.C., Bertie County, N.C. blue-matrix type of orthoquartzite with well sorted, fine, round to sub-round sand grains and remnants of a sandy cortex structure on the dorsal face of the artifact, found in swampland in gray-white loamy sand.

**35.** Large pointed side scraper of Clovis or Early Archaic age, Prince George County, VA, typical white matrix Stafford County, VA type of orthoquartzite with poorly sorted, fine-to-large sub-rounded to angular sand grains, found on a white-sandy-loam terrace above the Blackwater River.

**36.** Large pointed side scraper of likely Clovis age, found on the surface in a Clovis-age artifact cluster on the J. F. Slade site Sussex County, VA, blue-matrix orthoquartzite from an unknown source with well-sorted, sub-rounded to rounded fine sand grains with fossil shell inclusions, found on an eolian sand terrace above the Nottoway River.

**37.** Small finely-edged knife on a blade-like flake, found at the Palmer level in excavation 7C-3D at 21-inches below surface on the J.F. Slade site, Sussex County, VA, very-fine to fine grain rounded to sub-rounded to angular blue-and-brown-matrix type of Bertie County, N.C. orthoquartzite, excavated on an eolian sand terrace above the Nottoway River.

**38** Side scraper of likely Clovis, late Paleoindian, or Early Archaic age, Sussex County, VA, blue-matrix fine-grain-size Bertie County, N.C. type of orthoquartzite with rounded to sub-rounded sand grains but with cluster inclusions of unweathered fine quartz-crystal-cemented sand grains

(unique in the NRS collections), found in sandy, gravelly alluvium at a multi-component Paleoindian and Archaic-period site on a terrace above the Nottoway River.

**39.** Side scraper on a wide, broken core blade, likely of Clovis age, Sussex County, Virginia, typical white-matrix Stafford County, VA type of orthoquartzite with fine to very large, angular to sub-rounded sand grains, and included white quartz pebbles, found in gray loamy sand on the Slade South site, on a terrace above the Nottoway River.

**40.** Side scraper of Paleoindian age (two images), Point of Rocks (type-site for the Appomattox River point), Chesterfield County, VA, typical white-matrix Stafford County, VA type of orthoquartzite with angular to sub-rounded, poorly sorted, fine-to-very-large sand grains and included-pebbles, recovered on a white to reddish-brown sandy loam terrace above the Appomattox River.

**41.** Side scraper of Clovis age, Quail Springs site, City of Virginia Beach, VA, typical white-matrix type of Stafford County, VA orthoquartzite, poorly sorted, angular to sub-rounded, fine-to-very-large sand grains, found on a sandy terrace above a spring on a drainage divide between the Elizabeth River and the North Landing River.

**42.** Edge-worked flake, plow-broken (two images, top and side views), Sussex County, VA, yellowish-white matrix orthoquartzite (dark gray center of original unweathered material visible in the break) somewhat similar in color and weathering to some Stafford County, VA orthoquartzite, well sorted, rounded to sub-rounded fine sand grains with a large fossil shell inclusion, recovered on an eolian sand sheet on a high terrace above the Nottoway River.

**43.** Edge-worked flake, Quail Springs Clovis site, City of Virginia Beach, VA, typical white-matrix Stafford County, VA type of orthoquartzite with poorly sorted, fine-to-very-large angular to sub-rounded sand grains and large quartz and chert angular fragments, found on a sandy terrace above a spring on a drainage divide between the Elizabeth River and the North Landing River.

**44.** Broken biface reduction flake, Clovis cluster area of the Slade site, 44SX7, Sussex County, VA, typical white-matrix Stafford County, VA type of orthoquartzite with poorly sorted, fine-to-very-large angular to sub-rounded sand grains, found on an eolian sand terrace above the Nottoway River.

**45.** Biface reduction flake from a multi-component site along the James River that produced several Clovis points, Isle of Wight County, VA, unknown type of brown orthoquartzite or orthoquartzite-like stone with a mixture of poorly sorted, fine-to-large angular-to-rounded sand grains and other lithic inclusions, identical to the stone material of item 6 above.

**46.** Biface reduction flake, Greensville County, VA, from the same site that produced item 26, typical blue with some brown matrix Bertie County, N.C. type of orthoquartzite. Well-sorted rounded to sub-rounded fine sand grains, but with no shell inclusions as in item 26.

**47.** Edge-used flake, Clovis level in excavation area B of the Cactus Hill site, Sussex County, VA, brown and white matrix orthoquartzite with fine to medium sand grains and with fossil shell inclusions, thought to be a local form or variant of Stafford County-like, VA orthoquartzite (similar to items 11 and 50), unknown lithic source.

- 48.** Core fragment used as a scraping plane, Sussex County, VA, typical blue-white matrix Bertie County, N.C. type of orthoquartzite with well-sorted fine sand grains and with sandy brown inclusions, found on an eolian sand terrace above the Nottoway River at Fort Nottoway.
- 49.** Cortex flake (two images), from a stream-worn cobble, Halifax County, N.C. site, typical blue-white with some brown Bertie County, N.C. type of orthoquartzite, fine to medium well-sorted sand grains, found on a high terrace along the Roanoke River.
- 50.** Side scraper (two images), Sussex County, VA, excavated at the Cactus Hill site in area B at the Clovis level, dorsal face (ventral face shown at lower left of Figure 4 above) showing the sandy cortex surface of a quarried piece, brown and white matrix orthoquartzite with fine to medium sand grains and with fossil shell inclusions, thought to be a local form or variant of Stafford County-like, VA orthoquartzite (similar to items 11 and 47), unknown lithic source.



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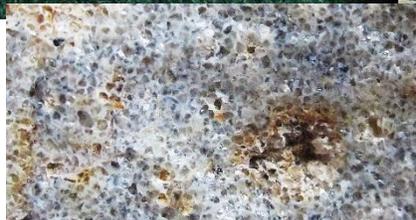
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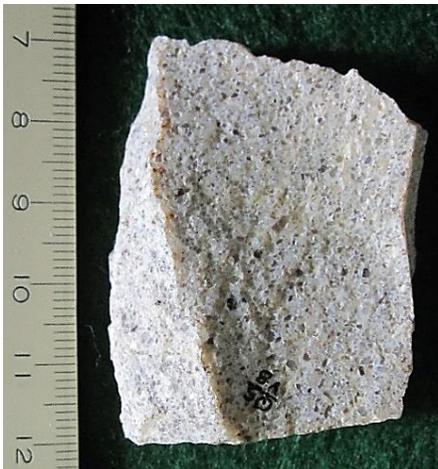
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