Appendix D Investigation and Analysis Report

D.1 Introduction

This appendix provides supplementary information pertaining to the investigations and analyses completed to support this Watershed Plan-EA. The administrative record contains additional supporting information relevant to each section of this appendix.

D.2 Existing Data

The following data was provided by Carroll County, Maryland and the Maryland Department of the Environment Dam Safety Division (MDE) and reviewed as part of this project:

- Construction Drawings
- As-Built Drawings
- As-Built Report
- Design Report
- County-Wide Water Supply Studies
- Watershed Plan
- Original and Supplemental Watershed Agreements
- Inspection Reports
- Construction Photos
- Supporting Documentation and Correspondence

D.3 Inspections

D.3.1 Visual Inspection

A visual inspection was conducted on November 5, 2019 by walking the crest, slopes, and abutments as well as the earthen spillway entrance, control, and exit channel sections. Visual observations were made of the exposed areas of the dam and appurtenant structures.

Primary observations from the inspection included the following:

- Depressions on the upstream and downstream slopes;
- Woody debris lodged in the trash rack of the principal spillway riser;
- Broken/corroded animal grates on the internal drain outlets;
- Damage to two observation wells (#9 and #11) which made readings difficult to obtain and possibly inaccurate.

Primary recommendations from the inspection are summarized below:

- Fill the upstream depression with compacted fill material and over seed. Monitor the depression on the downstream slope;
- Remove woody debris from the principal spillway riser taking care not to allow debris to fall into the bottom of the riser (completed December 20, 2019);
- Repair/replace the animal guards on the internal drain outlets;
- Repair/replace the damaged sections of observation wells #9 and #11;

When compared with the last documented annual inspection report by MDE and The United States Department of Agriculture Natural Resources Conservation Services (NRCS), there were no observed changes identified in the dam, its appurtenant structures, or the reservoir within view of the dam.

D.3.2 Conduit Inspections

Inspections of conduits in the dam were made using remotely operated vehicle (ROV) video inspection techniques on December 19, 20, and 23, 2019. The ROV system provides the capability to complete remote inspections of pipe runs up to 500 feet in length. The system allows capturing real-time video to document the existing conditions of each conduit of interest. The ROV was launched laterally from one end of each pipe to survey and document the pipe conditions without the need for human entry into confined spaces at the following locations:

- Principal spillway intake tower
- Principal spillway conduit
- Lake drain conduit
- Left (Northeast) internal drain conduit
- Right (Southwest) internal drain conduit

In the principal spillway conduit, there were approximately one to two inches of water flowing in the conduit invert during the inspection. The conduit appears to have well-seated joints. Minor pitting was observed along conduit walls below the spring line of the pipe (between three o'clock and nine o'clock) and minor spots of efflorescence above the spring line (between nine o'clock and three o'clock) along the entire length of the conduit.

In the lake drain conduit, which was bulkheaded and dewatered prior to inspection, there were approximately one to two inches of water flowing in the conduit invert. The inspection showed the conduit to have well-seated joints. Minor pitting was observed along conduit walls all around the conduit along its entire length. Discontinuities having the look of a scrape or indentation in the invert of the conduit wall were observed at locations 338.58 feet (six o'clock), 339.08 feet (six o'clock), 356.41 feet (between six o'clock and nine o'clock), and 363.16 feet (between seven o'clock and eight o'clock) along the pipe. No indications of leaks were identified at these locations. Minor hairline cracks with some efflorescence were observed at location 370.0 feet (between 10 o'clock and 12 o'clock).

Inspection of the principal spillway riser proceeded from top to bottom. The inspection showed that the safety ladder fall protection system running down the center of the ladder was misaligned toward the bottom of the ladder and that there was no ladder for the approximately 12 feet at the bottom of the tower. The riser interior walls appeared to be in good condition with no major visible defects and the lake drain sluice gate rising stem extension and guides also appeared to be in operable condition.

The lake drain sluice gate was successfully operated several times during the inspections. The sluice gate itself was not completely sealed and there was a significant amount of water entering the riser from around the gate disc. A review previous inspections showed that this has been a problem for many years with flow rates estimated as high as 100 gallons per minute (0.22 cubic feet per second). Since the estimated leak rate is lower than the estimated inflow rate to the reservoir, there is not a concern about loss of water in the reservoir through the gate. In addition, there is no historical documentation or anecdotal evidence pertaining the issue of maintaining the normal pool reservoir despite the leaking gate.

During inspection of the left internal drain conduit, there were approximately one to two inches of water standing/flowing in the conduit invert. Loss of the conduit bitumen wall coating was observed along the entire conduit. Potential leaks were noted at locations 3.66 feet (two at four o'clock) and 48.58 feet (when pulling the camera out of the conduit in the downstream direction - two at seven o'clock) on the conduit. In all cases, these potential leaks appear to have some pressure forcing water up into the conduit above the standing water. At location 16.33 feet there was a large object noted at seven o'clock. Sediment deposits were also found in the invert of the conduit at location 15.0 feet. Significant buildup of material was observed between locations 61.16 feet and 70.91 feet and deeper flows and sediment were observed from locations 71.91 feet to the end of the inspection which is at the approximate location of the toe drain "tee" connection to the internal drain conduit. A characterization of these sediments could not be made from review of the video and therefore, it is not possible to determine a source at this time.

During inspection of the right internal drain conduit, there were approximately one to two inches of water standing/flowing in the conduit invert. Loss of conduit wall bitumen coating was observed along the entire conduit. Potential leaks were noted at location 10.25 feet (when pulling the camera out of the conduit in the downstream direction - two at seven o'clock) on the conduit. These potential leaks appear to have some pressure forcing water up into the conduit above the standing water. At location 17.0 feet there was a large object noted at six o'clock. Significant buildup of material was observed between locations 52.91 feet and 76.33 feet and deeper flows and sediment were observed from locations 76.33 feet to just beyond the location of the toe drain "tee" connection to the internal drain conduit. A characterization of these sediments could not be made from review of the video and therefore, it is not possible to determine a source at this time.

Primary recommendations are summarized below:

- Re-inspect all conduits in five years and beyond that on a five-year cycle to identify any changes affecting performance or safety of the conduits.

- In the principal spillway riser, replace the missing section of the access ladder at the bottom of the principal spillway intake tower and repair or replace the fall protection system before any further access using the ladder system is attempted.
- Complete a detailed inspection and adjustment of the gate components including the wedges to improve the overall seal by a qualified technician within the next 12 months.
- Re-align the downstream end of the drain system where the drain alignments run around the impact basin to their outlets. Install an access point such as a manhole or vault along the alignment of each internal drain conduit to allow for easier maintenance, camera inspections, discharge measurement, and discharge sampling and evaluation. The new internal drains should be aligned to reduce the number of bends for easier maintenance and inspection. All new conduit should be made of high density polyethylene (HDPE).
- The raw water intake tower and conduit were not able to be inspected completely due to malfunctioning gates in the tower that did not allow the tower and conduit to be dewatered. A previous inspection of the dewatered conduit performed by Progress Marine in November 2013 was reviewed and no major findings were identified. Inspect and repair the raw water intake tower gates to functional condition. Inspect the raw water intake tower and water supply conduit under dewatered conditions.

D.4 Affected Environment Investigations

Investigations into the affected environment were conducted in November and December 2019 and included wetland and waters of the U.S. delineations, invasive species assessment, and Phase I and Phase II archeological surveys.

D.4.1 Wetlands and Waters of the U.S.

A wetlands and waters delineation was conducted in September 2023 that identified five perennial riverine streams comprising 2,432 linear feet (LF), two intermittent riverine streams comprising 70 LF, and two palustrine forested (PFO) wetlands comprising 1.56 acres, and two palustrine scrub shrub wetlands comprising 0.08 acres within the Study Area. Perennial riverine streams are waterways with continuous flow throughout the year while intermittent riverine streams have little to no flow during dry seasons.

D.4.2 Invasive Species

Invasive species are abundant throughout the Study Area and a total of 17 species were observed during field surveys conducted on 4 November 2019. The amount of invasive species is described in terms of relative aerial coverage to other invasive and non-invasive species in the area, based on an observational review, and categorized as high, medium, or low occurrence abundance. Species in high abundance include Japanese stiltgrass (Mycrostegium vimineum), wine berry (Rubus phoenicolasius), wavyleaf basketgrass (Oplismenus hirtellus subsp. Undulatifolius), and barberry (Berberis thunbergii).

D.4.3 Cultural Resources

A Phase I archaeological survey was conducted in the Study Area during 3-6 December 2019. The survey consisted of visual surface inspection for above-ground evidence of archaeological sites and the excavation of 217 shovel test pits. Survey results found 1 prehistoric and 242 historic artifacts, and the identification of 4 historic archaeological sites. The prehistoric artifact and 1 of the historic artifacts occurred as isolated finds, while the remaining 241 historic artifacts are attributed to 3 of the 4 historic sites. The archaeological sites include: 18CR292, an early twentieth century refuse pit; 18CR293, an early nineteenth to early twentieth century farmstead; 18CR294, a likely nineteenth century spring box; and 18CR295, a possible nineteenth century domestic occupation. In addition, due to its age of over 50 years, the Piney Run Dam itself is also considered a site potentially eligible for listing in the NHPA's National Register of Historic Places (NRHP).

Site 18CR293 includes 5 features and 224 historic artifacts representing two functionally discrete site loci. Locus A served as the farmstead's agricultural core as indicated by the foundations of a large barn and secondary outbuilding, along with a low-density scatter of artifacts with very limited functional diversity. Locus B served as the farmstead's domestic epicenter, as indicated by a dwelling foundation and higher quantities of more functionally diverse artifacts, including service and storage wares. The distribution of artifacts and features reflects the division of space the site occupants imposed on the landscape. Site 18CR293 is also located in what was likely a very isolated part of the valley throughout the nineteenth century, a setting which might have forced site occupants to adapt to life in a more remote location.

For a property or site to be listed or eligible for listing in the NRHP, it must possess sufficient integrity of location, design, setting, materials, workmanship, feeling, and association, and meet one or more of the NRHP significance criteria listed below (54 USC 302103):

- Association with events that have made a significant contribution to the broad patterns of our history;
- Association with the lives of significant persons in our past;
- Embodiment of the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction;
- Yielded, or may be likely to yield, information important in history or prehistory

Determinations of eligibility for listing in the NRHP were made by the NRCS and concurrence sought from the Maryland State Historic Preservation Office, the Maryland Historic Trust. The determinations of the five sites were as follows:

1. Site 18CR292 – Not eligible. The site lacks a clear affiliation with any individual historic occupation and lack of associate value and data potential to yield significant information about local consumer practices. This determination was concurred with by the Maryland Historic Trust in January 2024.

2. Site 18CR293 – Potentially eligible. The site was recommended to be avoided by the project due to the presence of numerous features, discrete activity areas, and intact archaeological deposits. However, since it could not be avoided by the dam's operations, particularly if the auxiliary spillway were to activate, a Phase II archeological evaluation of Site 18CR293 was completed in late 2023. Based on the results of the evaluation, the site was determined to be not eligible for listing in the NRHP as it did not meet any of the criteria for listing. This determination was concurred with by the Maryland Historic Trust in March 2024.
3. Site 18CR294 – Not eligible. The site lacks a clear affiliation with any individual historic occupation and absence of potentially meaningful historical and archeological contexts. This determination was concurred with by the Maryland Historic Trust in January 2024.
4. Site 18CR295 – Outside of the APE. The site was represented within the APE at its western extent by a single positive shovel test pit. NRCS determined based on the proposed limits of disturbance that this site would be avoided by all ground-disturbing activity. Since it is upstream of the dam and above the maximum pool elevation, it would also be avoided by dam operations. This recommendation was concurred with by the Maryland Historic Trust in July 2021.
5. Piney Run Dam – Not eligible. The site does not meet any of the criteria for listing in the NRHP. This recommendation was concurred with by the Maryland Historic Trust in December 2023.

D.5 Geology

A geologic investigation was performed to inform the engineering assessment of the embankment and spillway at the Piney Run Dam.

D.5.1 Geologic Setting

Piney Run Dam is located in central Maryland within the Piedmont physiographic province. In the western part of the province, lithology includes "phyllite, slate, marble, and moderately to slightly metamorphosed volcanic rocks" (Maryland Geological Survey, 2020). Local geology of Piney Run Dam shown on the Geologic Map of the Finksburg Quadrangle (Muller, 1994) indicates that the dam is located within the Morgan Run Formation [mr, a, um, and g].

According to Muller's 1994 geologic map, the Morgan Run Formation primarily consists of fine- to medium-grained, lustrous, silver-gray to greenish-gray, garnetiferous mica schist and quartz-mica schist containing discontinuous layers and lenses of quartzite ranging from five centimeters to one meter thick.

The surface soils of the dam and abutments are identified in the NRCS Web Soil Survey as "Dams, concrete" [DAM]. It should be noted that Piney Run Dam is an earthen embankment dam, but it does include concrete components such as the concrete riser, intake structure, and impact basin. The surface soils downstream of the dam outlet consist of Codorus silt loam [CdA] with 0 to 3 percent slopes. The surface soils of the auxiliary spillway and west of the auxiliary spillway outside slope consist of Glenelg loam [GdB] with 3 to 8 percent slopes. The surface soils directly surrounding the auxiliary spillway to the west, south, and east consist of Manor loam [MaF] with 25 to 65 percent slopes. The surface soils of the northeast (left) abutment consist of Brinklow channery loam [BrC and BrD] with 8 to 15 and 15 to 25 percent slopes, respectively.

D.5.2 Seismic Potential

Based on the United States Geological Survey (USGS) Earthquake Hazards Program Quaternary Fault and Fold Database of the United States (https://earthquake.usgs.gov/hazards/qfaults/), the Central Virginia Seismic Zone (Class A) is the closest identified fault location to Piney Run Dam. Located between Richmond, Virginia and Charlottesville, Virginia, these faults are located approximately 128 miles from Piney Run Park.

Peak ground acceleration (PGA) was determined based on USACE ER 1110-2-1806 (2016). Piney Run Dam is a High Hazard dam, which is a determining factor in PGA return period selection. For this site, a return period of 10,000 years was selected as there is potential for loss of life from failure at normal pool levels, which means the dam would be categorized as a high consequence structure in the event of a seismic failure and thus subjected to an analysis return period of 10,000 years per TR-210-60 requirements. A shear wave velocity of 760 m/sec was selected as it is on the boundary of Class B "rock" and Class C "very dense soil and soft rock" site classifications from American Society of Civil Engineers (ASCE) Standard 7-16 Minimum

Design Loads and Associated Criteria for Buildings and Other Structures (2016). From the USGS Unified Hazard Tool, the PGA is projected to be 0.185g (https://earthquake.usgs.gov/hazards/interactive/).

D.5.3 Geologic Investigation Program

The subsurface investigation was performed between November 25, 2019 and January 15, 2020. Twenty-five total borings were drilled using a CME-55 track-mounted drill rig: twelve on the existing auxiliary spillway, five beyond the outside slope of the existing auxiliary spillway, three on the embankment, three on the left abutment, and two at the downstream toe (one of which is an offset boring). In addition, one hand-dug test pit was performed on the middle portion of the downstream slope approximately halfway between the crest and toe of the slope.

Soil was drilled using 3 ¼-inch inside-diameter hollow stem augers. Representative soil samples were obtained using a 2-inch outer-diameter split spoon sampler in general accordance with ASTM International (ASTM) D1586 Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils. SPTs were performed by driving a split-barrel sampler with a 140-pound hammer dropped 30 inches. Soil samples were collected in jars and were obtained by split spoon sampling generally at 5-foot intervals. Where possible, samples were tested with a pocket penetrometer and pocket shear vane from the split spoon.

Shelby tube sampling was performed in select borings in general accordance with ASTM D1587, Standard Practice for Thin-Walled Tube Sampling of Fine-Grained Soils for Geotechnical Purposes. These samples were collected for laboratory testing requiring relatively undisturbed soil samples. Bulk samples were also obtained from select borings by sampling from the auger cuttings.

One additional bulk sample was obtained from the hand-dug test pit located on the mid-downstream slope of the embankment because the drill rig was not able to safely access the location without significantly damaging the embankment.

Rock core sampling was performed generally at auger refusal using an NQ wireline coring barrel and 2 ½-inch outer diameter coring rods. Rock coring was performed at all boring locations except Borings 205 and 601A. The rock coring ranged between five linear feet (Borings 601 and 208) and 35 linear feet (Boring 805). In some instances, rock coring was performed with a split core barrel prior to auger refusal in order to sample the transitionary material at the soil-rock interface.

Upon drilling completion, 1-inch-diameter PVC pipes with slotted perforations in the bottom foot were temporarily installed in the majority of borings in order to take 24-hour groundwater readings and to preserve the hole to its termination for tremie grouting. After taking final groundwater readings, borings were backfilled by tremie grouting using cement-bentonite grout.

D.5.4 Laboratory Testing

Laboratory testing on soil and rock samples obtained during the subsurface investigation of Piney Run Dam was performed in general accordance with ASTM standards. The following laboratory tests were performed:

- Twenty-one (21) tests with ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- Thirty-three (33) tests with ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- Twenty-one (21) tests with ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- Ten (10) tests with ASTM D7263 Standard Test Methods for Laboratory Determination of Density (Unit Weight) of Soil Specimens
- One (1) test with ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3 (600kN-m/m3))
  - Thirty-seven (37) tests with ASTM D7928 Standard Test Method for Particle Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis
  - Ninety-nine (99) tests with ASTM D6913 Standard Test Method for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
  - Four (4) tests with ASTM D7012 Standard Test Method for Compressive Strength and Elastic Moduli of Intact Rock Core Specimens under Varying States of Stress and Temperatures
  - Three (3) tests with ASTM D4767 Standard Test Method for Consolidated Undrained Triaxial Compression Test for Cohesive Soils
- One (1) test with ASTM D7181 Standard Test Method for Consolidated Drained Triaxial Compression Test for Soils
  - One (1) test with ASTM D5084 Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter
- Two (2) tests with ASTM D854 Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer
  - Two (2) tests with ASTM C128 Standard Test Method for Relative Density (Specific Gravity) and Absorption of Fine Aggregate

Tests with ASTM D4221, Standard Test Method for Dispersive Characteristics of Clay Soil by Double Hydrometer or ASTM D6572, Standard Test Methods for Determining Dispersive Characteristics of Clayey Soils by the Crumb Test, were planned for soil samples from the auxiliary spillway. However, within the spillway proper, the soils were found to be non-plastic and thus a test for dispersion was determined to not be applicable.

D.5.5 Subsurface Conditions

The thickness of organic topsoil varied across the site with a maximum thickness of approximately 12 inches in Boring 805.

Piney Run Dam is an earth fill dam containing an earthen core. The material used to construct the dam is hereby referred to as Embankment Fill, consisting of Embankment Shell and Embankment Core material. The Embankment Fill material was sampled and tested from three borings located along the crest, two borings at the downstream toe of the dam, and a hand-dug test pit at the downstream mid-slope. Embankment Shell samples were visually classified as Silty SAND with varying amounts of gravel (SM). One sample was laboratory classified as Silty SAND with gravel (SM). Embankment core samples were visually classified as Silty SAND with varying amounts of gravel (SM), Clayey SAND with varying amounts of gravel (SC), and Sandy Lean CLAY (CL). Three samples were laboratory classified as Silty SAND (SM) and Sandy Lean CLAY (CL).

Residual soil was not identified in any of the Embankment Core borings, but based on the original design drawings, it is believed that a residual soil layer exists between the Embankment Fill and the underlying bedrock under the Embankment Shell zone, both upstream and downstream of the core trench as confirmed by Boring 601. Residual soil measured at Boring 601 is approximately seven feet thick. The soils were visually classified as Silty GRAVEL with sand (GM), and Silty SAND with a small amount of gravel (SM).

Nearly all soil sampled in the left abutment was considered residual because it is in a cut area, with only a few feet of possible fill encountered in Boring 702. The Residual soil thickness at the center of the left abutment, measured at Boring 702, is approximately 38 feet. Residual soil samples on the left abutment were visually classified as Silty GRAVEL with sand (GM), Silty SAND with varying amounts of gravel (SM), Clayey SAND with varying amounts of gravel (SC), and Sandy Lean CLAY (CL). Select samples were laboratory classified as Silty SAND (SM) and Silty GRAVEL with sand (GM) within the top ten feet.

Nearly all soil sampled in the auxiliary spillway was considered residual because it is in a cut area, with only a small amount of apparent fill encountered in Boring 211. The Residual soil thickness within the auxiliary spillway measured between zero feet (Boring 204) and 39 feet (Boring 207), with an average thickness of 25 feet. Auxiliary spillway soil was visually classified as Silty GRAVEL with sand (GM), Silty SAND with varying amounts of gravel (SM), Clayey SAND (SC), Silty Clayey SAND (SC-SM), Sandy SILT (ML), Sandy Lean CLAY (CL), and Sandy Silty CLAY (CL-ML). Select samples were laboratory classified as Silty GRAVEL with sand (GM), Silty SAND with varying amounts of gravel (SM), and SILT with varying amounts of sand (ML).

All soil sampled in the area beyond the auxiliary spillway right (outside) slope was considered residual because the borings are located in a wooded, undisturbed area. Residual soil thickness beyond the auxiliary spillway right slope measured between 8 feet (Boring 805) and 78 feet (Boring 803), with an average thickness of 37 feet. Residual Soil samples beyond the auxiliary spillway outside slope were visually classified as Silty SAND with varying amounts of gravel

(SM), Clayey SAND (SC), Sandy Lean CLAY (CL), Sandy SILT (ML), and Sandy ELASTIC SILT (MH). Select samples were laboratory classified as Sandy ELASTIC SILT (MH), SILTY SAND (SM), and SILTY GRAVEL with sand (GM).

Decomposed Rock was encountered directly above bedrock in the majority of borings within the left abutment, auxiliary spillway, and area beyond the auxiliary spillway outside slope. The decomposed rock layer ranged from approximately zero to 34 feet thick and averaged 9.5 feet thick. The material recovered in the split spoon was most often visually classified as slightly moist, brown to gray, non-plastic, fine to coarse Silty SAND with varying amounts of gravel (SM). Other visual classifications included Silty GRAVEL with sand (GM), Poorly Graded SAND with silt (SP-SM), Silty Clayey SAND with gravel (SC-SM), and Sandy SILT (ML).

The bedrock encountered in borings generally matched the Morgan Run Formation lithology described in Muller's 1994 geologic map. Rock core samples were predominantly weak to strong, slightly to highly weathered, slightly to intensely fractured, fine to medium grained, brownish gray to dark gray MICA SCHIST, with many samples containing quartz inclusions. Fractures were predominantly slightly rough to rough with spotty to partial iron and dark brown staining infill, with some fractures containing soil infill.

D.6 Engineering

Engineering investigations were performed to support evaluation of the existing conditions as well as development and evaluation of the proposed alternatives.

D.6.1 Surveys

Survey data was collected via field-run topographic, aerial photogrammetric, and bathymetric methods. The field-run topographic surveys were conducted to map all features in the Study Area as well as topography located under tree canopy. In the areas of the Study Area not under tree canopy, such as the dam embankment and auxiliary spillway, aerial photogrammetric data was collected using an un-manned aerial system (UAS) airframe. The photogrammetric data was combined with the field run survey data using a series of targets set on the ground and located using field-run survey techniques.

The bathymetry of the reservoir was assessed with the sonar transducer mounted to a small boat. The boat traveled in transects across the reservoir while the transducer collected sonar date of the reservoir bottom.

Survey control was established from permanent control points established by Carroll County, Maryland. The horizontal datum for the survey was the North American Datum of 1983 (NAD83), Maryland State Plane and the vertical datum was the North American Vertical Datum of 1988 (NAVD88). A comparative analysis of the benchmarks placed on various features of the appurtenant works of the dam indicates that the datum adjustment from the as-builts to the current NAVD88 datum is -1.0 feet.

D.6.2 Hydrologic and Hydraulic Analysis

A hydrologic and hydraulic analysis of the Piney Run Dam was prepared for existing and ultimate development watershed conditions. Using Geographic Information System (GIS) ArcMap version 10.6 software, a hydrologic database was created to support the watershed analysis. The GIS hydrologic database contains input data used to define and characterize the watershed, such as hydrologic soil types, land use types, runoff curve number and time of concentration. A gridded terrain surface was obtained in the form of a Hydro Flattened Digital Elevation Model (DEM) with a 10-foot cell size resolution. The DEM was derived from Light Detection and Ranging (LiDAR) data published by the state of Maryland Geographic Information Office's (GIO) iMAP Program in 2016.

The NRCS' Water Resources Site Analysis Computer Program, SITES version 2005.1.8 was used to create a hydrologic model of the Piney Run Dam watershed. This model was used to estimate the inflow hydrographs to Piney Run Dam and route the storms through the reservoir as required by State of Maryland and NRCS guidance. Since the watershed is less than 50 square miles, in accordance with NRCS guidance, the basin was modeled as a single sub-basin as shown in Figure 4. The watershed was delineated using ArcGIS hydrology tools and manually verified. The watershed area is estimated to be 6,760 acres (10.6 square miles).

Rainfall losses were computed using NRCS' Runoff Curve Number method. The CN was determined using ArcMap to overlay the land use and hydrologic soil groups within the watershed to determine the weighted CN. The CN for existing conditions was 72 and for ultimate conditions which used zoning data to determine land use, was 75.

To convert excess precipitation into surface runoff, the Soil Conservation Service (SCS) Unit Hydrograph Transform Method was employed within the watershed model. The Standard graph type with peak rate factor of 484 was selected for this analysis as recommended by Maryland Hydrology Panel for the Piedmont and Blue Ridge physiographic regions which encompass the Piney Run Dam watershed (Maryland Hydrology Panel, 2016). The Time of Concentration (Tc) for the watershed was calculated using the Velocity Method which is a segmental approach involving defining travel times for three different flow types along the longest flow path: sheet flow, shallow concentrated flow, and open channel flow. The estimated time of concentration of the Piney Run Dam watershed is 2.87 hours under existing conditions and 2.49 hours under ultimate conditions.

Precipitation data including estimated depth and distribution for each event modeled was collected from the following data sources:

- National Oceanic and Atmospheric Administration's Atlas 14, Volume 2, Version 3
- Hydrometeorological Report No. 51: "Probable Maximum Precipitation Estimates, United States East of the 105th Meridian" (NOAA, 1978)

Atlas 14 provided data for all annual exceedance probability (AEP) events up to and including the 0.2% AEP (500-year) event. The AEP events used the NOAA Type C rainfall distribution in accordance with NRCS guidance. HMR-51 provided data for the PMP.

The following events were analyzed:

- 2% AEP, 24-hour event
- 1% AEP, 24-hour event
- 0.2% AEP, 24-hour event
- PSH event
- SDH event
- FBH event

In accordance with TR-210-60 guidance for flood retarding structures, the principal spillway was analyzed for a 1% annual exceedance, 10-day duration event using methods described in the National Engineering Handbook (NEH), Part 630, Chapter 21, Design Hydrographs (NRCS, 2019). The temporal distribution of the PSH is created in the SITES model by critically stacking the resulting runoff values and accumulating the results.

Likewise, TR-210-60 guidance requires that the auxiliary spillway be analyzed for discharge capacity, stability (erosion potential), and integrity (breach potential). This analysis is performed by examining spillway performance under both six- and 24-hour duration events and using the most critical results when evaluating the spillway.

In accordance with TR-210-60 guidance and Maryland regulations, the dam must be analyzed for capacity and sufficient freeboard using FBH/SDF event. This analysis is performed by examining the dam's hydraulic performance under both six- and 24-hour duration events for TR-210-60 and for the six, 24-, and 72-hour events based State of Maryland guidance and using the most critical results when evaluating discharge capacity and freeboard. As a Class 'C' high hazard potential dam, the required precipitation depth for the FBH/SDF is the PMP.

The United States Army Corps of Engineers Hydrologic Engineering Center Meteorological Visualization Utility Engine, version 3.0 (HEC-MetVue) was used to manipulate HMR-51 datasets including temporal and spatial aggregation of datasets and areal average computations to develop the PMP events for the Piney Run Dam watershed. HEC-MetVue utilizes methodologies of NOAA's HMR-52 to adjust the precipitation depth and extents for the size, shape, and orientation of the watershed and to temporally distribute precipitation.

HEC-MetVue gives a 72-hour output hyetograph for the watershed. Unit hyetographs for six- and 24-hour duration storms were extracted from the 72-hour hyetograph using the method in the NEH Part 630, Chapter 4, Storm Rainfall Depth and Distribution (NRCS, 2015). These unit hyetographs were input into the SITES program for the six- and 24-hour duration SDH events to create temporal distributions of the SDH precipitation depths.

The FBH/PMP depths were obtained as described in this section. As previously discussed, HEC-MetVue gives a 72-hour output hyetograph for the watershed (Maryland requires consideration of PMP events as long as the 72-hour event for the purposes of determining the PMF). This hyetograph was used to model the 72-hour event in SITES while six- and 24-hour hyetographs were extracted using the method in the NEH Part 630, Chapter 4, Storm Rainfall Depth and Distribution (NRCS, 2015). The hyetographs for these events were input directly into the SITES program.

Reservoir routing through Piney Run Reservoir and Dam was performed within the SITES watershed model. The stage-storage relationship of Piney Run Reservoir was developed using a combination of bathymetric survey data below elevation 523.0 which was performed in 2019 one-meter LiDAR data obtained from the Maryland GIO above elevation 523.0. Storage volume calculations were prepared to elevation 546.0 (approximately 5.5 feet above the dam crest elevation). The principal and auxiliary spillway stage-discharge ratings were developed internally in the SITES model using geometric input data derived from the survey and as-built plans.

D.6.3 Spillway Integrity Analysis

An auxiliary spillway integrity analysis was performed using the SITES model. Subsurface information obtained from the original geologic investigation report (RK&K, 1971) and from geologic investigation made during this study were used to develop representative geologic profiles through the auxiliary spillway with conservative (i.e., most erodible) input parameters. Headcut erodibility index (Kh) and other soil and rock parameters were estimated based on available subsurface data. Three different profiles through the auxiliary spillway were evaluated.

These were along the inside edge of the spillway (closest to the dam, left side), through the centerline of the spillway and along the outside edge of the spillway (furthest from the dam, right side).

Twelve borings were drilled in the auxiliary spillway to determine subsurface profiles and to collect samples for estimation of soil and rock erodibility parameters for auxiliary spillway integrity analysis. Laboratory testing of soil samples collected during the subsurface exploration program made as part of this study was performed for use in the spillway integrity analysis. All testing was performed in accordance with applicable ASTM test standards. Calculations were performed to estimate soil and rock erodibility parameters for use in an auxiliary spillway integrity analysis using the SITES program. The head cut erodibility index for each stratum was estimated using procedures in the NEH, Part 628, Chapter 52, Field Procedures Guide for the Headcut Erodibility Index (NRCS, 2001).

The auxiliary spillway surface condition parameters were estimated based on the conditions observed during a visual inspection made in November 2019. The Vegetal Retardance Curve Index is approximated by the Manning's roughness value of the cover through the auxiliary spillway. A Manning's roughness value of 0.04 was used for the constructed portion of the auxiliary spillway while a value of 0.10 was used for the wooded area downstream of the constructed portion of the spillway. The vegetal cover factor ranges from zero for non-vegetated surfaces to 0.87 for typical turf grass sod covers. The area downstream of the constructed portion of the auxiliary spillway was assumed to have a vegetal cover factor of 0.5 which corresponds to typical bunch grasses. The maintenance code describes the overall uniformity of the cover in the channel. A maintenance code of 1 was used for the constructed portion of the spillway profile which represents uniform cover. A maintenance code of 2 was used for the wooded area downstream of the constructed portion of the spillway which represents minor discontinuities present in the cover. The potential rooting depth is the depth to which roots could reasonably penetrate under good growing conditions. A potential rooting depth of 1.0 foot was used for the constructed portion of the spillway and a depth of 5.0 feet was used for the wooded area downstream of the constructed portion of the spillway. The valley floor is defined as the elevation below which the spillway will not erode because of downstream control. The valley floor was defined as elevation 496.0 feet for all of the profiles modeled in SITES which is the elevation where the inside edge profile meets the stream channel approximately 150 feet downstream of the constructed portion of the auxiliary spillway.

The SITES model-based auxiliary spillway integrity analysis for the inside edge profile, centerline profile, and outside edge profile all show erosion of the soil overburden of the auxiliary spillway and a breach of the spillway crest during passage of the 6- and 24-hour PMF events. The SITES model shows that the 24-hour PMF scenario is the worst-case scenario for the integrity of the spillway. During the 24-hour PMF event, the model estimates a maximum final head cut depth of approximately 35 feet for the inside edge, centerline, and outside edge profiles.

A sensitivity analysis was performed where the soil and rock parameters were evaluated for a range of values to determine if altering the subsurface profile and material properties would change the results of the model. The sensitivity analysis showed that the spillway would still breach during a 24-hour PMF event even if the material properties were changed to the least possible erodible material properties based on the possible range of material properties as determined by the soil borings and lab testing results. The sensitivity analysis was performed on the inside edge profile, centerline profile, and outside edge profile with the results and the material properties used shown in Figure 18, Figure 19, and Figure 20, respectively. All three profiles showed that a breach would likely occur. The results of the sensitivity analysis support the original material properties used because even when the least erodible material properties within the range of possible material properties are used, the model still shows a breach of the spillway.

D.6.4 Hazard Classification

The hazard classification of the dam was assessed by completing a breach analysis in accordance with TR-210-60. The breach analysis included three events: seismic (normal pool), static (auxiliary spillway crest) and hydrologic (FBH peak water surface elevation) failures with the breach wave modeled downstream until a termination criterion was met. For the seismic and static breaches, the criterion was that the peak water surface elevation of the breach wave be less than that of the 1% AEP floodplain at that location, which occurred approximately 18 miles downstream of the dam. For the hydrologic breach, the criterion was that the difference in water surface elevation between the flood wave during a hydrologic breach event and the flood wave during the hydrologic event with no breach be less than one foot. This criterion was met approximately 27 miles downstream of the dam.

The breaches were modeled using a two-dimensional mesh modeling approach in HEC-RAS version 5.07. Hydrographs and inputs for the model were obtained from the SITES models generated for the hydrologic and hydraulic analysis. For the hydrologic breach scenario, additional hydrographs for downstream watersheds were added in assuming the outer precipitation isohyets of the PMP event extended over those watersheds as appropriate in accordance with State of Maryland guidance (MDE, 2018).

Based on the model output, impacts of a breach of the dam during the hydrologic event may impact up to 181 structures, 44 roads, and one freight railroad. Due to the extensive impacts, the dam is recommended to remain classified as a Class 'C' high hazard potential structure.

D.6.5 Reservoir Sedimentation

A study of reservoir sedimentation was made for the Piney Run Reservoir. The bathymetry data was compared to the original reservoir bathymetry as well as bathymetric surveys made in 1989 and 2013. The data showed that the reservoir has accumulated approximately 725 acre-feet of sediment during its 45-year service life (approximately 16.5 acre-feet per year). This is approximately 213% of the allocated sediment pool.

Two methods were used to estimate annual sediment yield; one method based on a comparative analysis of the reservoir bathymetry over time as indicated above, and one method that used analysis methods to understand sediment delivery from the watershed and from erosion of the tributary streams to the reservoir. The analysis-based method yielded an annual sediment load estimate of 19.0 acre-feet per year. Both methods used to estimate the sediment deposition rate are in excess of the original 3.4 acre-feet/year planned.

A study of the watershed, future land use and zoning, and tributary channel conditions indicated that future sedimentation rates could increase to up to 43.4 acre-feet per year depending on the rate of build-out of the watershed, future erosion of the stream channels, and status of mitigation projects in the watershed to arrest erosion. Because the state of Maryland and Carroll County have both enacted strict stormwater management standards on development requiring stormwater treatment to mimic pre-development (defined as "woods in good condition") hydrologic conditions using best management practices with 80% minimum reduction in total suspended sediment rates, the increase in estimated sedimentation loading (24.4 acre-feet per year) could be reduced by as much as 80% which would yield a total estimated future loading rate of 23.9 acre-feet per year. Based on the reservoir capacity to watershed runoff ratio, the estimated trap efficiency is 97% and based on the materials a watershed characterization, the estimated aerated sediment portion is 20%. Based on these estimates, the estimated 100-year aerated sediment load is 360 acre-feet and submerged sediment load is 1,960 acre-feet.

The Sponsor, through their own programmatic efforts has undertaken investigations and studies of the Piney Run watersheds as well as other watersheds in the County including stream surveys and planning-level studies with the intent of implementing stream stabilization and restoration projects as well as upland stormwater management projects in the future. At this time, the exact date and order of project implementation has not been determined. Upon implementation, these projects will support reductions erosion rates of the stream channels with discharge into the reservoir and lower the currently estimated sedimentation rate.

The existing sediment pool volume of 339 acre-feet has been exceeded by approximately 386 acre-feet or 113% of the intended 100-year volume. However, as the portion of the reservoir allocated to water supply is not currently being used, there is sufficient additional volume in the normal pool of the reservoir that was intended to be allocated to water supply (3,357 acre-feet). Since the water supply use of the reservoir is not being used, there is ample storage volume to accommodate the anticipated 100-year sediment load of between 1,960 acre-feet. The sediment load rate depends on how much, if at all, the development of the contributing watershed changes.

D.6.6 Slope Stability and Seepage Analyses

Computer modeling analyses were performed on Piney Run Dam to determine the slope stability under existing and proposed alternative conditions. The computer modeling analysis was performed in general accordance with TR-210-60 requirements. Seepage and slope stability analyses were performed using SLOPE/W of GeoStudio 2016 (Version 8.16.2.14053) software. Spencer's method, which satisfies all static equilibrium conditions, was used in these analyses.

Three cross sections were analyzed at Piney Run Dam is perpendicular to the dam crest centerline and were taken at each of the three embankment crest boring locations. The location of the soil and rock layers are based on the geologic investigation completed as part of this project and supplemented with historical documentation. Embankment core, cutoff trench, chimney drain, and trench drain dimensions were based on the Piney Run Dam design drawings (SCS, 1975).

Existing conditions as well as conditions expected under Alternatives 1 and 2 were analyzed.

Hydraulic conductivity for embankment soils at Piney Run Dam is based on laboratory testing and empirical values. One hydraulic conductivity test was performed on sample T-1 (25.0 – 26.2 feet, depth) obtained from Boring 2 for the embankment core. The hydraulic conductivity of the embankment core undisturbed sample (47.5 percent fines) is 9.3E-06 cm/sec (2.6E-02 ft/day).

For the Embankment shell, residual soil, and drain material, hydraulic conductivity was estimated based on the Kozeny-Carman equation (Duncan, 2008). The Kozeny-Carman equation is a method used to correlate hydraulic conductivity with material grain size. One bulk sample from the embankment shell was compared with estimated values from eight embankment core values. Comparison showed there was no significant difference in hydraulic conductivity between the Embankment Shell (average 31.6 percent fines, 8.27E-01 ft/day) and the Embankment Core (average 44.5 percent fines, average 9.66E-01 ft/day).

Empirical values were obtained through the following literature sources to correlate the estimated values:

- Duncan, M. (2008). "Methods for Evaluating Permeability of Soils". Virginia Tech CGPR No. 51. Blacksburg, VA
- Natural Resources Conservation Service. (2012). National Engineering Handbook, Part 631 Geology, Chapter 3: Engineering Classification of Earth Materials. U.S. Department of Agriculture.

- Natural Resources Conservation Service. (2012). National Engineering Handbook, Part 631 Geology, Chapter 4: Engineering Classification of Rock Materials. U.S. Department of Agriculture.
- United States Bureau of Reclamation. (2014). Design Standards No. 13 Embankment Dams, Chapter 8: Seepage.

The lean clay layer of the inner core was estimated based on National Engineering Handbook, Part 631 Geology, Chapter 3: Engineering Classification of Earth Materials (NRCS, 2012a).

Anisotropy estimates of Embankment Core, Embankment Shell, and Residual soils were based on ranges of accepted values found in the United States Bureau of Reclamation (USBR) Design Standards No. 13 Embankment Dams, Chapter 8: Seepage (USBR, 2014). Estimated values were selected from these ranges through calibration of the seepage model to observed levels in the observation wells of the dam. For the Embankment Core and Shell, the vertical hydraulic conductivities were selected to be 1/10 and 1/5 the horizontal hydraulic conductivity, respectively. For Residual Soil, vertical hydraulic conductivity was selected to be 1/2 of the horizontal hydraulic conductivity. Proposed fill hydraulic conductivity was assumed to be the same as the existing fill material.

Bedrock hydraulic conductivity was estimated based on NRCS National Engineering Handbook Part 631, Chapter 4, Engineering Classification of Rock Materials (NRCS, 2012b) and USBR Design Standards No. 13 Embankment Dams, Chapter 8: Seepage (USBR, 2014) for Mica Schist, which was identified as the predominant rock at Piney Run Dam during the geotechnical investigation and is a metamorphic rock.

Hydraulic conductivity of the filter drain material was estimated based on Hazen's formula (Duncan, 2008). This method estimates hydraulic conductivity based on the D10 (grain size diameter of 10% passing) of material from grain size distribution. Values were obtained from Piney Run As-Builts (1975), Sheet 12 for coarse and fine limits. The estimated hydraulic conductivity of the drain material ranged from 21.5 ft/day (7.60E-03 cm/sec) to 382.7 ft/day (1.35E-01 cm/sec). For this analysis, a hydraulic conductivity of 50 ft/day was selected.

The material properties used for slope stability analysis are based on laboratory testing and engineering judgement. One CID Triaxial Test and one CIU Triaxial Test with pore water measurements (ASTM D 4767) were performed on the Embankment Core. One CIU Triaxial Test was performed on a remolded specimen from a bulk sample of the Embankment Shell. The Residual soil effective strength friction angle was estimated from a CIU Triaxial Test performed on a sample from the crest of the auxiliary spillway outside slope (803, T-2). Boring 803, sample T-2 soil classified as Silty SAND (SM) with approximately 40% fines. The residual soil unit weight was based on the average of the laboratory-measured unit weights from the same area, the auxiliary spillway outside slope, for consistency. Data from this area were used because there was insufficient recovery in the undisturbed sample from the toe boring (Boring 601).

Four compressive strength tests were performed with an average compressive strength of 10412.5 psi. The minimum compressive strength of these tests was 6353 psi. Cohesion equaling one-half compressive strength is based on assuming a zero-degree friction angle and cohesion equal to one-half the difference between major and minor principal stresses. Bedrock cohesion was assumed to be one-half of the unconfined ultimate compressive strength. As the compressive strength test is unconfined, the minor principal stress is zero psi. Therefore, the Mohr's circle radius is equal to one half of the major principal stress, which is the resultant compressive strength.

However, to account for potential variances and/or weathering within the Bedrock, only a percentile of the cohesion of Bedrock was assumed in the analyses. For these analyses, approximately 25 percent of the laboratory cohesion based on engineering judgment was assumed to create a conservative model. This correlates to a cohesion of 794 psi (114,336 pounds per square foot).

Friction angle for the existing filter drain material was estimated based on USACE Mechanical and Physical Properties of ASTM C 33 fine aggregate. The designed gradation tables of existing filter drain material presented in the Piney Run Dam As-Built drawings, Sheet 12 (SCS, 1975). Comparison of the designed filter drain material with ASTM C 33 fine aggregate shows that the coarse limits of each material are similar with ASTM C 33 fine aggregate slightly coarser after D_{25}. The designed existing filter drain material fine boundary is finer than ASTM C33 sand for the range, with the difference at D_{15} being 0.38 mm for the designed existing filter drain material compared with 1.18 mm for ASTM C 33 fine aggregate. For ASTM C 33 Fine Aggregate, laboratory testing presented in the report showed a peak friction angle of 40 degrees, minimum friction angle of 32.8 degrees, and an average friction angle of 36.5 degrees. A 35 degree friction angle was selected for the designed existing drain material which is at approximately the lower one-third of the range for ASTM C 33 fine aggregate.

Saturated unit weight of the Embankment Core and Embankment Shell were estimated based on laboratory test results for dry unit weight, average moisture content, and specific gravity of the Embankment Core, as undisturbed samples of the Embankment Shell were unable to be obtained. Saturated unit weight of the Residual Soil beneath the embankment shell was estimated based on laboratory results from Residual Soil encountered beyond the auxiliary spillway outside slope, because there was insufficient recovery in the undisturbed sample from the toe boring (Boring 601).

Bedrock dry unit weight was determined during laboratory testing of compressive strength. Saturated unit weight of rock was conservatively estimated based on dry unit weight.

Proposed fill soil strength properties were estimated to be the same as those for the existing Embankment Shell.

The seepage analyses were performed using SEEP/W of GeoStudio 2016 (Version 8.16.2.14053). At the reservoir, a boundary condition for the head elevation of the pool (normal pool or flood surcharge pool) being analyzed was used in each model. Boundary conditions were set within SEEP/W to simulate observed conditions at the dam for normal pool models. Normal Pool reservoir elevation was set at the reservoir elevation measured during inspection (EL. 523.5 feet) for existing conditions. The normal pool tailwater elevation was assumed to be at EL. 469.1 feet based on 72-hr groundwater reading in Boring 601(measured EL. 469.1 feet).

Flood surcharge pool, based on freeboard hydrograph level, was selected to be one foot below the crest of dam (EL. 539.5 feet) for existing conditions. Tailwater at auxiliary spillway crest reservoir pool elevation was assumed to be the elevation at 75 percent of the principal spillway conduit height at the outlet (EL. 469.41 feet). Tailwater elevation at flood surcharge pool was analyzed for two scenarios: (1) assumed one foot higher than tailwater at auxiliary spillway crest pool, and (2) due to seepage through the dam, downstream existing ground surface elevation. Finally, principal spillway drain elevation, which refers to the base of the chimney drain, was utilized as a boundary condition.

The boundary conditions used for seepage analysis for existing conditions are summarized below:

- Normal Pool Elevation: 523.5 feet
- Flood Surcharge Pool (auxiliary spillway crest) Elevation: 531.0 feet
- Flood Surcharge Pool Elevation: 539.5 feet
- Tailwater Elevation (Normal Pool): 469.1 feet
- Tailwater Elevation (auxiliary spillway crest): 469.41 feet
- Tailwater Elevation (Flood Surcharge Pool): (1) 470.41 feet and (2) existing ground surface elevation
- Principal Spillway Drain Elevation: 470.0 feet

The phreatic surface within the embankment at Piney Run Dam for existing conditions was estimated based on open well readings and 24-hour minimum observations from 2019-2020 borings. Measured well data, laboratory test data and empirical values from literature for hydraulic conductivity and anisotropy were used to conservatively estimate the phreatic surface at Piney Run Dam during flood surcharge conditions. Based on TR-210-60, flood surcharge elevation is the reservoir at freeboard hydrograph level. For this analysis, flood surcharge elevation was assumed to be one foot below top of dam elevation at EL. 539.5 feet.

Seepage analysis boundary conditions for proposed Alternatives 1 and 2 are based on designed pool and freeboard elevations for the reservoir. Tailwater elevations for normal and freeboard hydrograph conditions were estimated based on existing condition analysis. **Table D-1** provides the boundary conditions for each alternative.

Table D - 1. Alternatives Boundary Conditions

Condition	Analysis	
	Alternative 1	**Alternative 2**
Normal Pool Elevation (ft)	523.5	525.3
Freeboard Hydrograph (ft)	544	543.5
Tailwater Elevation (Normal Pool)	469.1	469.1
Tailwater Elevation (Flood Surcharge Pool)	470.41	470.41

Slope Stability analyses were performed on the previously described cross section using the 2019 and 2005 versions of TR-210-60 guidelines for existing and proposed alternative conditions. The analyses performed measured slope stability for rapid drawdown conditions for the upstream slope, steady-seepage slope conditions for full and normal pool conditions and seismic analysis at normal pool conditions for the downstream slope. Slope stability analyses were performed using SLOPE/W. Spencer's method of slices, which satisfies all conditions of static equilibrium, including horizontal and vertical force equilibrium, and moment equilibrium, was used for the analysis. Minimum depth for a failure was set at two feet. Failure was considered for circular failure planes and non-circular failure planes for deep failures as well as shallow failure within the embankment slope. The results of the analyses show that existing conditions at Piney Run Dam meet the requirements for slope stability for all conditions analyzed.

D.6.7 Exit Gradient

Analysis was performed to determine the potential for piping at the downstream embankment at Piney Run Dam. This analysis was performed based on Hurricane and Storm Damage Risk Reduction System Design Guidelines (USACE, 2012) and Critical Horizontal Seepage Gradients (O'Leary, et al, 2013) guidelines. Minimum factor of safety for the analysis was evaluated t 1.6 from USACE (2012). The results indicated that the downstream toe exceeds the minimum factor of safety for exit gradient and potential piping for existing and proposed alternative conditions.

D.6.8 Filter Compatibility

Analysis was performed to determine if soil materials located at Piney Run Dam are compatible for filtration and/or drainage. Filtration inhibits the movement of fine material particles between soils. Particle movement between soils may initiate internal erosion and piping. Drainage is analyzed to determine if groundwater can easily pass between soils. Obstructed groundwater flow paths can cause increased pore pressures within the embankment, potentially causing heave and/or seepage on the downstream embankment slope.

Both the chimney filter and toe drains are two-stage filters using the same material specification for the coarse and fine-grained stages, respectively. The fine-grained chimney filter material as specified in the as-built drawings (Soil Conservation Service, 1975) ranges in size from #200 sieve (0.075 mm) to 3/8-inches (9.5 mm) and is similar in gradation to the coarse limit of ASTM C-33 Fine Aggregate. The coarse-grained material as specified on the same as-built drawing ranges in size from #16 sieve (1.2 mm) to three inches and is a mix of 60 percent #2 gravel and 40 percent #5 gravel. A review of the specified materials against current NRCS filter gradation guidelines (NRCS, 2017) was completed and found that the fine-grained filter specification was compatible with the soils used in both the Embankment Shell and Embankment Core materials based on soil samples taken during the 2019-2020 subsurface geologic and geotechnical investigation. The analysis also showed that the coarse-grained filter specification as specified in the as-built drawings was generally compatible with the fine-grained filter specification. It should be noted that the coarse-grained filter specification lies partially outside the maximum allowable limits for larger grain sizes (greater than the 60th percentile diameter).

D.7 Economic Effects of Alternatives

An economic analysis was conducted to quantify impacts to the watershed for project alternatives to address issues at Piney Run dam. This memorandum describes the methods used to quantify the impacts of the alternatives and to determine economic feasibility of the alternatives.

Following a preliminary analysis of possible alternatives, four alternatives were carried forward for evaluation. The alternatives are comprised of one No Action alternative (also referred to as the Future Without Project (FWOP) alternative), one future without federal investment (FWOFI) alternative, two rehabilitation alternatives, and one decommissioning alternative. **Table D-2** describes the five alternatives.

Table D - 2. Description of Alternatives

Alternative	Description
Alternative 0 (No Action/FWOP)	Continue the regular maintenance of the dam, but no modifications to the dam or spillways would be made to address concerns (i.e., existing conditions would remain).
Alternative 1	Piney Run dam would be modified with federal support to meet NRCS and Maryland Department of the Environment (MDE) criteria for Class 'C'/high hazard dams.
Alternative 1a (FWOFI)	The local sponsor would modify Piney Run dam to meet NRCS and Maryland Department of the Environment (MDE) criteria for Class 'C' high hazard dams. Because of funding constraints, the rehabilitation would not be implemented for 10 years. In the interim, the reservoir would be drawn down to reduce the risk of a failure. Once rehabilitation is complete, the reservoir would be refilled and returned to normal pool.
Alternative 2	Piney Run dam would be modified to meet NRCS and MDE criteria for Class 'C'/high hazard dams. Additionally, improvements to establish Piney Run reservoir as a backup water supply source would be made by installing the necessary infrastructure to connect the reservoir to Carroll County's water supply system.
Alternative 6	Piney Run dam would be decommissioned, the reservoir drained would be removed, and creek would be established in a state similar to pre-construction of the dam.

D.7.1 Economic Framework

In general, the national economic benefits presented in this supplemental plan were developed based on guidance contained in the *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies*[2] and the *Principles, Requirements and Guidelines for Federal Investments in Water Resources.*[3]

Economic feasibility for an alternative is determined by comparing the average annual benefits to the average annual costs. If the average annual benefits for the alternative exceed the average

[2] U.S. Water Resources Council, 1983. *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies*, March.
[3] *Principles, Requirements and Guidelines for Federal Investments in Water Resources,* 2014.

annual costs, then the alternative is considered economically feasible. The economic analysis considers the No Action alternative as the baseline condition, which assumes the existing maintenance activities continue but no major changes are made to dam. The analysis is formulated from the perspective that changes/impacts resulting from implementation of any of the other alternatives (Alternatives 1, 1A, 2, and 6) in relation to the No Action alternative were measured as a cost or a benefit (i.e., a zero benefit, zero cost approach was applied to No Action alternative). Costs and benefits are reported in 2022 dollars (2022$) and were evaluated over a 103-year period of analysis (36 months of construction and 100-year evaluation period) using 2.5 percent discount rate. Inputs or assumptions provided in a year prior to 2022 were adjusted to 2022 dollars using the U.S. Gross Domestic Product (GDP) deflators.

The hydrologic and hydraulic (H&H) analysis conducted by AECOM Technical Services Inc. for each of the alternatives was used to estimate the depth of flooding throughout the study area. The economic analysis uses inundation models for five flood recurrence intervals, which are the 4-percent- (25-year), 2-percent- (50-year), 1-percent- (100-year), 0.5-percent- (200-year), and 0.2-percent- (500-year) recurrence interval flood events, to estimate future damages from flooding within the study area.

Under the No Action alternative, the dam would not be brought up to current federal standards and many of the underlying issues would remain. Therefore, there is still a chance for the dam to fail from a seismic, hydraulic, or static event. A failure due to erosion of the auxiliary spillway was estimated to be the failure mode with the highest probability of occurrence. Based on incremental modeling of spillway way erosion, the spillway was determined to have the potential to failure in a storm with an annual exceedance probability as high as 0.2 percent. Once this event occurs, it was assumed that the spillway would have a 10 percent change of eroding through the crest resulting in a failure and uncontrolled release of the reservoir. As a result, a one-time failure with a probability of 0.02[4] percent was evaluated and incorporated into the average annual damages (AAD) for the No Action alternative. The No Action alternative assumed that the existing flood conditions would continue until the dam fails.

D.7.2 Benefit Analysis

The following describe the analyses used to evaluate the benefits of the alternatives. The benefits represent damage reduction from future flooding and are evaluated in average annual terms. The benefit categories considered were:

- Residential and nonresidential structures
- Automobiles
- Debris removal
- Infrastructure
- Recreation

[4] The runoff associated with a 0.2-percent annual exceedance probability will activate the auxiliary spillway with sufficient discharge to potentially cause enough erosion for the spillway to erode through its crest causing an uncontrolled release. It was reasonably assumed that the subsequent probability of failure if this storm occurs is 10 percent. Therefore, the estimated annual probability of failure is 0.02-percent.

- Agriculture

D.7.2.1 Residential and Nonresidential Structures

Knowledge of existing development located in a floodplain is essential when evaluating a flood-risk-management alternative. An inventory was conducted of residential and nonresidential structures located in the study area, which serves as the base data for the economic analysis. The structure inventory comprises residential and nonresidential structures that are within the area of inundation associated with a failure of the dam, which is estimated to be the worst-case scenario and therefore included all structures that could be potentially impacted (however, the estimated number of structures impacted varies by flood event). Data from the Carroll and Howard Counties' assessors were obtained, cleaned, and used as the basis for the structure inventory. A total of 231 structures were identified.

The structures were assigned a building class and structure type based on the structure descriptions in the assessor's data. **Table D-3** lists the building classes, structure types, and number of structures in the inventory assigned to each class.

Table D - 3. Structure Type and Number of Structures in Inventory

Building Class	Structure Type	Number of Structures
Apartment	Residential	4
Farm Structure	Nonresidential	5
Shop	Nonresidential	4
Church	Nonresidential	2
Commercial Building	Nonresidential	70
Garage/Shed	Nonresidential	8
Industrial Building	Nonresidential	9
Firehouse	Nonresidential	1
General Storeroom	Nonresidential	1
Institutional Building	Nonresidential	9
Maintenance Building	Nonresidential	1
Municipal Building	Nonresidential	3
Nursing Home	Nonresidential	1
Outbuilding	Nonresidential	2
State Park Structure	Nonresidential	5
Pump Station	Nonresidential	2
Single Family House	Residential	78
Storage Building	Nonresidential	1
Townhouse	Residential	20
Unidentified Building	Nonresidential	5
	Total	**231**

The foundation height was subtracted from the flood depth at each structure to estimate the depth of inundation in relation the first-floor elevation (FFE). Structure types and their respective foundation heights are listed in **Table D-4**.

Table D - 4. Assumed Foundation Heights

Structure Type	Foundation Height (Feet Above Ground Level)
Nonresidential	0.5
Residential, no basement	0.5

Each structure was assigned a depth-damage function (DDF) based on the structure type that estimates an economic loss as a percentage of the value of the structure based on the building class and depth of flooding. DDFs were sourced from the U.S. Army Corps of Engineers' (USACE's) Economic Guidance Memorandum (EGM) 01-03, *Generic Depth-Damage Relationships*[5] and EGM *Generic Depth-Damage Relationships for Residential Buildings with Basements*.[6] DDFs for nonresidential buildings were sourced from FEMA's Benefit-Cost Analysis Toolkit.[7] Within each DDF are the percentage damage for the structure and its contents. Because the DDFs estimate damages at 1-foot intervals, straight-line interpolation was used to estimate damages in 0.1-foot intervals. The structure and content DDFs for the structure types are provided in **Tables D-17 through D-20**.

Data from the H&H analysis and GIS were used to estimate the depth of inundation in relation to the FFE at each structure for each recurrence interval. Using an Excel-based model developed for this analysis, the depth of inundation was correlated to the DDF to calculate the percent damage to each structure. The percent damage was then multiplied by the structure improvement value[8] to estimate the damages. Similarly, the analysis uses the depth of inundation to calculate the percent damage to contents per flood recurrence interval, which was then multiplied by the contents' value to estimate the content damages. The total damages from all of recurrence interval were annualized to estimate the average annual damages for each alternative.

Because the DDFs are estimated for stillwater flooding, the damage estimates were not appropriate for most of the flooding that would occur under the hydraulic failure scenario, where high-velocity floodwater can quickly destroy a structure. FEMA defines high velocity as conditions where the depth x velocity (DV) is greater than 200 feet^3/second^2. For the analysis, the H&H analysis was reviewed to identify conditions where the DV may be greater than 200 feet^3/second^2. If the conditions indicated there could be high-velocity floodwaters, the structure and contents were assumed to be 100 percent damaged (i.e., destroyed). The majority of the structures in the inventory were estimated to be impacted by high-velocity floodwaters during the failure scenario.

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[5] USACE, 2000. *Generic Depth-Damage Relationships*, EGM 01-00. December 4. https://planning.erdc.dren.mil/toolbox/library/EGMs/egm01-03.pdf
[6] USACE, 2003. *Generic Depth-Damage Relationships for Residential Buildings with Basements*, EGM 04-01. October 10. https://planning.erdc.dren.mil/toolbox/guidance.cfm?Option=BL&BL=OnlyInlandFlood&Type=None&Sort=Default.
[7] FEMA, 2019. *Benefit-Cost Analysis Toolkit, Version 6.0*. https://www.fema.gov/media-library/assets/documents/179903.
[8] For properties without improvement values identified in the Carroll County Assessor database, the improvement value of such a property were estimated by applying the replacement value ($/sqft) suggested by RS Means to the size of the structure.

D.7.2.2 Automobiles

The damages to automobiles were determined using the USACE EGM 09-04, *Generic Depth-Damage Relationships for Vehicles*.[9] In accordance with the guidance, the elevation of each automobile was assumed to be the mean ground elevation estimated at each structure. The damages to vehicles at residences depends on the following: the average number of vehicles per household and the percentage of vehicles that are likely to be at the residence at the time the flood waters reach the property.

In 2019, the median number of vehicles per household in the study area was 1.98. The average vehicle value was obtained from CoPilot. According to CoPilot's Return to Normal Index Report, the average retail value for used vehicles was $33,341 in calendar year 2022.

The length of potential warning time and the access to a safe evacuation route to a flood-free location were considered to estimate the percentage of vehicles that would likely remain in the flood-prone location. For the study area, the analysis assumes that the warning time would be less than 6 hours; therefore, 50.5 percent of the vehicles in the flood area would be evacuated according to USACE EGM 09-04 and 49.5 percent would remain.

Because only those vehicles not used for evacuation can be included in the damage calculations, an adjusted average vehicle value of $32,691 ($33,341 x 1.981 x 0.495) was assigned to each individual residential structure. The analysis calculated automobile damages for each flood recurrence interval. No automobiles were assigned to nonresidential structures.

D.7.2.3 Debris Removal

In some flooding events, structure owners incur costs from debris accumulation and the required costs for removal, as described in guidance from USACE.[10] Costs associated with debris removal were assumed to vary between structures with and without a basement. Due to data limitation issues, only structures with flood depths greater than the first-floor elevation were assumed to incurred debris removal costs. Debris removal costs were monetized for each structure inundated in the analysis.

Debris removal costs were estimated for structures without a basement. The debris costs include the labor to load and remove debris from site, county landfill disposal fee, and opportunity cost lost by the homeowner due to time spent cleaning and breaking down debris. FEMA has estimated 25 to 30 cubic yards of debris for a structure without a basement from a flood event.[11] Assuming 1 ton of mixed debris has a volume of 4 cubic yards, the average volume of debris for a structure without a basement is about 6.9 tons.

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[9] USACE, 2009. *Generic Depth-Damage Relationships for Vehicles*, EGM 09-04. June 22. https://planning.erdc.dren.mil/toolbox/guidance.cfm?Option=BL&BL=OnlyInlandFlood&Type=None&Sort=Default.

[10] USACE, 2018. *Souris River Basin Flood Risk Management Draft Feasibility Report With Integrated Environmental Assessment; Bottineau, McHenry, Renville Ward County, North Dakota, Appendix E: Economics*, https://www.mvp.usace.army.mil/Portals/57/docs/Civil%20Works/Flood%20Risk%20Management/Souris%20River/Appendix%20E%20Economics.pdf?ver=2018-11-19-105908-867.

[11] FEMA, 2010. Debris Estimating Field Guide, https://www.fema.gov/pdf/government/grant/pa/fema_329_debris_estimating.pdf.

Using the Homewyse Debris Removal Cost Calculator[12], labor costs to load and remove the debris from the site were estimated. To load and remove the debris, approximately 1.03 hours of labor is required for every cubic yard and the average labor cost per cubic yard is estimated to be $28 ($114 per ton) in the study area, based on the Homewyse Debris Removal Cost Calculator. The average disposal fee in the study area is $80 per ton, based on costs at county landfills, with one ton free for disposal. The total estimated debris removal cost (labor and disposal fee) per ton is $194. The debris labor removal and disposal fee per structure, for a structure without a basement is summarized in **Table D-5**.

To break down the debris for removal, it is assumed homeowners forego other activities, such as work and leisure to clean up the debris, the opportunity cost was estimated to value this time. The value of time (per person-hour) was estimated using the average 2021 median household income for the study area from the Census and updating to 2022 dollars using U.S. GDP deflator. First dividing household income by 2,080 hours to get $59 hourly wage per household, for the value of time working.[13] For leisure time, an opportunity cost of $39 per hour per household was assigned based on the common practice used in economics literature to value recreation time as fraction of hourly wage. In literature, this fraction ranges from one-third of the wage to the full wage; therefore, a fraction of two-third was conservatively used to estimate the opportunity cost of leisure. During the flood aftermath, homeowners were assumed to forego recreation time two-thirds of the time and forego work one-third of the time, for an average value of time of $46 per hour per household. This was then divided by 1.77[14] (the average working person per household) for a total of $26 per person-hour. The estimated labor time to break down debris per ton is 4.1 hours for one person. The total estimated average opportunity cost per household for structures without a basement are summarized in **Table D-5**.

Average annual debris removal costs were estimated for the alternatives. The net difference is estimated to be the flood mitigation benefits of the alternative.

Table D - 5. Debris Removal Costs per Structure

Structure Type	Average Tons of Debris	Debris Removal Labor and Disposal Costs	Owner Opportunity Cost of Time	Total Cost of Debris Removal
Structure – Without Basement	6.9	$1,300	$700	$2,000

Note: 2022 price level. Monetary values rounded to nearest hundred.

If a structure received damages above the FFE for flooding at any of the recurrence intervals, the debris cleanup costs were applied and annualized.

D.7.2.4 Infrastructure

Similar to structure flood damages, the analysis used flood depths and DDFs to calculate the percent damage to community infrastructure per flood recurrence interval and each alternative. DDFs for community infrastructure (roadways) were sourced from a 2012 USACE Report, *Development of Depth-Emergency Cost and Infrastructure Damage Relationships for Selected*

[12] Homewyse, 2020. *Cost to Remove Construction Debris*, https://www.homewyse.com/services/cost_to_remove_construction_debris.html.
[13] FEMA, 2010. Debris Estimating Field Guide, https://www.fema.gov/pdf/government/grant/pa/fema_329_debris_estimating.pdf.
[13] Homewyse, 2020. *Cost to Remove Construction Debris*, https://www.homewyse.com/services/cost_to_remove_construction_debris.html.
[14] U.S. Census Bureau – Maryland Quick Facts. Persons per household multiplied by the percentage of population in civilian work force.

South Louisiana Parishes[15]. From the report, values used for the analysis assume the following: freshwater flooding with a duration of inundation lasting 1 day. The respective DDF, varying on flood depth and infrastructure type, was multiplied by the improvement value to estimate the cost of flood damages. Average annual flood damages were estimated for each alternative. The net difference in damages between the No Action Alternative and each of the other alternatives is estimated to be the benefits of those other alternatives.

Roadway flooding events result in damages to the roadways, emergency clean-up costs, and increase travel time from traffic detours due to road closure. Travel time costs were estimated for each alternative. The net difference in costs between the No Action alternative and each of the other alternatives is estimated to be the roadway detour damage reduction benefits of those other alternatives.

Roadway Flood Damages and Costs
As described above, DDFs to estimate flood damages to roadways were sourced from a 2012 USACE report. The replacement value of roadways was multiplied by the respective DDF and the number of impacted miles, to estimate the value of roadways damages from a given flood event and project alternative. Roadway clearing costs were also considered, the total cost of clearing varies on the number of miles impacted and flood depth, values were sourced from the 2012 USACE Report and adjusted to 2022 dollars. For roadway clearing costs, costs are approximately $4,200 per flooded mile at a 2.0 feet flood depth, $53,000 per mile at a 5-foot flood depth, and $270,000 per mile at a 12-foot flood depth.

Under the alternatives, seven roadways flood: Marriottsville Road, Henrytown Road, Slacks Road, Arrington Road, Brangles Road, Marriottsville Road #2 and Sykesville Road. A replacement value of $250,000 per mile (2022 dollars) was for all roadways.

Roadway Detour – Travel Time Savings
As a results of roadway flooding, road closures occur and detours are required for vehicles, increasing travel times. Roadways that are considered in this portion of the analysis are listed in **Table D-6**. Only two of the seven roads that flood in the study area were considered for this portion, to avoid double counting vehicles.

The analysis conservatively assumes an average road closure of 1 day from flood events that result in flooding greater than 0 feet on a roadway listed in **Table D-6**. The road closure duration only considered road flooding and does not consider longer road closures from damages to the road. Time savings per detour trip avoided range between 1 and 12 minutes per vehicle. Based on U.S. DOT values, an average vehicle occupancy of 1.67 was used and the value of time of $26 per person-hours (estimated under debris removal costs) was used to estimate the value of time saved per hour of road closure avoided.

[15] USACE New Orleans District, Development of Depth-Emergency Cost and Infrastructure Damage Relationships for Selected South Louisiana Parishes, March 2012

Table D - 6. Roadways – Detours

Name	AADT (2018)	Existing Route Time (minutes)	Average Detour Route Time (minutes)	Value of Time Saved Per Day – Road Closure Avoided
Brangles Road	1,952	8	9	$846
Marriottsville Road	5,471	14	18	$9,483

D.7.2.5 Recreation

The Piney Run reservoir and its recreational amenities are a significant asset to the regional community. The existing average annual park visitors and boat users at Piney Run Park are listed in **Table D-7**, which is assumed to be the annual visitors under No Action, Alternative 1, 1A and Alternative 2. Under Alternative 6 – Federal Decommissioning, the Piney Run reservoir, a major attraction of Piney Run Park, would no longer exist, and some current recreational activities at the park would not be possible, such as fishing and boating, and the user experience would be decreased for all users. This would result in significant loss of recreational amenities to the community. Based on current park visitor trends seen by Carroll County Department of Recreation and Parks, 100 percent of boat users would no longer visit, and non-boat users would reduce by 50 percent if Alternative 6 is implemented based on discussions with park managers who are familiar with both the site and the visitors.

Table D - 7. Piney Run Park Visitors

Year	Total Visitors	Non-Boat Users	Boat Users
2019	103,367	82,694	20,673
2018	111,490	89,192	22,298
2017	118,535	94,828	23,707
2016	115,129	92,103	23,026
2015	102,619	82,095	20,524
Average Annual Visitors (No Action, Alternative 1 and Alternative 2)	110,228	88,182	22,046
Average Annual Visitors (Alternative 6)	44,091	44,091	0

Source: Carroll County Department of Recreation and Parks and AECOM

The analysis used the Unit Day Value (UDV) method to estimate recreation impacts of the alternatives. The UDV method and informed opinion were used to estimate a point value, assigned to five areas of recreation criteria, for a total point value assignment for the park, as shown in **Table D-8**. **Table D-8** includes the Park's estimated UDV values for the alternatives based on general recreation activities. Under the No Action and Alternative 1, the Park is anticipated to retain its recreational value, however Alternative 2 and Alternative 6 will result in less benefits. Alternative 2 is anticipated to have less recreational benefits than the No Action alternative and Alternative 1 from reduced aesthetic quality of the park due to potential fluctuations in reservoir levels associated with water supply withdrawals. Under Alternative 6, recreational benefits will be lost from a reduction in visitors and a reduction in the recreational quality of Piney Run Park from the loss of the reservoir. The analysis did not consider the impacts to recreation should there be a failure of the dam under the No Action alternative.

For each point value estimate, there is an associated dollar value per visitor-day, the dollars values used for the analysis are listed in **Table D-8**. Dollar values used are FY 2022 from the USACE *Economic Guidance Memorandum* (EGM) 20-03. The total recreational value of the reservoir, with the project was estimated by multiplying the number of visitors by the unit day value. Average annual recreational benefits were estimated for the alternatives. The net difference in benefits between the No Action alternative and of the other alternatives is estimated to be the recreation benefit of those other alternatives.

Table D - 8. Piney Run Park Unit Day Value Total Points

Recreation Criteria	Possible UDV Points	Alt. 0 (No Action)	Alt. 1	Alt. 1a (FWOFI)	Alt. 2	Alt. 6
Recreation Experience	**30**	**16**	**16**	**13**	**13**	**11**
Two general activities (General); Heavy use or frequent crowding or other interference with use (Specialized)	0-4					
Several general activities (General); Moderate use, other users evident and likely to interfere with use (Specialized)	5-10					
Several gen activities; one high-quality (General); Moderate use, some evidence of other users and occasional interference with use due to crowding (Specialized)	11-16	✓	✓	✓	✓	✓
Several gen activities; more than one high-quality (General); (Specialized)	17-23					
Numerous high-quality activities (General); (Specialized)	24-30					
Availability of Opportunity	**18**	**4**	**4**	**4**	**4**	**2**
Several within 1 hour; a few within 30 min	0-3					✓
Several within 1 hour; none within 30 min	4-6	✓	✓	✓	✓	
One or two within 1 hour; none within 45 min	7-10					
None within 1 hour	11-14					
None within 2 hours	15-18					
Carrying Capacity	**14**	**11**	**11**	**11**	**11**	**11**
Minimum facility for development for public health and safety	0-2					
Basic facility to conduct activity	3-5					
Adequate facilities to conduct activity without	6-8					

Recreation Criteria	Possible UDV Points	Alt. 0 (No Action)	Alt. 1	Alt. 1a (FWOFI)	Alt. 2	Alt. 6
deterioration of the resource or activity experience						
Optimum facilities to conduct activity	9-11	✓	✓	✓	✓	✓
Ultimate facilities to achieve intent of project	12-14					
Accessibility	**18**	**18**	**18**	**18**	**18**	**18**
Limited access by any means to or within site	0-3					
Fair access, poor quality roads to site; limited access within site	4-6					
Fair access, fair roads to site; good roads within site	7-10					
Good access, good roads to site; good roads within site	11-14					
Good access, high standard road to site; good access within site	15-18	✓	✓	✓	✓	✓
Environmental Quality	**20**	**10**	**10**	**3**	**5**	**3**
Low aesthetic factors that significantly lower quality	0-2					
Average aesthetic quality; minor factors lower quality	3-6			✓	✓	✓
Above average aesthetic quality; limiting factors can be rectified	7-10	✓	✓			
High aesthetic quality; no factors lower quality	11-15					
Outstanding aesthetic quality; no factors lower quality	16-20					
Total Points	**100**	**59**	**59**	**49**	**51**	**45**
Total Points (rounded per guidance)	**100**	**60**	**60**	**50**	**50**	**50**
Unit Day Value (2022$) per person-day		**$10.41**	**$10.41**	**$9.57**	**$9.57**	**$9.57**

D.7.2.6 Agriculture

There is very little agricultural land downstream of Piney Run dam that would be impacted by a flood event (except during a flood event resulting from a failure). As a result of the small amount of agricultural land and the limited impacts of the alternatives described in the previous section, agricultural land damages and benefits were not quantified for this analysis.

D.7.2.7 Benefits not Quantified

Some benefits of Alternatives 1, 1A, 2 and 6 were not quantified, most significantly is the benefit of having backup water supply provided with Alternative 2. Under Alternative 2, Piney Run reservoir will have the capabilities to support Carroll County as a water supply source, however this would only occur in an emergency situation, such as if Baltimore City was not able to supply water to Carroll County during extreme drought conditions. These benefits were not quantified due to the uncertainty of estimating when such a situation would occur and what other sources of water may be available to Carroll County.

D.7.2.7 Benefit Summary

This section summarizes the benefits analysis, which includes comparisons of the impacts to structures from the alternatives. **Table D-9** presents the number of structures flooded above the FFE for each recurrence interval. The number of structures flooded is significantly lower than the number of structures inventoried because the inventory was based on a worst-case failure scenario.

Table D - 9. Number of Structures Flooded Above the First Floor Elevation (FFE)

Recurrence Interval		Alternative 0 (No Action)	Alternative 1	Alternative 1A	Alternative 2	Alternative 6
4%	25-Year	0	0	0	1	8
2%	50-Year	0	0	0	1	10
1%	100-Year	0	0	0	1	10
0.5%	200-Year	4	4	4	7	13
0.2%	500-Year	5	5	5	8	16
0.02%	Spillway Failure	186	N/A	N/A	N/A	N/A

Structure-related benefits include damage reductions to structures, contents, automobiles, and debris removal. A summary of damages for all alternatives by recurrence interval is provided in **Table D-10**. The damages for the No Action consider those related to the existing dam until a failure occurs, therefore the damage estimates for the recurrence intervals are similar to those of the other alternatives, while the damage for the hydraulic event are the estimated damages of the failure scenario.

Table D – 10. Summary of Damages by Recurrence Interval (2022$)

Recurrence Interval		Building	Contents	Auto	Debris Removal	Infrastructure	Total Damages
Alternative 0 (No Action*/FWOP)							
4%	25-year	$0	$0	$0	$0	$76,000	$76,000
2%	50-year	$0	$0	$0	$0	$103,000	$103,000
1%	100-year	$0	$0	$0	$0	$137,000	$137,000
0.5%	200-year	$106,000	$59,000	$42,000	$8,000	$247,000	$462,000
0.2%	500-year	$196,000	$109,000	$84,000	$10,000	$378,000	$777,000
0.02%	Spillway Failure	$71,361,000	$56,622,000	$2,177,000	$468,000	$21,097,000	$151,725,000
Alternative 1							
4%	25-year	$0	$0	$0	$0	$76,000	$76,000
2%	50-year	$0	$0	$0	$0	$103,000	$103,000
1%	100-year	$0	$0	$0	$0	$137,000	$137,000
0.5%	200-year	$106,000	$59,000	$42,000	$8,000	$247,000	$462,000
0.2%	500-year	$196,000	$109,000	$84,000	$10,000	$378,000	$777,000
Alternative 1a (FWOFI)							
4%	25-year	$0	$0	$0	$0	$76,000	$76,000
2%	50-year	$0	$0	$0	$0	$103,000	$103,000
1%	100-year	$0	$0	$0	$0	$137,000	$137,000
0.5%	200-year	$106,000	$59,000	$42,000	$8,000	$247,000	$462,000
0.2%	500-year	$196,000	$109,000	$84,000	$10,000	$378,000	$777,000
Alternative 2							
4%	25-year	$7,000	$4,000	$0	$2,000	$76,000	$90,000
2%	50-year	$12,000	$8,000	$0	$2,000	$103,000	$125,000
1%	100-year	$17,000	$10,000	$0	$2,000	$137,000	$166,000
0.5%	200-year	$136,000	$77,000	$42,000	$14,000	$247,000	$516,000
0.2%	500-year	$234,000	$130,000	$87,000	$16,000	$383,000	$850,000
Alternative 6							
4%	25-year	$170,000	$98,000	$82,000	$16,000	$456,000	$822,000
2%	50-year	$317,000	$181,000	$115,000	$20,000	$571,000	$1,204,000
1%	100-year	$320,000	$184,000	$127,000	$20,000	$747,000	$1,398,000
0.5%	200-year	$457,000	$267,000	$159,000	$26,000	$684,000	$1,593,000
0.2%	500-year	$634,000	$364,000	$195,000	$32,000	$765,000	$1,990,000

*Note: This alternative assumes that no action would be taken and that the existing condition would remain until the time in which a failure occurs.

The average annual damages were estimated for each alternative. To estimate the average annual damages associated with each alternative, the total damages were averaged between each recurrence interval and applied to the incremental probability between the respective flood events and the values summed (i.e., integrated under the curve). Annual flood damages for the Alternative 0 (No Action) and Alternative 1, and Alternative 1A would be the same (not including the impacts of a failure), while Alternative 2 would see slightly more downstream damages because of changes to the principal spillway. Alternative 6 would have the greatest damages because the dam would be removed, and the existing flood protection provided by the dam would not be available.

To estimate the total average annual damages associated with the failure under Alternative 0 (No Action), the total damages for the event were applied a probability of occurrence of 0.02 percent, resulting in an annual average damage estimate of $30,000 which was added to the average annual damages with the dam in place.

The average annual damage reduction benefit for Alternatives 1, 1A, 2 and 6 were estimated by comparing the damages that would occur under each of the alternatives with those that would occur under Alternative 0 (No Action – the existing annual damages plus those from a failure). **Table D-11** summarizes the estimated annual damages for each alternative and the damage reduction benefit of Alternatives 1, 1A, 2, and 6 in relation to Alternative 0 (No Action).

Table D - 11. Annual Damage Reduction Benefit

Alternative	Average Annual Damages	Annual Damage Reduction Benefit
Alternative 0 (No Action)	$43,000	NA
Alternative 1	$13,000	$30,000
Alternative 1A	$13,000	$30,000
Alternative 2	$14,000	$29,000
Alternative 6	$172,000	($128,000)

The recreation analysis evaluated the recreational value at Piney Run Park for each of the alternatives. **Table D-12** summarizes the recreation values associated with each alternative and the benefit of Alternatives 1, 1A, 2, and 6 in relation to Alternative 0 (No Action).

Table D - 12. Annual Recreation Impacts

Alternative	Annual Recreation Value	Average Annual Recreation Benefit
Alternative 0 (No Action)	$1,147,000	NA
Alternative 1	$1,147,000	$0
Alternative 1A	$974,000	($173,000)
Alternative 2	$1,055,000	($92,000)
Alternative 6	$422,000	($725,000)

A summary of total average annual benefits is provided in **Table D-13**.

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Table D - 13. Summary of Average Annual Damages Avoided (2022$)

Alternative	Annual Damage Reduction Benefit	Average Annual Recreation Benefit	Total Average Annual Benefits
Alternative 1	$30,000	$0	$30,000
Alternative 1a	$30,000	($173,000)	($143,000)
Alternative 2	$29,000	($92,000)	($63,000)
Alternative 6	($128,000)	($725,000)	($853,000)

D.7.3 Cost Analysis

The average annual operation and maintenance (O&M) costs for each alternative were estimated. The net O&M costs for each Alternatives 1, 1A, 2, and 6 is the difference between the cost for that alternative and Alternative 0 (No Action). (**Table D-14**).

Table D - 14. Average Annual O&M Costs

Alternative	Annual O&M Costs	Net Annual O&M Costs
Alternative 0 (No Action)	$22,000	NA
Alternative 1	$22,000	$0
Alternative 1A	$22,000	$0
Alternative 2	$62,000	$40,000
Alternative 6	$0	($22,000)

The average annual costs associated with the alternatives and O&M costs of implementation for the alternatives are summarized in **Table D-15**. The marginal on-site capital cost difference between Alternative 1 and Alternative 2 is approximately $13.7 million. Under Alternative 2 additional costs would be incurred off-site to complete the pipeline extension and for modifications at the water treatment plant. The additional off-site costs (which are not included in the construction costs in **Table D-15**) would be approximately $40 million based on estimates by Carroll County Department of Public Works.

Table D - 15. Design and Construction Cost of Alternative Implementation (2022$)

Alternative	Construction Costs	Average Annual Construction Costs	Net Annual O&M Costs	Average Annual Costs
Alternative 1	$11,300,000	$313,000	$0	$313,000
Alternative 1a	$11,300,000	$250,000	$0	$250,000
Alternative 2	$25,000,000	$691,000	$40,000	$731,000
Alternative 6	$27,200,000	$752,000	($22,000)	$730,000

Note: 2022 price level, 103-year period of analysis, and 2.5% discount rate. Interest during construction is included in the Average Annual Construction Costs.

D.7.4 Results of the Economic Analysis

Benefits and costs over the period of analysis were annualized to allow for a direct comparison of average annual benefits to average annual costs. The benefits and costs were evaluated using a price level of 2022 dollars, a discount rate of 2.5 percent, and a 103-year period of analysis. **Table D-16** summarizes the analysis results.

Table D - 16. Benefit-Cost Analysis Summary (2022$)

Category	Alternative 1	Alternative 1A	Alternative 2	Alternative 6
Average Annual Costs	$313,000	$250,000	$731,000	$730,000
Average Annual Benefits	$30,000	($143,000)	($63,000)	($853,000)
Average Annual Net Benefits	($283,000)	($393,000)	($794,000)	($1,583,000)
Benefit-Cost Ratio (BCR)	0.1	(0.6)	(0.1)	(1.2)

Notes: 2022 price level, 103-year period of analysis, and 2.5% discount rate. All $ values rounded to the nearest thousand.

Table D - 17. Depth-Damage Function – Residential Building

Depth Inundation (feet)	Slab	Residential-NB	Residential-2NB	Split Level-NB	Residential-2B	Mobile Home	Auto
-2.00	0%	0%	0%	0%	10%	0%	0%
-1.90	0%	0%	0%	1%	10%	0%	0%
-1.80	0%	1%	1%	1%	11%	0%	0%
-1.70	0%	1%	1%	2%	11%	0%	0%
-1.60	0%	1%	1%	2%	12%	0%	0%
-1.50	0%	2%	2%	3%	12%	0%	0%
-1.40	0%	2%	2%	4%	12%	0%	0%
-1.30	0%	2%	2%	4%	13%	0%	0%
-1.20	0%	2%	2%	5%	13%	0%	0%
-1.10	0%	3%	3%	5%	14%	0%	0%
-1.00	0%	3%	3%	6%	14%	0%	0%
-0.90	1%	4%	4%	6%	14%	1%	0%
-0.80	2%	5%	4%	6%	15%	2%	0%
-0.70	4%	6%	5%	6%	15%	2%	0%
-0.60	5%	7%	5%	6%	16%	3%	0%
-0.50	6%	8%	6%	7%	16%	4%	0%
-0.40	7%	9%	7%	7%	16%	5%	0%
-0.30	8%	10%	7%	7%	17%	6%	0%
-0.20	10%	11%	8%	7%	17%	6%	0%
-0.10	11%	12%	8%	7%	18%	7%	0%
0.00	12%	13%	9%	7%	18%	8%	0%
0.10	13%	14%	10%	7%	18%	12%	1%
0.20	15%	15%	10%	7%	19%	15%	3%
0.30	16%	16%	11%	8%	19%	19%	4%
0.40	17%	17%	11%	8%	20%	22%	6%
0.50	19%	18%	12%	8%	20%	26%	7%
0.60	20%	19%	13%	8%	21%	30%	11%
0.70	21%	20%	13%	9%	21%	33%	15%
0.80	22%	21%	14%	9%	21%	37%	20%
0.90	24%	22%	15%	9%	22%	40%	24%
1.00	25%	23%	15%	9%	22%	44%	28%
1.10	28%	24%	16%	10%	23%	46%	30%
1.20	30%	25%	16%	10%	23%	48%	32%
1.30	33%	26%	17%	10%	24%	50%	33%
1.40	35%	27%	17%	11%	24%	52%	35%
1.50	38%	28%	18%	11%	25%	54%	37%
1.60	40%	29%	19%	12%	25%	55%	39%
1.70	43%	29%	19%	12%	26%	57%	41%
1.80	45%	30%	20%	12%	26%	59%	42%
1.90	48%	31%	20%	13%	27%	61%	44%
2.00	50%	32%	21%	13%	27%	63%	46%
2.10	53%	33%	21%	13%	27%	64%	48%
2.20	55%	34%	22%	14%	28%	65%	49%
2.30	58%	35%	23%	14%	28%	66%	51%
2.40	60%	35%	23%	15%	29%	67%	52%
2.50	63%	36%	24%	15%	29%	68%	54%
2.60	65%	37%	24%	16%	30%	69%	56%

Depth Inundation (feet)	Slab	Residential-NB	Residential-2NB	Split Level-NB	Residential-2B	Mobile Home	Auto
2.70	68%	38%	25%	16%	30%	70%	57%
2.80	70%	39%	25%	17%	31%	71%	59%
2.90	73%	39%	26%	17%	31%	72%	60%
3.00	75%	40%	26%	17%	32%	73%	62%
3.10	78%	41%	27%	18%	32%	74%	63%
3.20	80%	42%	27%	18%	33%	74%	65%
3.30	83%	42%	28%	19%	33%	75%	66%
3.40	85%	43%	28%	20%	34%	75%	68%
3.50	88%	44%	29%	20%	34%	76%	69%
3.60	90%	44%	29%	21%	35%	76%	70%
3.70	93%	45%	30%	21%	35%	77%	72%
3.80	95%	46%	30%	22%	36%	77%	73%
3.90	98%	46%	31%	22%	36%	78%	75%
4.00	100%	47%	31%	23%	37%	78%	76%
4.10	100%	48%	32%	23%	37%	78%	77%
4.20	100%	48%	32%	24%	38%	78%	78%
4.30	100%	49%	33%	25%	38%	79%	79%
4.40	100%	50%	33%	25%	39%	79%	80%
4.50	100%	50%	34%	26%	39%	79%	82%
4.60	100%	51%	34%	26%	40%	79%	83%
4.70	100%	51%	35%	27%	40%	79%	84%
4.80	100%	52%	35%	28%	41%	80%	85%
4.90	100%	53%	36%	28%	41%	80%	86%
5.00	100%	53%	36%	29%	42%	80%	87%
5.10	100%	54%	37%	30%	42%	80%	88%
5.20	100%	54%	37%	30%	43%	80%	89%
5.30	100%	55%	38%	31%	43%	80%	90%
5.40	100%	55%	38%	32%	44%	80%	91%
5.50	100%	56%	38%	32%	44%	81%	92%
5.60	100%	56%	39%	33%	45%	81%	93%
5.70	100%	57%	39%	34%	45%	81%	94%
5.80	100%	58%	40%	34%	46%	81%	95%
5.90	100%	58%	40%	35%	46%	81%	96%
6.00	100%	59%	41%	36%	47%	81%	97%

Table D - 18. Depth-Damage Function – Commercial Building

Depth Inundation (feet)	Retail-Furniture	Retail-Electronics	Retail-Clothing	Hotel	Fast Food	Non-Fast Food	Hospital	Medical Office	Protective Services	Correctional Facility	Recreation	Religious Facilities	Schools	Service Station	Office One-Story	Convenience Store	Grocery	Apartment	Industrial Light	Warehouse, Refrig	Warehouse - Non-Refrigerated	Government	Vacant
-2.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.90	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.80	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.70	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.50	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.40	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.30	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.20	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.90	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.80	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.70	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.50	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.40	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.30	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.20	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
0.00	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
0.10	1%	1%	1%	1%	2%	2%	1%	1%	1%	1%	1%	2%	1%	1%	1%	2%	1%	1%	1%	1%	1%	0%	0%
0.20	2%	2%	2%	2%	3%	4%	3%	2%	2%	2%	3%	3%	3%	2%	3%	3%	2%	2%	2%	2%	2%	0%	0%
0.30	3%	4%	4%	3%	5%	6%	4%	4%	3%	3%	4%	5%	4%	3%	4%	5%	3%	4%	3%	4%	3%	0%	0%
0.40	4%	5%	5%	4%	6%	7%	5%	5%	4%	4%	5%	6%	5%	4%	5%	6%	4%	5%	4%	5%	4%	0%	0%
0.50	6%	6%	6%	5%	8%	9%	7%	6%	5%	5%	6%	8%	7%	5%	6%	8%	5%	6%	6%	6%	5%	0%	0%
0.60	7%	7%	7%	7%	9%	11%	8%	7%	6%	6%	8%	9%	8%	6%	8%	9%	6%	7%	7%	7%	7%	0%	0%
0.70	8%	8%	9%	8%	11%	13%	10%	9%	7%	7%	9%	11%	10%	7%	9%	11%	8%	8%	8%	9%	8%	0%	0%
0.80	9%	10%	10%	9%	12%	15%	11%	10%	8%	8%	10%	12%	11%	8%	10%	12%	9%	9%	9%	10%	9%	0%	0%

Depth Inundation (feet)	Retail-Furniture	Retail-Electronics	Retail-Clothing	Hotel	Fast Food	Non-Fast Food	Hospital	Medical Office	Protective Services	Correctional Facility	Recreation	Religious Facilities	Schools	Service Station	Office One-Story	Convenience Store	Grocery	Apartment	Industrial Light	Warehouse, Refrig	Warehouse - Non-Refrigerated	Government	Vacant
0.90	10%	11%	11%	10%	14%	17%	12%	11%	9%	9%	11%	14%	12%	9%	12%	14%	10%	11%	10%	11%	10%	0%	0%
1.00	11%	12%	12%	11%	15%	19%	14%	12%	10%	11%	13%	16%	14%	10%	13%	15%	11%	12%	11%	12%	11%	0%	0%
1.10	12%	13%	13%	12%	16%	20%	15%	13%	10%	11%	14%	17%	15%	11%	13%	16%	12%	12%	12%	13%	12%	0%	0%
1.20	12%	13%	14%	12%	18%	21%	16%	14%	11%	12%	15%	18%	15%	12%	14%	17%	12%	13%	13%	14%	12%	0%	0%
1.30	13%	14%	14%	13%	19%	22%	17%	15%	12%	13%	15%	19%	16%	12%	15%	18%	13%	14%	13%	15%	13%	0%	0%
1.40	14%	15%	15%	13%	20%	23%	18%	15%	12%	14%	16%	20%	17%	13%	15%	18%	14%	15%	14%	15%	14%	0%	0%
1.50	14%	15%	16%	14%	21%	25%	19%	16%	13%	15%	17%	21%	18%	14%	16%	19%	14%	15%	15%	16%	15%	0%	0%
1.60	15%	16%	16%	14%	22%	26%	20%	17%	14%	16%	18%	22%	19%	14%	16%	20%	15%	16%	15%	17%	15%	0%	0%
1.70	15%	17%	17%	15%	24%	27%	21%	18%	14%	17%	19%	23%	20%	15%	17%	21%	16%	17%	16%	18%	16%	0%	0%
1.80	16%	17%	18%	16%	25%	28%	22%	18%	15%	18%	20%	24%	21%	15%	17%	22%	17%	17%	17%	19%	17%	0%	0%
1.90	17%	18%	18%	16%	26%	30%	23%	19%	15%	18%	21%	25%	22%	16%	18%	23%	17%	18%	18%	19%	18%	0%	0%
2.00	17%	19%	19%	17%	27%	31%	24%	20%	16%	19%	22%	27%	23%	17%	18%	24%	18%	19%	18%	20%	18%	0%	0%
2.10	18%	19%	19%	17%	28%	32%	25%	21%	16%	20%	23%	27%	23%	17%	19%	24%	19%	19%	19%	21%	19%	0%	0%
2.20	18%	20%	20%	18%	29%	32%	26%	21%	17%	20%	23%	28%	24%	18%	20%	25%	19%	20%	19%	21%	19%	0%	0%
2.30	19%	20%	20%	18%	30%	33%	27%	22%	17%	21%	24%	29%	24%	18%	20%	26%	20%	20%	20%	22%	20%	0%	0%
2.40	19%	21%	21%	19%	30%	34%	28%	22%	18%	21%	25%	29%	25%	18%	21%	27%	20%	21%	20%	23%	20%	0%	0%
2.50	20%	21%	21%	19%	31%	35%	28%	23%	18%	22%	25%	30%	26%	19%	21%	28%	21%	21%	21%	23%	21%	0%	0%
2.60	21%	22%	22%	20%	32%	35%	29%	24%	18%	22%	26%	31%	26%	19%	22%	28%	21%	22%	21%	24%	21%	0%	0%
2.70	21%	23%	22%	20%	33%	36%	30%	24%	19%	22%	27%	31%	27%	20%	22%	29%	22%	22%	22%	25%	22%	0%	0%
2.80	22%	23%	23%	21%	33%	37%	31%	25%	19%	23%	27%	32%	27%	20%	23%	30%	22%	23%	22%	25%	22%	0%	0%
2.90	22%	24%	23%	21%	34%	38%	32%	26%	20%	23%	28%	33%	28%	21%	23%	31%	23%	23%	23%	26%	22%	0%	0%
3.00	23%	24%	24%	22%	35%	39%	33%	26%	20%	24%	29%	33%	28%	21%	24%	31%	23%	24%	23%	27%	23%	0%	0%
3.10	23%	25%	25%	22%	36%	39%	34%	27%	21%	25%	29%	34%	29%	22%	24%	32%	24%	24%	24%	27%	23%	0%	0%
3.20	24%	25%	25%	23%	37%	40%	35%	28%	21%	26%	30%	35%	30%	22%	25%	33%	25%	25%	24%	28%	24%	0%	0%
3.30	25%	26%	26%	23%	38%	41%	36%	29%	22%	26%	31%	35%	30%	23%	25%	34%	25%	25%	25%	29%	25%	0%	0%
3.40	25%	27%	26%	23%	39%	42%	37%	30%	22%	27%	31%	36%	31%	23%	26%	34%	26%	26%	25%	30%	25%	0%	0%
3.50	26%	27%	27%	24%	40%	43%	38%	31%	23%	28%	32%	37%	32%	24%	26%	35%	27%	26%	26%	30%	26%	0%	0%
3.60	27%	28%	28%	24%	41%	44%	39%	31%	23%	29%	33%	37%	32%	25%	27%	36%	27%	27%	27%	31%	26%	0%	0%
3.70	27%	28%	28%	25%	42%	44%	40%	32%	24%	30%	33%	38%	33%	25%	27%	37%	28%	27%	27%	32%	27%	0%	0%
3.80	28%	29%	29%	25%	43%	45%	41%	33%	24%	31%	34%	39%	34%	26%	28%	37%	29%	28%	28%	32%	27%	0%	0%

Depth Inundation (feet)	Retail-Furniture	Retail-Electronics	Retail-Clothing	Hotel	Fast Food	Non-Fast Food	Hospital	Medical Office	Protective Services	Correctional Facility	Recreation	Religious Facilities	Schools	Service Station	Office One-Story	Convenience Store	Grocery	Apartment	Industrial Light	Warehouse, Refrig	Warehouse - Non-Refrigerated	Government	Vacant
3.90	28%	29%	29%	26%	44%	46%	42%	34%	25%	32%	35%	39%	34%	26%	28%	38%	29%	28%	28%	33%	28%	0%	0%
4.00	29%	30%	30%	26%	44%	47%	43%	35%	25%	33%	35%	40%	35%	27%	29%	39%	30%	29%	29%	34%	28%	0%	0%
4.10	29%	30%	30%	27%	45%	48%	44%	35%	26%	33%	36%	41%	35%	27%	29%	39%	30%	29%	29%	34%	29%	0%	0%
4.20	30%	31%	31%	27%	46%	48%	44%	36%	26%	33%	36%	41%	35%	27%	29%	39%	30%	29%	29%	35%	29%	0%	0%
4.30	30%	31%	31%	27%	46%	49%	45%	36%	27%	33%	37%	42%	36%	28%	30%	40%	31%	30%	30%	35%	30%	0%	0%
4.40	31%	32%	32%	28%	47%	50%	46%	37%	27%	34%	37%	42%	36%	28%	30%	40%	31%	30%	30%	35%	30%	0%	0%
4.50	31%	32%	32%	28%	47%	50%	46%	37%	28%	34%	37%	43%	36%	28%	30%	41%	31%	30%	30%	36%	30%	0%	0%
4.60	31%	32%	32%	28%	48%	51%	47%	37%	28%	34%	38%	43%	37%	29%	31%	41%	32%	31%	31%	36%	31%	0%	0%
4.70	32%	33%	33%	29%	48%	52%	48%	38%	29%	35%	38%	44%	37%	29%	31%	41%	32%	31%	31%	37%	31%	0%	0%
4.80	32%	33%	33%	29%	49%	52%	48%	38%	29%	35%	39%	45%	37%	29%	31%	42%	32%	31%	32%	37%	31%	0%	0%
4.90	32%	34%	34%	29%	49%	53%	49%	39%	30%	35%	39%	45%	38%	30%	32%	42%	33%	31%	32%	37%	32%	0%	0%
5.00	33%	34%	34%	30%	50%	54%	50%	39%	30%	35%	39%	46%	38%	30%	32%	43%	33%	32%	32%	38%	32%	0%	0%
5.10	33%	34%	34%	30%	50%	54%	51%	40%	30%	36%	40%	46%	38%	30%	33%	43%	33%	32%	33%	38%	32%	0%	0%
5.20	33%	35%	35%	30%	51%	55%	52%	41%	31%	37%	40%	47%	39%	31%	33%	44%	34%	32%	33%	39%	33%	0%	0%
5.30	34%	35%	35%	31%	51%	56%	53%	42%	31%	37%	41%	47%	39%	31%	33%	44%	34%	33%	34%	39%	33%	0%	0%
5.40	34%	35%	35%	31%	52%	57%	54%	43%	31%	38%	41%	48%	39%	32%	34%	45%	35%	33%	34%	40%	34%	0%	0%
5.50	35%	36%	36%	31%	52%	57%	55%	44%	31%	39%	42%	48%	40%	32%	34%	45%	35%	33%	35%	40%	34%	0%	0%
5.60	35%	36%	36%	31%	53%	58%	56%	45%	32%	39%	42%	49%	40%	32%	35%	46%	36%	33%	35%	41%	34%	0%	0%
5.70	35%	36%	37%	32%	53%	59%	57%	46%	32%	40%	43%	49%	41%	33%	35%	46%	36%	34%	35%	41%	35%	0%	0%
5.80	36%	36%	37%	32%	54%	59%	58%	47%	32%	40%	43%	50%	41%	33%	36%	47%	37%	34%	36%	42%	35%	0%	0%
5.90	36%	37%	37%	32%	55%	60%	59%	48%	32%	41%	44%	50%	41%	33%	36%	47%	37%	34%	36%	43%	36%	0%	0%
6.00	36%	37%	38%	33%	55%	61%	60%	49%	33%	42%	44%	51%	42%	34%	37%	48%	38%	35%	37%	43%	36%	0%	0%

Table D - 19. Depth-Damage Function – Residential Contents

Depth Inundation (feet)	Slab	Residential-NB	Residential-2NB	Split Level-NB	Residential-2B	Mobile Home
-2.0	0%	0%	0%	0%	8%	0%
-1.9	0%	0%	0%	0%	8%	0%
-1.8	0%	0%	0%	0%	8%	0%
-1.7	0%	1%	0%	1%	9%	0%
-1.6	0%	1%	0%	1%	9%	0%
-1.5	0%	1%	1%	1%	9%	0%
-1.4	0%	1%	1%	1%	9%	0%
-1.3	0%	2%	1%	2%	9%	0%
-1.2	0%	2%	1%	2%	10%	0%
-1.1	0%	2%	1%	2%	10%	0%
-1.0	0%	2%	1%	2%	10%	0%
-0.9	1%	3%	1%	2%	10%	1%
-0.8	2%	4%	2%	2%	10%	2%
-0.7	3%	4%	2%	2%	11%	4%
-0.6	4%	5%	3%	2%	11%	5%
-0.5	5%	5%	3%	3%	11%	6%
-0.4	6%	6%	3%	3%	11%	7%
-0.3	7%	6%	4%	3%	11%	8%
-0.2	8%	7%	4%	3%	12%	10%
-0.1	9%	8%	5%	3%	12%	11%
0.0	10%	8%	5%	3%	12%	12%
0.1	12%	9%	5%	3%	12%	17%
0.2	14%	9%	6%	3%	12%	23%
0.3	16%	10%	6%	3%	12%	28%
0.4	18%	10%	6%	4%	13%	34%
0.5	20%	11%	7%	4%	13%	39%
0.6	22%	11%	7%	4%	13%	44%
0.7	24%	12%	8%	4%	13%	50%
0.8	26%	12%	8%	4%	13%	55%
0.9	28%	13%	8%	5%	14%	61%
1.0	30%	13%	9%	5%	14%	66%
1.1	32%	14%	9%	5%	14%	68%
1.2	33%	14%	9%	5%	14%	71%
1.3	35%	15%	10%	6%	14%	73%
1.4	36%	15%	10%	6%	15%	76%
1.5	38%	16%	10%	6%	15%	78%
1.6	39%	16%	11%	6%	15%	80%
1.7	41%	17%	11%	7%	15%	83%
1.8	42%	17%	12%	7%	15%	85%
1.9	44%	17%	12%	7%	16%	88%
2.0	45%	18%	12%	8%	16%	90%
2.1	48%	18%	13%	8%	16%	90%
2.2	51%	19%	13%	8%	16%	90%
2.3	54%	19%	13%	9%	16%	90%
2.4	57%	20%	14%	9%	17%	90%
2.5	60%	20%	14%	9%	17%	90%
2.6	63%	20%	14%	10%	17%	90%
2.7	66%	21%	15%	10%	17%	90%
2.8	69%	21%	15%	10%	17%	90%
2.9	72%	22%	15%	11%	18%	90%

Depth Inundation (feet)	Slab	Residential-NB	Residential-2NB	Split Level-NB	Residential-2B	Mobile Home
3.0	75%	22%	16%	11%	18%	90%
3.1	78%	22%	16%	12%	18%	90%
3.2	80%	23%	16%	12%	18%	90%
3.3	83%	23%	16%	12%	18%	90%
3.4	85%	23%	17%	13%	19%	90%
3.5	88%	24%	17%	13%	19%	90%
3.6	90%	24%	17%	14%	19%	90%
3.7	93%	25%	18%	14%	19%	90%
3.8	95%	25%	18%	14%	19%	90%
3.9	98%	25%	18%	15%	20%	90%
4.0	100%	26%	19%	15%	20%	90%
4.1	100%	26%	19%	16%	20%	90%
4.2	100%	26%	19%	16%	20%	90%
4.3	100%	27%	19%	17%	20%	90%
4.4	100%	27%	20%	17%	21%	90%
4.5	100%	27%	20%	18%	21%	90%
4.6	100%	28%	20%	18%	21%	90%
4.7	100%	28%	20%	19%	21%	90%
4.8	100%	28%	21%	19%	22%	90%
4.9	100%	28%	21%	20%	22%	90%
5.0	100%	29%	21%	20%	22%	90%
5.1	100%	29%	22%	21%	22%	90%
5.2	100%	29%	22%	21%	22%	90%
5.3	100%	30%	22%	22%	23%	90%
5.4	100%	30%	22%	22%	23%	90%
5.5	100%	30%	23%	23%	23%	90%
5.6	100%	30%	23%	23%	23%	90%
5.7	100%	31%	23%	24%	24%	90%
5.8	100%	31%	23%	24%	24%	90%
5.9	100%	31%	24%	25%	24%	90%
6.0	100%	32%	24%	25%	24%	90%

Table D - 20. Depth-Damage Function – Commercial Contents

Depth Inundation (feet)	Retail-Furniture	Retail-Electronics	Retail-Clothing	Hotel	Fast Food	Non-Fast Food	Hospital	Medical Office	Protective Services	Correctional Facility	Recreation	Religious Facilities	Schools	Service Station	Office One-Story	Convenience Store	Grocery	Apartment	Industrial Light	Warehouse, Refrig	Warehouse - Non-Refrigerated	Government	Vacant
-2.0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.6	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-1.0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.6	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
-0.1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
0.0	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
0.1	5%	2%	3%	2%	2%	3%	1%	1%	1%	1%	3%	3%	2%	2%	2%	2%	3%	2%	2%	3%	2%	0%	0%
0.2	9%	5%	6%	3%	4%	6%	3%	3%	3%	3%	5%	6%	4%	3%	4%	5%	6%	4%	4%	6%	4%	0%	0%
0.3	14%	7%	9%	5%	6%	8%	4%	4%	4%	4%	8%	9%	7%	5%	6%	7%	9%	7%	6%	9%	6%	0%	0%
0.4	19%	9%	12%	6%	9%	11%	6%	6%	6%	5%	10%	12%	9%	7%	8%	9%	12%	9%	8%	12%	8%	0%	0%
0.5	23%	12%	15%	8%	11%	14%	7%	7%	7%	7%	13%	15%	11%	8%	10%	12%	15%	11%	10%	15%	10%	0%	0%
0.6	28%	14%	17%	10%	13%	17%	9%	9%	9%	8%	15%	18%	13%	10%	12%	14%	18%	13%	12%	18%	12%	0%	0%
0.7	33%	16%	20%	11%	15%	19%	10%	10%	10%	9%	18%	21%	15%	12%	14%	16%	22%	15%	14%	21%	15%	0%	0%
0.8	37%	18%	23%	13%	17%	22%	12%	11%	11%	11%	21%	23%	17%	13%	16%	19%	25%	17%	15%	24%	17%	0%	0%

Depth Inundation (feet)	Retail-Furniture	Retail-Electronics	Retail-Clothing	Hotel	Fast Food	Non-Fast Food	Hospital	Medical Office	Protective Services	Correctional Facility	Recreation	Religious Facilities	Schools	Service Station	Office One-Story	Convenience Store	Grocery	Apartment	Industrial Light	Warehouse, Refrig	Warehouse - Non-Refrigerated	Government	Vacant
0.9	42%	21%	26%	15%	19%	25%	13%	13%	13%	12%	23%	26%	20%	15%	18%	21%	28%	20%	17%	27%	19%	0%	0%
1.0	47%	23%	29%	16%	21%	28%	15%	14%	14%	13%	26%	29%	22%	16%	20%	23%	31%	22%	19%	30%	21%	0%	0%
1.1	48%	24%	31%	17%	23%	30%	16%	16%	15%	14%	28%	31%	23%	18%	21%	25%	32%	23%	20%	32%	22%	0%	0%
1.2	50%	25%	32%	18%	25%	32%	17%	17%	16%	15%	29%	33%	23%	19%	23%	26%	33%	23%	22%	33%	23%	0%	0%
1.3	51%	26%	34%	19%	26%	34%	18%	18%	17%	16%	31%	35%	24%	20%	24%	28%	34%	24%	23%	35%	25%	0%	0%
1.4	53%	27%	36%	20%	28%	36%	20%	19%	18%	16%	33%	37%	25%	21%	26%	30%	35%	25%	24%	37%	26%	0%	0%
1.5	54%	29%	38%	21%	30%	38%	21%	21%	20%	17%	35%	39%	26%	23%	27%	32%	36%	26%	25%	39%	27%	0%	0%
1.6	56%	30%	39%	22%	32%	40%	22%	22%	21%	18%	37%	41%	27%	24%	29%	33%	37%	27%	26%	41%	29%	0%	0%
1.7	57%	31%	41%	23%	33%	43%	23%	23%	22%	19%	38%	43%	28%	25%	30%	35%	38%	28%	27%	43%	30%	0%	0%
1.8	59%	32%	43%	24%	35%	45%	25%	24%	23%	20%	40%	45%	29%	26%	31%	37%	39%	29%	29%	44%	31%	0%	0%
1.9	60%	33%	45%	25%	37%	47%	26%	26%	24%	20%	42%	47%	30%	28%	33%	38%	40%	30%	30%	46%	32%	0%	0%
2.0	62%	34%	46%	26%	39%	49%	27%	27%	25%	21%	44%	48%	30%	29%	34%	40%	41%	30%	31%	48%	34%	0%	0%
2.1	62%	35%	47%	27%	40%	50%	28%	28%	26%	22%	46%	50%	31%	30%	35%	41%	42%	31%	32%	49%	35%	0%	0%
2.2	63%	36%	48%	28%	41%	51%	29%	30%	27%	23%	48%	51%	32%	31%	37%	42%	43%	32%	33%	50%	36%	0%	0%
2.3	64%	37%	49%	29%	43%	51%	30%	31%	28%	24%	49%	52%	33%	33%	38%	44%	45%	33%	34%	51%	38%	0%	0%
2.4	64%	38%	50%	29%	44%	52%	31%	32%	30%	25%	51%	53%	34%	34%	39%	45%	46%	34%	36%	52%	39%	0%	0%
2.5	65%	39%	51%	30%	46%	53%	32%	34%	31%	26%	53%	54%	35%	35%	40%	46%	47%	35%	37%	54%	41%	0%	0%
2.6	66%	40%	52%	31%	47%	54%	33%	35%	32%	27%	55%	55%	36%	36%	41%	48%	48%	36%	38%	55%	42%	0%	0%
2.7	66%	41%	53%	32%	48%	55%	34%	36%	33%	28%	57%	57%	36%	37%	42%	49%	49%	36%	39%	56%	43%	0%	0%
2.8	67%	42%	54%	33%	50%	56%	35%	38%	34%	29%	59%	58%	37%	38%	43%	50%	50%	37%	40%	57%	45%	0%	0%
2.9	68%	43%	55%	33%	51%	56%	36%	39%	36%	30%	61%	59%	38%	40%	44%	52%	52%	38%	41%	58%	46%	0%	0%
3.0	68%	44%	55%	34%	53%	57%	37%	40%	37%	31%	63%	60%	39%	41%	45%	53%	53%	39%	42%	59%	47%	0%	0%
3.1	69%	47%	57%	35%	54%	59%	39%	42%	38%	32%	64%	61%	40%	43%	46%	55%	54%	40%	43%	60%	48%	0%	0%
3.2	70%	49%	58%	35%	55%	60%	40%	44%	39%	34%	65%	62%	40%	44%	47%	56%	55%	40%	44%	60%	49%	0%	0%
3.3	71%	51%	60%	36%	56%	62%	42%	45%	40%	35%	66%	63%	41%	46%	48%	58%	56%	41%	45%	61%	50%	0%	0%
3.4	73%	53%	61%	36%	57%	63%	44%	47%	41%	36%	67%	64%	41%	48%	49%	60%	57%	41%	46%	62%	51%	0%	0%
3.5	74%	56%	63%	37%	58%	65%	45%	49%	42%	38%	68%	65%	42%	49%	50%	62%	58%	42%	47%	62%	52%	0%	0%
3.6	75%	58%	64%	37%	59%	66%	47%	50%	43%	39%	69%	66%	43%	51%	51%	64%	60%	43%	48%	63%	53%	0%	0%
3.7	76%	60%	66%	38%	60%	67%	48%	52%	44%	40%	70%	67%	43%	53%	52%	65%	61%	43%	49%	64%	54%	0%	0%
3.8	77%	62%	67%	39%	61%	69%	50%	54%	45%	42%	71%	67%	44%	54%	53%	67%	62%	44%	50%	64%	55%	0%	0%

Depth Inundation (feet)	Retail-Furniture	Retail-Electronics	Retail-Clothing	Hotel	Fast Food	Non-Fast Food	Hospital	Medical Office	Protective Services	Correctional Facility	Recreation	Religious Facilities	Schools	Service Station	Office One-Story	Convenience Store	Grocery	Apartment	Industrial Light	Warehouse, Refrig	Warehouse - Non-Refrigerated	Government	Vacant
3.9	78%	65%	69%	39%	62%	70%	52%	55%	46%	43%	72%	68%	44%	56%	54%	69%	63%	44%	51%	65%	56%	0%	0%
4.0	79%	67%	70%	40%	63%	72%	53%	57%	47%	44%	73%	69%	45%	58%	55%	71%	64%	45%	52%	66%	57%	0%	0%
4.1	80%	68%	71%	41%	64%	73%	55%	58%	47%	45%	74%	70%	45%	58%	56%	72%	65%	45%	53%	67%	58%	0%	0%
4.2	80%	69%	72%	42%	65%	73%	57%	59%	48%	46%	74%	71%	46%	59%	57%	72%	66%	46%	54%	67%	59%	0%	0%
4.3	81%	70%	73%	42%	66%	74%	58%	60%	49%	47%	75%	71%	46%	59%	58%	73%	67%	46%	55%	68%	59%	0%	0%
4.4	82%	71%	74%	43%	67%	75%	60%	61%	50%	48%	76%	72%	46%	60%	59%	74%	69%	46%	56%	69%	60%	0%	0%
4.5	82%	72%	75%	44%	68%	76%	62%	62%	51%	49%	76%	73%	46%	61%	59%	75%	70%	46%	57%	70%	61%	0%	0%
4.6	83%	73%	75%	45%	69%	77%	63%	63%	52%	49%	77%	74%	47%	61%	60%	76%	71%	47%	57%	71%	62%	0%	0%
4.7	84%	75%	76%	46%	70%	77%	65%	64%	53%	50%	78%	74%	47%	62%	61%	77%	72%	47%	58%	72%	63%	0%	0%
4.8	84%	76%	77%	47%	71%	78%	67%	65%	54%	51%	79%	75%	47%	62%	62%	78%	73%	47%	59%	73%	64%	0%	0%
4.9	85%	77%	78%	48%	72%	79%	68%	66%	54%	52%	79%	76%	48%	63%	63%	78%	74%	48%	60%	73%	65%	0%	0%
5.0	86%	78%	79%	49%	73%	80%	70%	67%	55%	53%	80%	76%	48%	63%	64%	79%	75%	48%	61%	74%	66%	0%	0%
5.1	86%	79%	80%	49%	74%	80%	71%	68%	56%	54%	80%	77%	48%	64%	65%	80%	77%	48%	62%	75%	66%	0%	0%
5.2	87%	80%	81%	49%	74%	81%	72%	69%	57%	55%	81%	77%	49%	65%	66%	81%	78%	49%	63%	75%	67%	0%	0%
5.3	87%	80%	82%	50%	75%	81%	73%	70%	58%	56%	81%	78%	49%	66%	67%	82%	79%	49%	64%	76%	68%	0%	0%
5.4	88%	81%	83%	50%	76%	82%	74%	71%	58%	57%	82%	78%	49%	66%	68%	83%	80%	49%	65%	76%	69%	0%	0%
5.5	88%	82%	84%	51%	76%	82%	75%	71%	59%	58%	82%	79%	50%	67%	69%	84%	81%	50%	66%	77%	70%	0%	0%
5.6	89%	83%	85%	51%	77%	83%	75%	72%	60%	59%	82%	79%	50%	68%	70%	85%	83%	50%	67%	78%	70%	0%	0%
5.7	89%	84%	86%	51%	77%	83%	76%	73%	61%	59%	83%	80%	51%	68%	70%	85%	84%	51%	69%	78%	71%	0%	0%
5.8	90%	85%	87%	52%	78%	84%	77%	74%	61%	60%	83%	80%	51%	69%	71%	86%	85%	51%	70%	79%	72%	0%	0%
5.9	90%	86%	88%	52%	79%	84%	78%	75%	62%	61%	84%	81%	51%	70%	72%	87%	86%	51%	71%	79%	73%	0%	0%
6.0	91%	87%	89%	52%	79%	85%	79%	75%	63%	62%	84%	81%	52%	71%	73%	88%	87%	52%	72%	80%	74%	0%	0%

Appendix E Agency Consultation Responses

Figure E - 1. Maryland Department of Natural Resources

Maryland DNR Response

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor
Jeannie Haddaway-Riccio, Secretary

January 30, 2020

Ms. Charlene Wu
AECOM
3101 Wilson Boulevard
Suite 900
Arlington, VA 22201

RE: Environmental Review for Piney Run Watershed Study - Piney Run Dam Rehab, Carroll County, Maryland.

Dear Ms. Wu:

The Wildlife and Heritage Service has determined that there are no official State or Federal records for listed plant or animal species within the delineated area shown on the map provided. As a result, we have no specific concerns regarding potential impacts or recommendations for protection measures at this time. We would like to point out, however, that our remote analysis suggests that the forested area on this property contains Forest Interior Dwelling Bird habitat. Populations of many bird species which depend on this type of forested habitat are declining in Maryland and throughout the eastern United States. Interested landowners can contact us for further voluntary guidelines to help conserve this important habitat.

Please be sure to let us know if the limits of proposed disturbance or overall site boundaries change and we will provide you with an updated evaluation. Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2020.0024.cl

Tawes State Office Building – 580 Taylor Avenue – Annapolis, Maryland 21401
410-260-8DNR or toll free in Maryland 877-620-8DNR – *dnr.maryland.gov* – TTY Users Call via the Maryland Relay

Figure E - 2. United States Fish and Wildlife Service – Northern Long Eared Bat Correspondence

USFWS Response

Blass, Jeff

From:	CBFO Project Review, FWS <cbfoprojectreview@fws.gov>
Sent:	Wednesday, June 2, 2021 2:29 PM
To:	Wu, Charlene
Cc:	cheyn@carrollcountymd.gov; jque.jones@usda.gov; Blass, Jeff; Warf, Jennifer
Subject:	[EXTERNAL] Re: Piney Run Project Review Request - USFWS

Hi Charlene-

Thank you for sending this project in for review. Since there will be less than 15 acres of tree clearing, and there are no known hibernacula or maternity roosts in the area, we concur that this project is "not likely to adversely affect" northern long-eared bat. Please let me know if you have any questions.

Thank you,
Kathleen

From: Wu, Charlene <Charlene.Wu@aecom.com>
Sent: Thursday, May 13, 2021 8:07 PM
To: CBFO Project Review, FWS <cbfoprojectreview@fws.gov>
Cc: cheyn@carrollcountymd.gov <cheyn@carrollcountymd.gov>; jque.jones@usda.gov <jque.jones@usda.gov>; Blass, Jeff <jeff.blass@aecom.com>; Warf, Jennifer <Jennifer.Warf@aecom.com>
Subject: [EXTERNAL] Piney Run Project Review Request - USFWS

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Good afternoon,

Carroll County, with federal investment from the United States Department of Agriculture - Natural Resources Conservation Services, is preparing a Supplemental Watershed Plan and Environmental Assessment in support of the rehabilitation of Piney Run Dam in Carroll County, Maryland. We are seeking input from your agency regarding any information or potential environmental concerns associated with this project. Please see the attached letter for additional information. We would appreciate any comments, concerns, information, studies, or other data you may have regarding this project within **thirty (30) days** of receipt of this correspondence.

We look forward to and welcome your participation in this analysis. Thank you!

Regards,
Charlene Wu

Charlene Wu
Environmental Planner
Impact Assessment and Permitting
O: 703-682-5023 C: 301-221-6723
Charlene.wu@aecom.com

AECOM

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
Phone: (410) 573-4599 Fax: (410) 266-9127

In Reply Refer To:
Project code: 2023-0024324
Project Name: Piney Run Dam Rehabilitation

October 23, 2023

Federal Nexus: yes
Federal Action Agency (if applicable): Natural Resources Conservation Service

Subject: Federal agency coordination under the Endangered Species Act, Section 7 for 'Piney Run Dam Rehabilitation'

Dear Benjamin Obenland:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on October 23, 2023, for 'Piney Run Dam Rehabilitation' (here forward, Project). This project has been assigned Project Code 2023-0024324 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements may not be complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (DKey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid.***

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis completed by the Service, your project has reached the determination of "May Affect, Not Likely to Adversely Affect" the northern long-eared bat. Unless the Service advises you within 15 days of the date of this letter that your

IPaC-assisted determination was incorrect, this letter verifies that consultation on the Action is complete and no further action is necessary unless either of the following occurs:

- new information reveals effects of the action that may affect the northern long-eared bat in a manner or to an extent not previously considered; or,
- the identified action is subsequently modified in a manner that causes an effect to the northern long-eared bat that was not considered when completing the determination key.

15-Day Review Period

As indicated above, the Service will notify you within 15 calendar days if we determine that this proposed Action does not meet the criteria for a "may affect, not likely to adversely affect" (NLAA) determination for the northern long-eared bat. If we do not notify you within that timeframe, you may proceed with the Action under the terms of the NLAA concurrence provided here. This verification period allows the identified Ecological Services Field Office to apply local knowledge to evaluation of the Action, as we may identify a small subset of actions having impacts that we did not anticipate when developing the key. In such cases, the identified Ecological Services Field Office may request additional information to verify the effects determination reached through the Northern Long-eared Bat DKey.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Candidate

You may coordinate with our Office to determine whether the Action may affect the species and/or critical habitat listed above. Note that reinitiation of consultation would be necessary if a new species is listed or critical habitat designated that may be affected by the identified action before it is complete.

If you have any questions regarding this letter or need further assistance, please contact the Chesapeake Bay Ecological Services Field Office and reference Project Code 2023-0024324 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

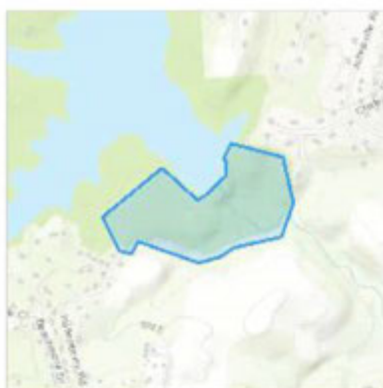
Piney Run Dam Rehabilitation

2. Description

The following description was provided for the project 'Piney Run Dam Rehabilitation':

> The purposes of the proposed rehabilitation of the Piney Run Dam are to comply with current performance and safety standards while maintain present level of flood control benefits and to implement, if found to be feasible and beneficial, the water supply use of the reservoir. The preferred alternative is to rehabilitate the Piney Run Dam by expanding the existing 250-foot-wide earthen auxiliary spillway width by 25 feet and raising its crest by 0.8 feet (AS) on the right abutment to 275 feet, raising the existing dam crest 4.5 feet with earth fill, including the core zone and chimney filter, while maintaining the downstream slope at three-horizontal-to-one-vertical (3H:1V), modifying the impact basin and rate control system to accommodate the additional embankment fill, armoring the steep slope downstream of the AS exit channel with roller-compacted concrete (RCC) and installing a cutoff wall at the AS auxiliary spillway crest, replacing the downstream ends of each of the toe drains, making minor repairs to the existing principal spillway (PS) riser and water supply intake tower, and installing a cold water release system in either the PS riser or in the water supply intake tower.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.387213349999996,-76.97665023493201,14z



DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of "may affect, but not likely to adversely affect" for the Endangered northern long-eared bat (*Myotis septentrionalis*).

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. The action area does not overlap with an area for which U.S. Fish and Wildlife Service currently has data to support the presumption that the northern long-eared bat is present. Are you aware of other data that indicates that northern long-eared bats (NLEB) are likely to be present in the action area?

   Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed NLEB acoustic detections. Data on captures, roost tree use, and acoustic detections should post-date the year when white-nose syndrome was detected in the relevant state. With this question, we are looking for data that, for some reason, may have not yet been made available to U.S. Fish and Wildlife Service.

   No

3. Does any component of the action involve construction or operation of wind turbines?

   Note: For federal actions, answer 'yes' if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

4. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

5. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   No

6. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   Yes
7. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   No
8. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   No
9. Have you determined that your proposed action will have no effect on the northern long-eared bat? Remember to consider the effects of any activities that would not occur but for the proposed action.

   If you think that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, answer "No" below and continue through the key. If you have determined that the northern long-eared bat does not occur in your project's action area and/or that your project will have no effects whatsoever on the species despite the potential for it to occur in the action area, you may make a "no effect" determination for the northern long-eared bat.

   Note: Federal agencies (or their designated non-federal representatives) must consult with USFWS on federal agency actions that may affect listed species [50 CFR 402.14(a)]. Consultation is not required for actions that will not affect listed species or critical habitat. Therefore, this determination key will not provide a consistency or verification letter for actions that will not affect listed species. If you believe that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, please answer "No" and continue through the key. Remember that this key addresses only effects to the northern long-eared bat. Consultation with USFWS would be required if your action may affect another listed species or critical habitat. The definition of Effects of the Action can be found here: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

   No
10. [Semantic] Is the action area located within 0.5 miles of a known northern long-eared bat hibernaculum?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

11. Does the action area contain any caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating northern long-eared bats?

    No

12. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
    (If unsure, answer "Yes.")

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats (i.e., live trees and/or snags ≥3 inches (12.7 centimeter) dbh), answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    Yes

13. Will the action cause effects to a bridge?

    No

14. Will the action result in effects to a culvert or tunnel?

    No

15. Does the action include the intentional exclusion of northern long-eared bats from a building or structure?

    Note: Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local U.S. Fish and Wildlife Services Ecological Services Field Office to help assess whether northern long-eared bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures

    No

16. Does the action involve removal, modification, or maintenance of a human-made structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    No

17. Will the action directly or indirectly cause construction of one or more new roads that are open to the public?

    Note: The answer may be yes when a publicly accessible road either (1) is constructed as part of the proposed action or (2) would not occur but for the proposed action (i.e., the road construction is facilitated by the proposed action but is not an explicit component of the project).

    No

18. Will the action include or cause any construction or other activity that is reasonably certain to increase average daily traffic on one or more existing roads?

    Note: For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    No

19. Will the action include or cause any construction or other activity that is reasonably certain to increase the number of travel lanes on an existing thoroughfare?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

20. Will the proposed action involve the creation of a new water-borne contaminant source (e.g., leachate pond pits containing chemicals that are not NSF/ANSI 60 compliant)?

    No

21. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    No

22. Will the action include drilling or blasting?

    Yes

23. Will the drilling or blasting affect known or potentially suitable hibernacula, summer habitat, or active year-round habitat (where applicable) for the northern long-eared bat?

    Note: In addition to direct impacts to hibernacula, consider impacts to hydrology or air flow that may impact the suitability of hibernacula. Additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    Yes

24. Will the proposed action result in the cutting or other means of knocking down, bringing down, or trimming of any trees suitable for northern long-eared bat roosting?

    Note: Suitable northern long-eared bat roost trees are live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities.

    Yes

PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

6.5

In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the inactive (hibernation) season for northern long-eared bat? **Note:** Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

6.5

In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the active (non-hibernation) season for northern long-eared bat? **Note:** Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

0

Will all potential northern long-eared bat (NLEB) roost trees (trees ≥3 inches diameter at breast height, dbh) be cut, knocked, or brought down from any portion of the action area greater than or equal to 0.1 acre? If all NLEB roost trees will be removed from multiple areas, select 'Yes' if the cumulative extent of those areas meets or exceeds 0.1 acre.

Yes

Enter the extent of the action area (in acres) from which all potential NLEB roost trees will be removed. If all NLEB roost trees will be removed from multiple areas, entire the total extent of those areas. Round up to the nearest tenth of an acre.

6.5

For the area from which all potential northern long-eared bat (NLEB) roost trees will be removed, on how many acres (round to the nearest tenth of an acre) will trees be allowed to regrow? Enter '0' if the entire area from which all potential NLEB roost trees are removed will be developed or otherwise converted to non-forest for the foreseeable future.

1.7

Will any snags (standing dead trees) ≥3 inches dbh be left standing in the area(s) in which all northern long-eared bat roost trees will be cut, knocked down, or otherwise brought down?

No

Will all project activities by completed by April 1, 2024?

No

IPAC USER CONTACT INFORMATION

Agency: AECOM
Name: Benjamin Obenland
Address: 12420 Milestone Center Drive
Address Line 2: Suite 150
City: Germantown
State: MD
Zip: 20876
Email benjamin.obenland@aecom.com
Phone: 3019442414

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Natural Resources Conservation Service

Figure E - 3. Federal Emergency Management Agency

FEMA Response

From: Dunn, Margaret <margaret.dunn@fema.dhs.gov>
Sent: Thursday, May 20, 2021 4:14 PM
To: Wu, Charlene <Charlene.Wu@aecom.com>
Subject: [EXTERNAL] FW: Piney Run Project Review Request - FEMA

Hi Charlene,
I am responding to your request to FEMA to provide information regarding the Piney Run Dam in Carroll County, MD.

1. Our latest flood hazard information is available through FEMA's Map Service Center and through Maryland's State Flood Tool. The MD state tool is probably the best to use for geographic information and you can download the hydraulic model there. You can find the full Flood Insurance Study for Carroll County through the Map Service Center.
2. We also recommend looking at dam data in Carroll County's Hazard Mitigation Plan. The public version of the plan has redacted dam information, but you can probably get direct information through the County. The current hazard mitigation plan is expired but we understand the County will be moving forward to make an update soon.
3. Any additional information we have regarding this dam would be found in the ACOE National Inventory of Dams, which is publicly available.

As a side note, FEMA does have a new grant program called the High Hazard Potential Dam grant that provides funding for the rehabilitation of high hazard dams. I don't know if the Piney Run Dam would qualify, but you can visit the link for more information.

Thank you,
Maggie
--
Maggie Dunn, AICP (she/her)
Outreach Coordinator | Mitigation Division | Region 3
Mobile: (202) 372-5145
margaret.dunn@fema.dhs.gov

Federal Emergency Management Agency
fema.gov

FEMA

Figure E - 4. Carroll County, Maryland Department of Planning

Carroll County Department of Planning Response

Lynda D. Eisenberg
Director
Department of Planning
410-386-5145, fax 410-386-8978
Toll-free 1-888-302-8978
MD Relay service 7-1-1/800-735-2258

Mary S. Lane
Planning Manager
Carroll County Government
225 North Center Street
Westminster, Maryland 21157
email: ccplanning@carrollcountymd.gov

Jennifer E. Warf, Associate Vice President
AECOM Technical Services
12420 Milestone Center Drive, Suite 150
Germantown, MD 20876

May 18, 2021

Dear Ms. Warf,

The Carroll County Department of Planning has reviewed the proposal to rehabilitate Piney Run Dam. Piney Run Dam and Reservoir is an important source of recreation and a future drinking water supply for the County and the Department fully supports this project.

The rehabilitation project is consistent with 2014 County Master Plan, the 2018 Freedom Community Comprehensive Plan and the 2019 Water and Sewer Master Plan Triennial Update. The 2018 Freedom Community Comprehensive Plan states that "…the Piney Run Reservoir and Park further contributes to the community's overall sense of character, through its conserved resources, including wetlands, forested areas, and open fields."

Goals and recommendations from the Freedom Plan include: to establish and maintain existing wildlife corridors in the Piney Run and to restart the permitting process to establish Piney Run Reservoir as a future water supply source to provide redundancy and back up supply. This rehabilitation project would help toward the implementation of these objectives.

As stated in the 2019 Triennial Update to the Water and Sewer Master Plan: Piney Run Reservoir was designed as a future water supply source and the County reserves the right to use it in the future. This project will help to maintain this as an important source of future drinking water for the County.

Thank you for the opportunity to comment on this important project. If I can be of further assistance, please contact the Carroll County Department of Planning at 410-386-5145.

Sincerely,

Lynda Eisenberg

Lynda Eisenberg, Director

DEPARTMENT OF PLANNING
Planning for success in Carroll County

Figure E - 5. Maryland Department of the Environment – Non-Tidal Wetlands

Maryland Department of the Environment Non-Tidal Wetlands Response

From: Amanda Sigillito -MDE- <amanda.sigillito@maryland.gov>
Sent: Tuesday, May 18, 2021 11:36 AM
To: Wu, Charlene <Charlene.Wu@aecom.com>
Cc: cheyn@carrollcountymd.gov; jque.jones@usda.gov; Blass, Jeff <jeff.blass@aecom.com>; Warf, Jennifer <Jennifer.Warf@aecom.com>; Scott Bass -MDE- <scott.bass@maryland.gov>; William Seiger -MDE- <william.seiger@maryland.gov>
Subject: [EXTERNAL] Re: Piney Run Project Review Request - MDE Wetlands Division

Dear Ms. Wu:

Thank you for your email. The Nontidal Wetlands Division screened the site and identified nontidal wetlands both up- and downstream of the structure. Permanent or temporary impacts to the nontidal wetlands, the 25-foot nontidal wetland buffer, streams or 100-year nontidal floodplain will require authorization. Additionally, Piney Run is a Use III-P stream, so any permanent nontidal wetland impacts will require both public notice and mitigation.

You may want to consider requesting a pre-application meeting with the Nontidal Wetlands and Waterway Construction Divisions. We can arrange a time to meet in the field and discuss the scope of the project as well as impact avoidance and minimization measures. A pre-application meeting can be requested at:

https://mde.maryland.gov/programs/Water/WetlandsandWaterways/Pages/PreApplicationIntroduction.aspx

Please feel free to contact me with any questions.

Sincerely,

Amanda Sigillito, Chief
Nontidal Wetlands Division
Due to the COVID-19 virus and the need for safety precautions, many state employees are working remotely.

CHANGING Maryland FOR THE BETTER

Amanda Sigillito
Chief, Nontidal Wetlands Division
Water and Science Administration
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, Maryland 21230
amanda.sigillito@maryland.gov
410-537-3766 (O)
443-829-8127 (C)
Website | Facebook | Twitter

Click here to complete a three question customer experience survey.

Figure E - 6. Pre-Application Meeting Minutes (30 August 2021) – Maryland Department of the Environment (Dam Safety, Non-Tidal Wetlands, Waterway Construction) and United States Army Corps of Engineers

AECOM

Minutes

Meeting name
Pre-Application Meeting

Time
10:00 AM

Project name
Piney Run Watershed Plan-EA Project

Prepared by
Jeff Blass

Meeting date
August 30, 2022

Location
Piney Run Dam,
Sykesville, Maryland

AECOM project number
60614688

Attendees
AECOM - Jeff Blass
AECOM - Patrick Moreland
Carroll County - Chris Heyn
Carroll County - Ed Singer
MDE - Debra Correia
MDE - Pavla Dilnesahu
MDE - Ariel Ben-Sorek
USACE - Joseph DaVia
USACE - Nicole Voelker

Circulation list
Attendees

The purpose of this meeting was to explain the proposed modifications project for the Piney Run Dam and key potential impacts to environmental and cultural/historic site features and to gather feedback from regulatory agency representatives on permitting implications.

Jeff Blass led the site walk and explained the key components of the proposed modifications:

The primary objectives of the project are to address previously identified deficiencies at the Piney Run Dam:

- The overall spillway capacity is insufficient. The dam cannot pass spillway design flood without overtopping the crest by several feet.
- The auxiliary spillway is constructed on erodible material. If the spillway were to activate under extreme flood conditions, the dam may be susceptible to failure via erosion through the spillway resulting in an uncontrolled release.

The proposed modifications include the following general improvements:

- The dam crest will be raised several feet using borrow material from the right side slope of the auxiliary spillway which will be widened as a result. This will be done as a downstream-slope raise meaning that fill will be placed on the downstream slope as well.
- To minimize stream impacts, the principal spillway impact basin will be modified to increase the height of the perimeter wall to act as an earth retaining structure to retain the additional fill. This will eliminate the need to extend the principal spillway conduit due to the increased fill height of the embankment.
- The exit channel of the auxiliary spillway will be armored with roller-compacted concrete at the steep portion of the exit channel beyond the existing tree line to arrest any erosion that may occur during activation. A concrete cutoff wall will be installed at the crest to arrest any erosion that may occur in the shallow-sloped portion of the exit channel.
- Chris Heyn explained that an automated cold water release system already designed by the County will be installed in the un-used water intake structure located to the right of the principal spillway. This system will require a conduit to be installed underwater connecting to the water intake structure at the 19 foot deep intake on the structure. Pipe anchors will be required to anchor the pipe to the surface of the embankment.

Key environmental and cultural resource features were noted during the site walk:

- Two stream channels are located on or near the site. The main channel of Piney Run emanates from the principal spillway outfall. Piney Run is a Use Class III stream. Jeff Blass indicated that approximately 50 linear feet of impacts from construction and potential placement of additional riprap are expected.
- A lateral tributary that confluences with Piney Run downstream of the site is located at the downstream toe of slope of the auxiliary spillway exit channel. No impacts to this stream are anticipated.
- Suspected non-tidal wetlands are located downstream of the downstream toe of slope of the embankment dam to the left of the principal spillway and Piney Run itself. No impacts to these wetlands or their buffer is anticipated.

C:\Users\jeff.blass\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\AYPLJ0PQ\2022.08.30 _Pre-Application Meeting Minutes_FINAL.docx 1

AECOM

- A cultural site of significance was identified near the downstream toe of slope of the auxiliary spillway exit channel. No impacts to this site are anticipated. Jeff Blass indicated that correspondence with the Maryland Historic Trust is on-going and their response letter indicated that if a site plan showing avoidance could be provided, then they could issue a letter of no significant impact.

USACE Comments:

- The project would likely be designated as a Category A project and be eligible for permitting under the existing state programmatic general permit (GP-6) which expires in 2026. However, several aspects may trigger designation as a Category B project
- If there are impacts to a cultural resources site (there is an existing site of significance located just beyond the proposed limits of disturbance near the auxiliary spillway exit channel) then a Category B designation would be appropriate.
- If any concrete or soil fill is placed in the reservoir, the USACE would need to consider whether or not the project would be eligible as a Category B designation. If this is the case, the project would need to be permitted directly by the USACE rather than being permitted as a Category A project under a State Programmatic General Permit.
- The submittal should include a detailed depiction of the impacts (Jeff Blass suggested a stand-along impact plate).

MDE Comments:

- If the anticipated wetland impacts hold up after a detailed delineation effort is completed, then the project would not require authorization from the non-tidal wetlands division.
- The project will require a permit from the Dam Safety Permits division. Ariel Ben-Sorek believed the scope of the proposed modifications would require an OB-type permit (obstruction) rather than a repair permit.
- Because the project is being permitted by the Dam Safety Permits division, separate authorization from the Waterway Construction Division will not be required. The Dam Safety permit will include the conditions that would otherwise be provided in a Waterway authorization.

Figure E - 7. Maryland Department of the Environment – Joint Federal/State Application for the Alteration of Any Floodplain, Waterway, Tidal or Nontidal Wetland (or buffer) in Maryland Response

Maryland
Department of the Environment

Wes Moore, Governor
Aruna Miller, Lt. Governor

Serena McIlwain, Secretary
Suzanne E. Dorsey, Deputy Secretary

May 24, 2024

AECOM
12420 Milestone Center Dr, Ste 150
Germantown, Maryland 20876

Project Name:	CL Bur of Res Mgmt - Piney Run Dam
Project Address:	30 Martz Rd Sykesville, MD 21784
Tracking Number:	202460756
Permit Number:	24-NT-3087
AI Number:	89810
Application Received:	May 16, 2024
County:	Carroll

The Regulatory Services Coordination Office of the Maryland Department of the Environment's Wetlands and Waterways Protection Program (WWPP) has received your Joint Federal/State Application for the Alteration of Any Floodplain, Waterway, Tidal or Nontidal Wetland (or buffer) in Maryland. Based on the information in your application your project is considered a Minor project for fee purposes and anticipated processing time, and is considered a Category A project under the Army Corps of Engineers (USACE) Maryland State Programmatic General Permit-6 (MDSPGP-6). An application categorized as 'A' under the MDSPGP-6 may be granted federal approval by WWPP, without separate USACE review. Our goal at MDE is to complete the MDE review of your application within 180 days of the date of receipt. If your project is a nontidal stream or wetland restoration/ rehabilitation project, the Department's goal is to complete the State review of your application within 90 days from the date of receipt. The following WWPP project managers have been assigned to review your application:

Waterways Division: Debra Correia at debra.correia@maryland.gov or 410-537-3900

If available, please forward an electronic copy of the Joint Permit Application and supporting documentation to the email address listed for your WWPP project manager.

1800 Washington Boulevard | Baltimore, MD 21230 | 1-800-633-6101 | 410-537-3000 | TTY Users 1-800-735-2258
www.mde.maryland.gov

Joint Application Acknowledgement Letter
May 24, 2024
Page 2

Your application has been forwarded to the following groups for review:

☐ Tidal Wetlands Division	☐ Nontidal Wetlands Division
☒ Waterway Construction Division	☒ Dam Safety Permits Division (410) 537-3552
☐ U.S. Army Corps of Engineers (410) 962-3670	☐ Compliance Division (410) 537-3510

You will be contacted individually or jointly by the groups that have been checked above within 45 days to advise you as to whether WWPP has all the information it needs to complete its review and what, if any, additional information is needed. In order to continue to process your application in a timely manner, it is important that you or your agent respond to such information requests promptly. Many delays in processing applications can be attributed to delays in MDE receiving the necessary requested information.

A primary function of WWPP is to convey and store flood waters and buffer adjacent land and water from related impacts. With climate change increasing precipitation, sea level rise and flooding in Maryland, the hydrology of wetland and waterway systems are also expected to change, possibly increasing flood risks to projects in or near wetlands, waterways, or their regulated buffers. The Department is incorporating the best available flooding information and science into WWPP application decisions. However, as an applicant proposing regulated activities in a possible flood prone area, you are also responsible for considering your project's flood vulnerability and risks, and including such considerations in your project's design, location, and scope. If your project changes the course, current, or cross-section of waters of the State in a mapped tidal or nontidal Federal Emergency Management Agency (FEMA) 100-year floodplain you are required to notify the appropriate local government and the state National Floodplain Insurance Program (NFIP) coordinator at MDE, Mr. Dave Guignet, by email at dave.guignet@maryland.gov of the proposed work and the impacts to the FEMA floodplain. Additionally, if the work/construction activity will change or alter the FEMA 100-year boundaries or elevations, you are fully responsible for and required to contact FEMA and apply for a Conditional Letter of Map Amendment (CLOMR) which may necessitate a separate hydrologic and hydraulic study (determined by FEMA) before construction; and complete the FEMA Amendment process with a Letter of Map Amendment or Revision (LOMR) after construction is completed. This includes coordinating and informing the local government/community throughout the process. This requirement is in addition to any MDE authorization. If you have any questions regarding this FEMA requirement, please contact Dave Guignet by email at dave.guignet@maryland.gov.

Please note that if the proposed project changes during the course of processing, or if WWPP determines that other regulated resources may be impacted, your application may be recategorized and/or forwarded to other entities for their review and input (for example, Maryland Historical Trust, Tribal nations, Maryland Department of Natural Resources, U.S. Environmental Protection Agency, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and/or U.S. Coast Guard). Reviews by these other groups may add additional time to the review period. Your WWPP reviewer will let you know if your application has been forwarded to other groups for their review. If the Compliance box is checked, this application has been identified to contain after-the-fact work or is subject to a pending or ongoing compliance or enforcement action and has been forwarded to the Water and Science Administration, Compliance Program, for review and comment. Prior to issuance of the authorization, WWPP will consult with the Compliance Program. If a Tidal Wetlands License issued by the State Board of Public Works is required for your project, you will be advised by that agency regarding any additional required license fee.

Obtaining the authorizations checked above will satisfy the requirements of WWPP and the federal permit requirements from USACE. We suggest that you retain this letter for future reference.

When multiple permits are required for a particular project, WWPP may consolidate all permit reviews into one process. You should not proceed with any work on your project until you have received the required written authorizations. You are still obligated to obtain any other required authorizations including any other federal and state approvals as well as local grading and building permits.

For information on the status of your application, you may call the Regulatory Services Coordination Office at (410)537-3752 (Baltimore/Annapolis). Please reference your tracking number listed above for all written and telephone correspondence. You may also contact the individual review groups that are processing your application at the listed telephone numbers to obtain or provide specific information relating to this application.

Sincerely,

Regulatory Services
Coordination Staff

Figure E - 8. Maryland Department of the Environment – Waterway Construction Division Response Letter

Maryland
Department of
the Environment

Wes Moore, Governor
Aruna Miller, Lt. Governor

Serena McIlwain, Secretary
Suzanne E. Dorsey, Deputy Secretary

TRACKING #: 202460756/24-NT-3087

PROJECT: Carroll Co. Bureau of Resource Mgmt./Piney Run Dam/Rehabilitation

SUBJECT: Initial Waterway/Floodplain Review Comments

DATE: July 8, 2024

Mr. Chris Heyn:

The Maryland Department of the Environment received your Joint Federal/State Application for the alteration of Any Floodplain, Waterway, Tidal or Nontidal Wetland in Maryland on May 16, 2024. Your Application requested authorization for impacts associated with the rehabilitation of Piney Run Dam in Carroll County.

Upon review of the information submitted, we have determined that no authorization is required from the Department's Nontidal Wetlands Division and Waterway Construction Division. This determination is based upon the project not impacting any MDE-regulated nontidal wetland or nontidal wetland buffer. The nontidal waterway/floodplain impacts from the project will be approved through the MDE Dam Safety Division permit. Dam Safety will contact you separately with the status of their review.

A copy of the application has been forwarded to the U.S. Army Corps of Engineers. The federal authorization for the project will be sent directly to you once their review is complete.

Should you have any questions or comments regarding this matter, please contact me at (410)537-3900 or Debra.Correia@maryland.gov.

Sincerely,

Debra Correia

Debra Correia
Senior Regulatory & Compliance Engineer
Waterway Construction Division

cc: WMA Compliance, Carroll County w/file
Jeff Blass, P.E., AECOM
ACOE, Northern Division
Dam Safety Division

1800 Washington Boulevard | Baltimore, MD 21230 | 1-800-633-6101 | 410-537-3000 | TTY Users 1-800-735-2258
www.mde.maryland.gov

Figure E - 9. Maryland Department of the Environment – Dam Safety Permits Division Response Letter

Maryland
Department of the Environment

Wes Moore, Governor
Aruna Miller, Lt. Governor

Serena McIlwain, Secretary
Suzanne E. Dorsey, Deputy Secretary

July 9, 2024

Mr. Christopher Heyn
Carroll County Bureau of Resource Mgmt.
225 North Center Street
Westminster, MD 21157

File No.: **24-MR-0072**
Agency Interest (AI): **89810**
Tracking Number: **202460756**
Project Description: **Piney Run Dam Repair**
Assigned Staff: **William Ashby, P.E.R.**

The Department of the Environment, Water and Science Administration, Dam Safety program (the Department) has received your application for a permit to repair Piney Run Dam. The application has been assigned a file number and staff member as noted above. Should you have questions, please refer to the File Number when responding.

A cursory review of the materials submitted in support of the application indicates that some material is incomplete or missing. It is our understanding that this initial submittal consists of the 30% (Concept) package. We anticipate that you will provide the following items as part of subsequent submittals as the project moves into the 60% (Design and Development) stage:

- Detailed construction plans
- Project specifications
- Basis of Design Report
  - Summary of proposed work and project goals
  - Summary of design standards applicable to project
  - Hazard Classification Statement
  - Dam Inspection Report (for existing dams)
  - Hydrology & Hydraulics Report
  - Dam Breach Analysis and Hazard Classification Report
  - Geotechnical Engineering Report
  - Structural Engineering Report
  - Mechanical and Electrical Engineering Report
- Supporting calculations and software input/output records.

Note that every dam and project is unique, therefore any questions pertaining to the specific content of the above-mentioned submittals should be discussed with the staff member assigned to the application. As we perform a more detailed review of the concept submittal, we will contact you about any items that need additional clarification. At this point in the review process, we are in general agreement with the concept as submitted.

1800 Washington Boulevard | Baltimore, MD 21230 | 1-800-633-6101 | 410-537-3000 | TTY Users 1-800-735-2258
www.mde.maryland.gov

Pursuant to § 5-506, Environment Article, Annotated Code of Maryland, you are required to serve notice of the application to owners of property contiguous to the parcels on which the dam and reservoir are located as well as downstream property owners affected by the proposed construction. Please submit a copy of the tax map identifying the property owners notified. In addition, you must notify the mayor or chief executive official of each affected City or County. The notice must be served personally or by certified mail and shall include the location and a description of the project. Attached is a sample letter for your use and a "Certification of Notification" form which must be submitted before your application will be processed. The Department will compile a list of interested persons including those on the "Certification of Notification".

After the application is considered complete in accordance with Code of Maryland Regulations ("COMAR") 26.01.07, the Department shall prepare a notice of completed application that will include your name and address, a description of your project and instructions on how persons may submit comments on your project and how they may request a public informational hearing. This notice will be mailed to the individuals on the interested persons list and will be published for one day in a newspaper of general circulation in your area. You will be billed by the Department for the cost of publication in the local newspaper. Please complete and submit the enclosed "Public Notice Billing Approval Form."

In accordance with COMAR 26.17.04.05, the plans must be prepared by a professional engineer, registered in the State of Maryland, and experienced in dam design and construction. The applicant is also required to hire a professional engineer, referred to as the Engineer-In-Charge, to supervise the construction in order to assure that the dam is built according to the approved plans and the design assumptions. It is strongly recommended that the design engineer or a qualified member of the design team be retained to supervise the construction. Please have your engineer complete and submit the enclosed affidavit attesting to their qualifications in design and/or construction supervision.

You or your engineer must also prepare a maintenance plan describing the steps to be followed for the continued maintenance of the dam and reservoir during the expected life of the structure. This plan shall describe what work is to be called for at periodic intervals or when necessary to keep the structure in good condition. Among other items it shall address mowing or cutting of brushy growth on the embankment, preventing erosion or gullying of embankment surfaces, clearing of toe drains, removing accumulated trash and debris, protecting against rust and spalling, and exercising valves or other mechanical equipment. The description of this program shall be submitted to the Department for approval and will be included as a condition of the construction permit.

For dams classified as High Hazard, you or your engineer must also submit an Emergency Action Plan ("EAP"), for evacuation of downstream residents and road closures downstream of the dam which would be inundated should the dam fail. Yearly updates to this EAP must be submitted to the Department by May 1st of each year.

Attached you will find a "Memorandum of Land Restrictions" that will alert potential subsequent owners of the dam and the future legal and maintenance responsibilities associated with the dam. Please complete the first page, sign the memorandum and submit a check, payable to the Clerk of the Court for Carroll County to cover the land recordation fees. Please contact the Clerk of the Court for the fee amount. The Department will record the document. The completed document and the recording fee must be received prior to issuance of a permit.

A decision will be made on your application after the Department has received all the necessary supporting information and after the public informational hearing, if requested, has been held. An electronic set (PDF format) of the construction plans, specifications, and design reports must be submitted for approval prior to the issuance of the permit. You and your engineer each will receive a copy of the approved plans with a copy of the permit.

For your information, a permit-processing outline is enclosed. If you have any questions or require any additional information, please contact me at email william.ashby@maryland.gov, or call (410) 537-3554, or call Mr. John Roche, P.E. at (410) 537-3552.

Sincerely,

William S. Ashby, P.E.R.
Sr. Water Resources Engineer
Dam Safety Permits Division

Enclosures

cc: Engineer (Jeff Blass, P.E., AECOM) w/enclosures
John Roche, P.E., Chief, Dam Safety Permits Division

Figure E - 10. Maryland Department of Planning, Historic Trust (SHPO) Consultation and Concurrence Summary Letter and Supporting Correspondence

From: Maryland Historical Trust <donotreply@maryland.gov>
Sent: Thursday, November 14, 2024 2:48 PM
To: Mundt, Jessica - FPAC-NRCS, MD
Subject: MHT e106 project review – MHT Completed Comments

Date:	November 14, 2024
To:	Jessica Mundt Maryland NRCS, USDA
Project Name:	Piney Run Dam Watershed Study- 30 Martz Rd, Sykesville, MD 21784
County:	Carroll County
Agency:	Natural Resources Conservation Service
Second Agency:	-- Not noted --
MHT Log #:	202404559

MHT Response: Thank you for providing the Maryland Historical Trust the opportunity to comment on the above-referenced undertaking using the MHT e106 system. The Maryland Historical Trust has reviewed the submitted project for its effects on historic and archeological resources, pursuant to Section 106 of the National Historic Preservation Act of 1966 and/or the Maryland Historical Trust Act of 1985. We offer the following comments and/or concurrence with the agency's findings:

The undertaking will have no effect on historic properties. Additional consultation with our office may be required if there are any significant changes in project scope or location.

Please note that MHT has also concurred with the delineation of the APE for this undertaking.

Thank you for your cooperation in this review process. Since the MHT response is now complete, this response will appear in the Completed section of your project dashboard. No hard copy of this response or attachments will be sent. If you have questions, please contact the following MHT project reviewers:

Dixie Henry

Maryland Historical Trust
Project Review and Compliance
100 Community Place
Crownsville, MD 21032
mht.section106@maryland.gov

MHT.Maryland.gov
Planning.Maryland.gov

United States Department of Agriculture

Dixie L. Henry, Ph.D.
Preservation Officer, Project Review and Compliance
Maryland Historical Trust
Maryland Department of Planning
100 Community Place
Crownsville, MD 21032

October 11, 2024

Re: Piney Run Dam Watershed Study

Dear Ms. Henry,

The purpose of this letter is to summarize the findings and results of Phase I and Phase II archaeological investigations as well as consultation with the Maryland Historical Trust (MHT) associated with the Piney Run Dam Watershed Study. This letter will also provide a finding of effect on historic properties for the overall project.

The United States Department of Agriculture-Natural Resources Conservation Service (NRCS) is providing assistance to the Commissioners of Carroll County for the Piney Run Dam Watershed Study in Carroll County, Maryland. Although Piney Run Dam met all requirements when it was constructed in 1974, the Maryland Department of the Environment (MDE) stated that there are concerns the dam may not meet current safety criteria. The watershed study will allow the County to evaluate the dam and determine options for addressing any identified deficiencies. NRCS determined that the project is an undertaking, as defined in 36 CFR 800.16(y), that has the potential to affect historic properties. NRCS was in consultation with MHT under Section 106 of the National Historic Preservation Act (NHPA) regarding this study by May 2021 and possibly earlier. NRCS is continuing consultation with your agency, MHT.

The County contracted AECOM to conduct a Phase I archaeological survey of the Piney Run Dam Study project area and a Phase II archaeological evaluation of Site 18CR293, to assist the County in meeting its regulatory obligations under Section 106 of the NHPA. AECOM produced the following reports documenting this work:

- Phase I Archaeological Investigation for the Piney Run Watershed Study, Piney Run Dam Carroll County, Maryland, produced by AECOM for the Carroll County Bureau of Resource Management, April 2020.
- Phase II Archaeological Evaluation of Site 18CR293, Piney Run Watershed Carroll County, Maryland, produced by AECOM for the Carroll County Bureau of Resource Management, February 2024.

The Area of Potential Effects (APE) identified by NRCS for the Phase I survey encompassed 50.58 acres generally east, west, and south of Piney Run Dam (Figures 1 and 2). The Phase I archaeological survey was conducted in December 2019 and consisted of visual surface inspection for above-ground evidence of archaeological sites and the excavation of 217 shovel test pits. This survey resulted in the identification of four historic archaeological sites (18CR292, 18CR293, 18CR294, and 18CR295). One site, 18CR293 was recommended for Phase II evaluation. In addition, the Piney Run Dam is 50 years old as of 2024 and therefore was considered as a potential historic property.

Natural Resources Conservation Service
5601 Sunnyside Avenue
Beltsville, MD 20705
Voice (410) 757-0861 – FAX (855) 432-9027

The following sections provide greater detail regarding investigations and findings for the archaeological sites and Piney Run Dam:

18CR292 and 18CR294

Site 18CR292 is located in the uplands west of the dam and represents an isolated refuse disposal pit dating to the early 20th century. The site lacks a clear affiliation with any individual historic occupation, and while it can provide generic insights into some local consumer practices, it lacks the associative values and data potential to yield significant information. Therefore, NRCS recommended Site 18CR292 not eligible for listing in the National Register of Historic Places (NRHP). No further work was recommended.

Site 18CR294 is located at the eastern edge of the APE and consists of a large stone spring box that may date to the 19th century. No artifacts were recovered from 18CR294, which lacks a clear affiliation with any known, nearby historic occupation. Given the absence of potentially meaningful historical and archaeological contexts, 18CR294 likely possesses very limited data potential. For these reasons, NRCS recommended Site 18CR294 not eligible for listing in the NRHP. No further work was recommended.

In a letter dated September 14, 2023, NRCS requested MHT's comments and concurrence on eligibility determinations for Sites 18CR292 and 18CR294. In an email to NRCS dated January 24, 2024, MHT staff concurred that both sites are ineligible for listing in the NRHP and that no further archeological investigations were warranted.

18CR293

Site 18CR293, located immediately southeast of the dam's emergency spillway, represents a small 19th century farmstead. Phase I investigations identified various features including a possible capped well, two barn/outbuilding foundations, a spring box, and a dwelling foundation, arranged in two discrete activity loci representing agricultural and domestic site uses. Artifacts were recovered from intact contexts and exhibited spatial patterns that reflect the separate agricultural and domestic site uses. Site 18CR293 exhibits intact archaeological features, deposits, and discrete activity areas representative of a site type that has not been addressed in the local archaeological record. Given these considerations, Site 18CR293 was recommended potentially eligible for listing in the NRHP and that the site be avoided during future ground disturbing activities.

The site could not be avoided, and Phase II evaluations were conducted in October 2023. The Phase II evaluation of 18CR293 consisted of the excavation of 22 shovel test pits and nine test units and resulted in the recovery of over 7,000 historic artifacts. Based on the Phase II data, Site 18CR293 represents a small 19th to early 20th century farmstead. Features included two outbuilding foundations, an access road, a spring box, and remnants of a dwelling foundation. Artifacts date from the late 18th through 20th century, with most recovered in the vicinity of the house. A review of archival records suggested the house was occupied by farm hands and/or tenant farmers.

Site 18CR293 is not associated with an event important to history (criterion a), is not associated with a significant individual (criterion b) and does not embody a distinctive or exceptional example or work of a master (criterion c). While artifacts and features documented at 18CR293 provide information about the historic farmstead, artifacts were not well stratified. Soil layers were thin and included a mix of artifacts from the long occupation period, and most artifacts were recovered from the upper stratum associated with the demise of the building. The dwelling foundation had deteriorated, with no intact foundation or subsurface features remaining. While the stone and concrete outbuilding foundations remain intact, artifact deposits in this area were minimal, with limited research value. The site does not have potential to yield significant information about area history and the lives of the people who lived and worked on the site (criterion d) and does not retain a high level of integrity. For these reasons, NRCS determined Site 18CR293 not eligible for the NRHP.

In a letter dated March 6, 2024, NRCS requested MHT's comments and concurrence on the eligibility determination for Site 18CR293. MHT signed the letter on March 26, 2024, and concurred with NRCS's determination that 18CR293 is not eligible for the NRHP.

18CR295

Site 18CR295 is an unidentified historic occupation represented by a single positive STP at the western extent of the APE and a nearby stone foundation to the west and outside of the APE. Four historic artifacts were collected from the A/Ap horizon within the STP, including one piece of machine-made bottle glass (1893+) and three wire nails (1890+). Low density archaeological deposits within the APE represent the site periphery, while the core of the site is likely located beyond the APE near the foundation. Because the site core could not be more closely investigated, NRCS found that the site's overall nature, age, extent, cultural affiliation, integrity, and potential NRHP eligibility could not be assessed. NRCS has determined the Limit of Disturbance (LOD) for the Piney Run Dam Watershed Study which indicates that site 18CR295 will be avoided by all ground-disturbing activity (Figures 3 and 4).

In an email to NRCS, dated July 23, 2021, MHT provided their opinion that the proposed undertaking has low potential for impacting significant deposits associated with Site 18CR295 and that no further investigations were needed at this site for this undertaking.

Piney Run Dam

Piney Run Dam was constructed in 1974 and consists of an earthen embankment that represents a common type of dam built in the 1970s. Piney Run Dam is not associated with an event important to history (criterion a), is not associated with a significant individual (criterion b) and does not embody a distinctive or exceptional example or work of a master (criterion c). As a common earthen embankment dam, Piney Run Dam does not have potential to yield significant information about area history and the lives of the people who lived and worked on the site (criterion d). For these reasons, NRCS determined Piney Run Dam not eligible for the NRHP.

In an email exchange dated December 5, 2023, NRCS inquired if MHT would recommend completing a determination of eligibility (DOE) for Piney Run Dam as the dam structure is 50 years old as of 2024. MHT responded that a DOE was not recommended. In addition, MHT stated that in their opinion Piney Run Dam would not be eligible for listing on the NRHP.

In summary, as the result of work associated with the Piney Run Dam Watershed Study, NRCS has determined Sites 18CR292, 18CR293, 18CR294, and Piney Run Dam are not eligible for inclusion in the NRHP. Site 18CR295 is located at the western edge of the APE and extends further west outside of the APE. Because the site core could not be more closely investigated, NRCS could not make a determination on the site's eligibility for the NRHP. NRCS determined the LOD for the Study and it was found that site 18CR295 will be avoided by all ground-disturbing activity.

NRCS requests SHPO's concurrence with our definition of the APE and our determination of No Historic Properties Affected for the Piney Run Dam Watershed Project.

If you have any questions or comments, please feel free to contact me. Thank you for your consideration.

Sincerely,

JESSICA MUNDT Digitally signed by JESSICA MUNDT Date: 2024.10.11 10:09:55 -04'00'

Jessica Mundt
Cultural Resources Specialist
USDA-NRCS Maryland State Office
5601 Sunnyside Ave, Mail Stop 5598
Beltsville, Md 20705
Jessica.mundt@usda.gov

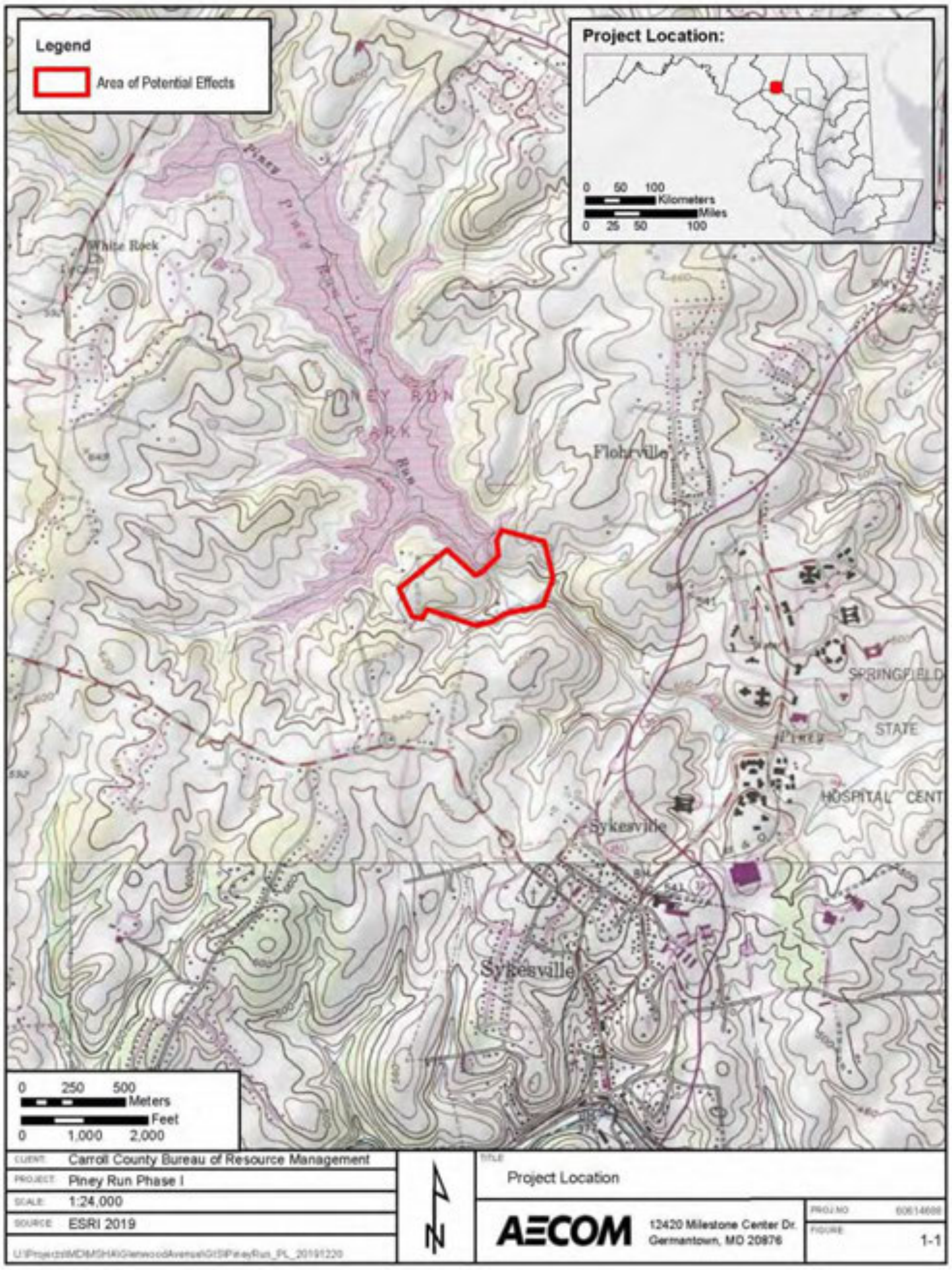


Figure 1. Topographic map showing the APE for the Phase I Archaeological Investigation for the Piney Run Dam Watershed Study.

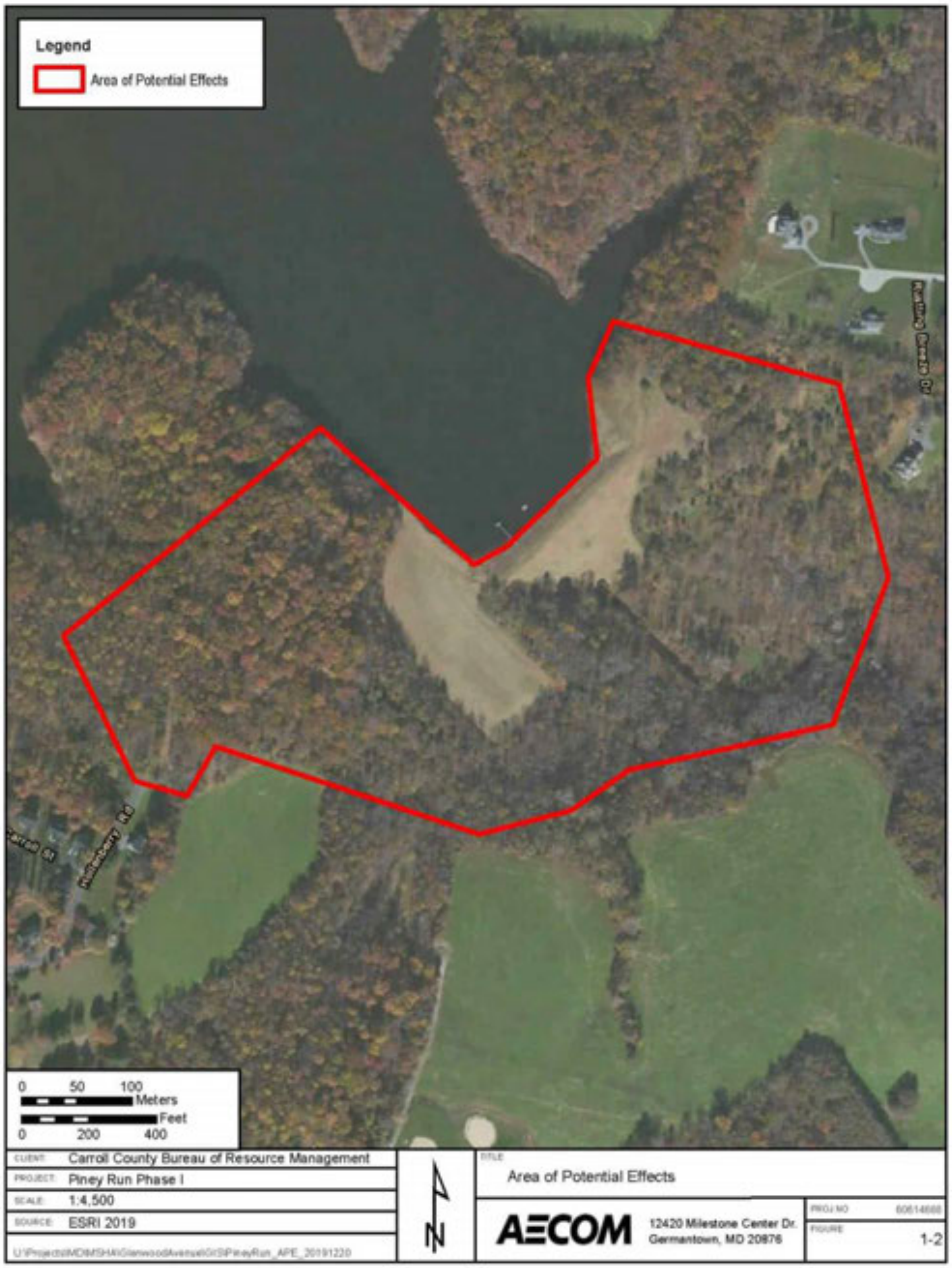


Figure 2. Aerial photograph showing the APE for the Phase I Archaeological Investigation for the Piney Run Dam Watershed Study.

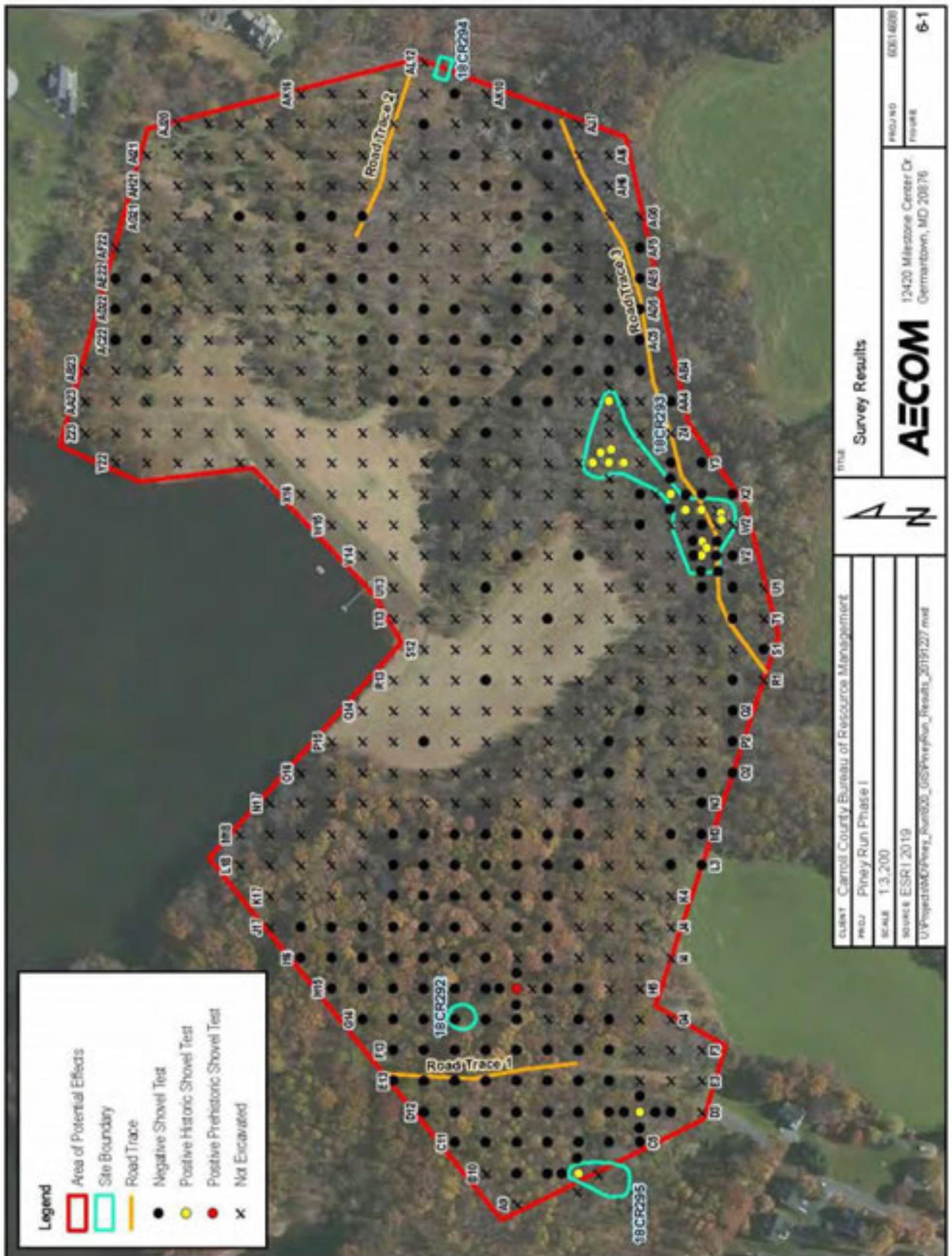


Figure 3. Aerial photograph showing location of shovel test pit excavations for the Phase I Archaeological Investigation for the Piney Run Watershed Study including the APE and site locations.

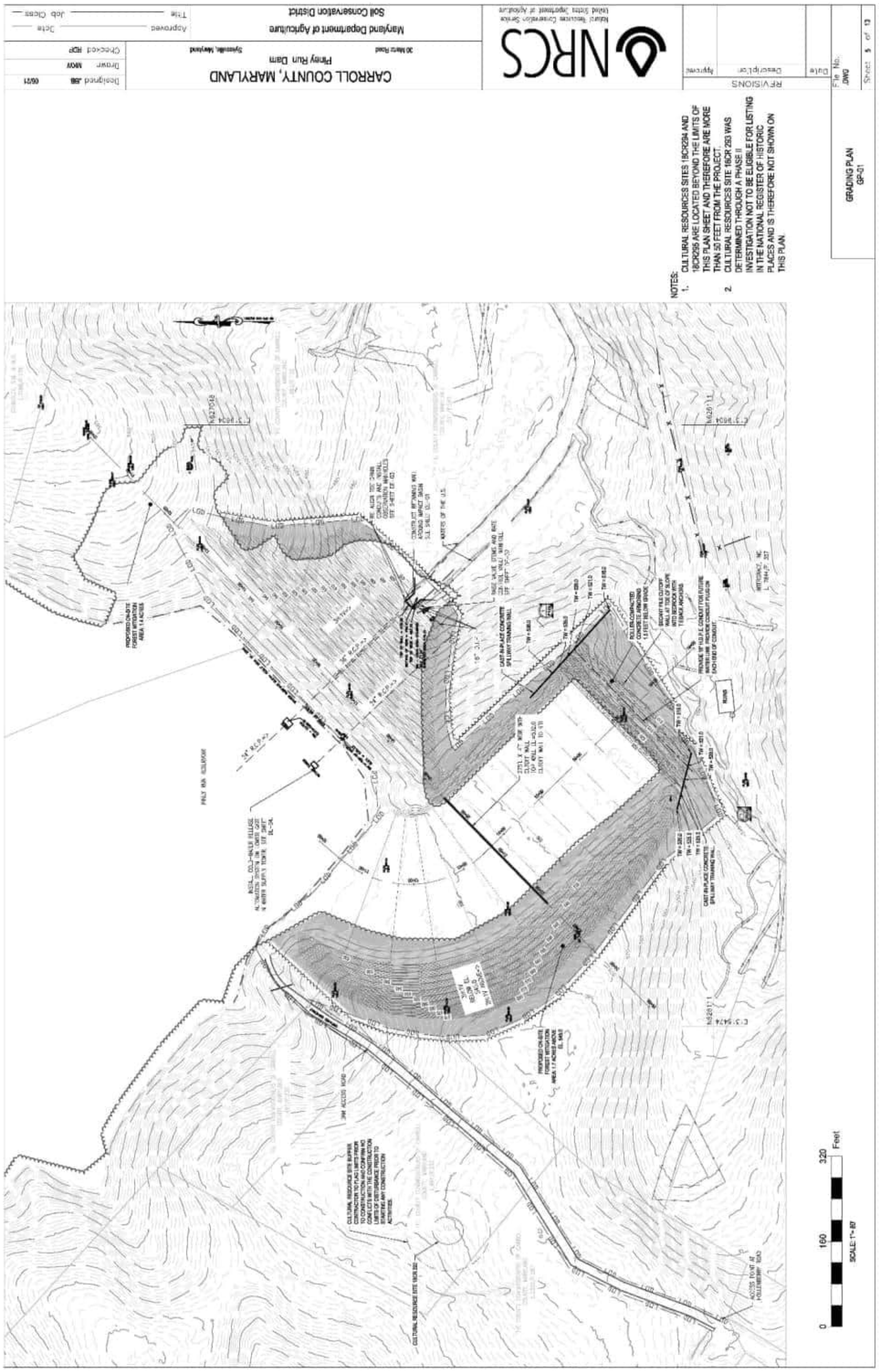


Figure 4. Piney Run Watershed Study plan showing the planned grading and Limit of Distrubance (LOD).

Blass, Jeff

From:	Dixie Henry -MDP- <[redacted]>
Sent:	Wednesday, October 19, 2022 2:43 PM
To:	Blass, Jeff
Cc:	Warf, Jen; Strano, Steve - NRCS, Annapolis, MD; Jones, J'Que - NRCS, Annapolis, MD; Baker, Michael - FPAC-NRCS, Annapolis, MD; Heyn, Chris; Seibel, Scott
Subject:	Re: Piney Run MHT Review Results

Jeff -- Thank you for providing the Maryland Historical Trust (MHT) with detailed site plans for the Piney Run Dam Rehabilitation project in Carroll County.
Following our review of the Phase I archaeological survey report and the site plans, we concur that site 18CR293 will be sufficiently avoided during construction
and preserved in place. We would recommend that protective fencing be installed prior to any site preparation activities, and that the fenced-off area also be delineated
on all site plans (including all civil sheets that will be provided to contractors and subcontractors) to ensure that the area containing site 18CR293 is correctly identified as
an area that is not to be disturbed or used in ANY way during the construction.

Following our review of these materials, it is our recommendation that the proposed dam rehabilitation work will have no effect on historic properties.

Please let us know if you have any questions or need further information -

- Dixie Henry

Maryland
DEPARTMENT OF PLANNING
MARYLAND HISTORICAL TRUST

MARYLAND HISTORICAL TRUST

CHANGING Maryland for the Better

Dixie L. Henry, Ph.D.

Preservation Officer, Project Review and Compliance

Maryland Historical Trust

Maryland Department of Planning

100 Community Place

1

[redacted]

From:	Miller, Meredith - FPAC-NRCS, MD [redacted]
Sent:	Wednesday, March 27, 2024 8:00 AM
To:	[redacted]
Cc:	
Subject:	FW: MHT e106 project review – MHT Completed Comments
Attachments:	202401353.pdf

This Message Is From an External Sender

This message came from outside your organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Report Suspicious

[redacted]

From: Maryland Historical Trust <donotreply@maryland.gov>
Sent: Tuesday, March 26, 2024 4:16 PM
To: [redacted]
Subject: MHT e106 project review – MHT Completed Comments

Date:	March 26, 2024
To:	Meredith Miller USDA NRCS
Project Name:	Piney Run Watershed - Phase II Evaluation of Site 18CR293 Draft Report
County:	Carroll County
Agency:	Natural Resources Conservation Service
Second Agency:	-- Not noted --
MHT Log #:	202401353

MHT Response: Thank you for providing the Maryland Historical Trust the opportunity to comment on the above-referenced undertaking using the MHT e106 system. The Maryland Historical Trust has reviewed the submitted project for its effects on historic and archeological resources, pursuant to Section 106 of the National Historic Preservation Act of 1966 and/or the Maryland Historical Trust Act of 1985. We offer the following comments and/or concurrence with the agency's findings:

No historic properties will be affected by the proposed undertaking. Additional consultation with our office may be required if there are any significant changes in project scope or location.

*****Notice: Refer to the attached document for MHT's response to your project submittal. Please click the link below. No hard copy of this comment email or attachments will be sent.*****

202401353.pdf

Thank you for your cooperation in this review process. Since the MHT response is now complete, this response will appear in the Completed section of your project dashboard. No hard copy of this response or attachments will be sent. If you have questions, please contact the following MHT project reviewers:

Dixie Henry [redacted]

Maryland Historical Trust
Project Review and Compliance
100 Community Place
Crownsville, MD 21032
mht.section106@maryland.gov

MHT.Maryland.gov
Planning.Maryland.gov

20240 1353

Dixie L. Henry, Ph.D.
Preservation Officer, Project Review and Compliance
Maryland Historical Trust
Maryland Department of Planning
100 Community Place
Crownsville, MD 21032

March 6, 2024

Re: Phase II Evaluation at Site 18CR293

Ms. Henry,

Attached please find the report of the *Phase II Archaeological Evaluation of Site 18CR293, Piney Run Watershed Carroll County, Maryland*, produced by AECOM for the Carroll County Bureau of Resource Management.

The Phase II evaluation of 18CR293 consisted of the excavation of 22 shovel test pits and nine test units and resulted in the recovery of over 7,000 historic artifacts. Based on the Phase II data, Site 18CR293 represents a small 19th to early 20th century farmstead. Features included two outbuilding foundations, an access road, a spring box, and remnants of a dwelling foundation. Artifacts spanned the late 18th through 20th century, with most found in the vicinity of the house. A review of archival records suggests the house was occupied by farm hands and/or tenant farmers.

Site 18CR293 is not associated with an event important to history (criterion a), is not associated with a significant individual (criterion b), and does not embody a distinctive or exceptional example or work of a master (criterion c). While artifacts and features documented at 18CR293 provide information about the historic farmstead, artifacts were not well stratified. Soil layers were thin and included a mix of artifacts from the long occupation period, and most artifacts were recovered from the upper stratum associated with the demise of the building. The dwelling foundation had deteriorated, with no intact foundation or subsurface features remaining. While the stone and concrete outbuilding foundations remain intact, artifact deposits in this area were minimal, with limited research value. The site does not have potential to yield significant information about area history and the lives of the people who lived and worked on the site (criterion d) and does not retain a high level of integrity. Site 18CR293 is recommended not eligible for the NRHP.

Thank you,

Meredith Miller
Environmental Engineer, USDA - Maryland NRCS

I concur with the above recommendation that 18CR293 is Not Eligible for the NRHP.

Dixie Henry 3/26/2024

Dixie L. Henry, Preservation Officer, Maryland Historical Trust

From:	Becky Roman -MDP-
To:	Sheehan, Nora - FPAC-NRCS, VA
Cc:	Baker, Michael - FPAC-NRCS, MD; Dixie Henry -MDP-; Strano, Steve - FPAC-NRCS, MD; Jones, J"Que - FPAC-NRCS, DC
Subject:	Re: DOE for Piney Run Dam, Dam Rehabilitation Project, Carroll County
Date:	Tuesday, December 5, 2023 11:50:24 AM
Attachments:	image001.png

Hello Nora,

Thank you for reaching out to MHT before submitting a completed DOE for Piney Run Dam. A DOE for the Piney Run Dam was never requested by MHT, and would not be based on its age. Based on information available on MDE's Fisheries website, the dam and reservoir were built by the COE in 1974 and in our opinion would not be eligible for listing on the National Register of Historic Places.

In addition, based on my review of our compliance log, the historic preservation consultation with MHT for the Piney Run Dam Rehabilitation Project is complete. A Phase I archaeology study was done by consultant AECOM and impacts to an identified site was avoided through project design. In was MHT's determination that the undertaking would have no effect on historic properties. Please see link to our final response with determination of effect on historic properties here: https://apps.mht.maryland.gov/compliancelog/pdfs/202204604.pdf

If the project scope of work or design has changed to include new areas of ground disturbance, please have NRCS submit the new project information to our office for review. Dixie Henry is the lead MRCS reviewer, and would see this submission and only bring me in as needed if above-ground resources may be present or effected.

If the team at NRCS have any further questions, please do not hesitate to contact us. For questions on historic structures and landscapes, I can be reached at [redacted]. For questions regarding the archeology review, please contact Dixie Henry at [redacted].

As to completing DOEs in Maryland - we have guidance on our website at: https://mht.maryland.gov/Pages/projectreview/project-review-DOE-Guide.aspx. FYI - we will be updating the web-based DOE guide in the next several months, so I am telling everyone to check back sometime in 2023.

Good to hear from you! Have a great rest of your week,
Becky

Becky Roman *(she, her, hers)*
Preservation Officer / Architectural Historian

Project Review and Compliance
Maryland Historical Trust
Maryland Department of Planning
[redacted]
Mht.maryland.gov Please take our customer service survey

On Tue, Dec 5, 2023 at 11:17 AM Sheehan, Nora - FPAC-NRCS, VA [redacted] wrote:

Hi Becky,

I am assisting the Maryland NRCS office with 106 review for a dam rehabilitation project on the Piney Run Dam in Carroll County. The dam will be 50 years old in 2024 so I was asked to complete a determination of eligibility. I have not done a DOE in Maryland before, so am not sure of the process. Any guidance you can give me would be appreciated!

Thanks,

Nora

Nora Sheehan

Cultural Resources Specialist

USDA-NRCS

1606 Santa Rosa Road Suite 209

Richmond VA 23229

[redacted]

USDA United States Department of Agriculture
Natural Resources Conservation Service

From: [illegible]
To: [illegible]
Subject: [illegible]
Date: [illegible]
Attachments: [illegible]

Nora –

Following our 2022 review of AECOM's Phase I archeological survey report and the USDA's more recent eligibility determinations for sites 18CR292 and 18CR294, MHT staff concur that both sites are ineligible for listing in the National Register and that no further archeological investigations are warranted for Section 106 purposes.

Please let us know if you have any questions or need further information -

- Dixie Henry

Dixie L. Henry, Ph.D.

[illegible]

Maryland Historical Trust

Maryland Department of Planning

100 Community Place

Crownsville, MD 21032

[redacted]

[illegible]

[illegible]

On Wed, Jan 24, 2024 at 3:49 PM Sheehan, Nora - FPAC-NRCS, VA [redacted] wrote:

Hi Dixie,

I'm just following up, still helping the MD NRCS office try to get everything in order for the Piney Run Dam EA. Can you let me know the status of this? As you recall, you had previously concurred that 18CR292 and 18CR294 are both ineligible for listing in the NRHP back in 2021, but since the request came from the consultant and not NRCS, we were required to resubmit the request directly from NRCS.

Thanks,

Nora

Nora Sheehan
Cultural Resources Specialist
USDA-NRCS
1606 Santa Rosa Road Suite 209
Richmond VA 23229
[redacted]

USDA United States Department of Agriculture
Natural Resources Conservation Service

From: Sheehan, Nora - FPAC-NRCS, VA
Sent: Thursday, Septem[redacted]
To: Dixie Henry -MDP-[redacted]
Subject: Piney Run Da[redacted]est for DOE comments and concurrence - Sites 18CR192 and 18CR194

Dixie,

Attached is a request for comments and concurrence regarding determinations of eligibility for two sites identified during AECOM's Phase I survey for the Piney Run Dam project in Carroll County.

Please let me know if you need any additional information.

Thanks,

Nora

Nora Sheehan
Cultural Resources Specialist
USDA-NRCS
1606 Santa Rosa Road Suite 209
Richmond VA 23229
[redacted]

USDA United States Department of Agriculture
Natural Resources Conservation Service

From: Dixie Henry -MDP-[redacted]
Sent: Thursday, July 13, 2023 3:0[illegible] PM
To: Sheehan, Nora - FPAC-NRCS, VA[redacted]
Subject: Re: Piney Run Dam Rehab C[redacted] ineligible sites and dam

Hello Nora!

As far as the determinations of eligibility for sites 18CR292 and 18CR294 are concerned. If NRCS would like to provide its own NR evaluation for these sites and request our comments and concurrence - that is absolutely fine. You can submit your own summary of the report and NRCS' determinations of (presumably) ineligibility, and we will provide a response/concurrence directly to NRCS. MHT routinely responds to whoever has provided the archeology report to us unless otherwise instructed. If a consultant provides us with a draft report, we will review the document and provide our recommendations based on the findings. It sounds like perhaps NRCS would prefer to have draft reports sent to them BEFORE they are submitted to the SHPO. If that is the case then NRCS will need to communicate that to the consultants, and then NRCS can forward the report (along with their determinations of eligibility) and a cover letter with a concurrence line for the MD SHPO, and we will be happy to conduct our review of the draft report once we have received it directly from NRCS.

And then regarding the DOE for the dam - If the federal agency wants to generate a DOE on a resource over 50 years that is certainly appropriate. You can look at the guidance on our website about DOEs - [illegible] which has lots of info and links to resources and the DOE database. One of our architectural historians, Becky [illegible], will be your main point of contact for assistance with the DOE. She can be reached at [redacted]
If you do a text search in Medusa (our Cultural Resources Information System - don't ask me to explain where "Medusa" came from...), under the Architecture tab and put "dam" in the Property Name field and then select Evaluated for NR Eligibility (DOE) under the Refine/Narrow Search Criteria box, it will give you a list of all the DOEs we have with "dam" in the name and you can look at these as examples.

Also - I wanted to make sure that you were aware that the Project Manager at AECOM, Jeff [illegible], provided MHT with detailed site plans for the dam rehab project, illustrating that site 18CR[illegible] would be sufficiently avoided during construction. We recommended that protective fencing be installed prior to any site preparation activities, and that the fenced-off area also be delineated on all site plans (including all civil sheets that will be provided to contractors and subcontractors) to ensure that the area containing site 18CR[illegible] is correctly identified as an area that is not to be disturbed or used in any way during construction.

I hope that this is helpful! Let Becky or I know if you have any questions or need further information.--

- Dixie

Dixie L. Henry, Ph.D.
Preservation Officer, Project Review and Compliance
Maryland Historical Trust
Maryland Department of Planning
[illegible]
[illegible]
[redacted]
[illegible]
[illegible]

To check on the status of a project submittal, please use our online search: [illegible]

On Fri, Jul 7, 2023 at 8:46 AM Sheehan, Nora - FPAC-NRCS, VA [redacted] wrote:

Good morning Dixie,

I hope you are enjoying your summer and have been able to take some time off to do that!

I am trying to address a few of the other issues that were brought up by the internal review of the Piney Run Dam Rehab EA by the National Watershed Management Center. The NWMC would like to see 'formal DOEs' for the two sites from this project (18CR292 and 294) that were determined ineligible for listing in the NRHP (this is what I started pursuing back in May that led to our initial email exchange). Their main issue seems to be that the determinations of eligibility and effect come from the consultant, not from the agency. I'm not sure how to remedy this – maybe if I submit another letter summarizing the AECOM report but coming from NRCS, can you submit another letter back that says the same thing you said in your previous letter regarding the report? Any advice you have would be greatly appreciated!

Also the NWMC is requesting that we do a DOE for the dam itself since it's ca. 50 years old (started in 72, finished in 74). Is there a format we should follow for that? Or can you point me to the right person to talk to?

Thanks again,

Nora

Nora Sheehan
Cultural Resources Specialist
USDA-NRCS
1606 Santa Rosa Road Suite 209
Richmond VA 23229
[redacted]

USDA United States Department of Agriculture
Natural Resources Conservation Service

From: Dixie Henry -MDP- [redacted]
Sent: Friday, May 12, [redacted]
To: Sheehan, Nora - FPAC-NRCS, VA [redacted]
Subject: Re: technical help with DOE [redacted]

Sounds good! We'll get through it! :)

Dixie L. Henry, Ph.D.
Preservation Officer, Project Review and Compliance

[redacted]

From: Jones, J'Que - NRCS, Annapolis, MD [redacted]
Sent: Monday, July 26, 2021 1:27 PM
To: Heyn, Chris; Blass, Jeff
Cc: Warf, Jennifer; Strano, Steve - NRCS, Annapolis, MD; Baker, Michael - FPAC-NRCS, Annapolis, MD; Jones, J'Que - NRCS, Annapolis, MD
Subject: [EXTERNAL] Piney Run MHT Review Results

Chris and Jeff,

See below the results of the MHT review.

Thanks;

J'Que C. Jones, PE
Maryland State Conservation Engineer
USDA-Natural Resources Conservation Service
John Hanson Business Center
339 Busch's Frontage Road, Suite 301
Annapolis, MD 21409-5543
[redacted]

[redacted]

From: Dixie Henry -MDP- <[redacted]
Sent: Friday, July 23, 2021 2:53 PM
To: Baker, Michael - FPAC-NRCS, Annapolis, MD <[redacted]
Subject: Fwd: Piney Run and

Hi Michael! I have completed my review of the Phase I archeological survey report that was prepared for the Piney Run Dam Rehabilitation project in
Carroll County. I will be concurring that sites 18CR292 and 18CR294 are both ineligible for listing in the National Register of Historic Places. No further
investigations are warranted at these two sites. Similarly, site 18CR295 (stone foundation) is located outside of the APE, and it is our opinion that the
proposed undertaking has a low potential for impacting significant deposits associated with this site. No further investigations are warranted at this site for
this particular undertaking.

Site 18CR293, however, contains the remains of a small 19th c. farmstead and is located just southeast of the dam's emergency spillway. We concur with the
Principal Investigator's recommendation that this site be avoided during construction and preserved in place. If the site cannot be avoided, Phase II evaluative
investigations will be needed prior to construction or site preparation work involving ground-disturbing activities.

Given these findings, MHT will need to be provided with site plans clearly illustrating that site 18CR293 will be avoided during construction. (Site 18CR293 is denoted as site Piney Run 2 on the site map found on page 6-2 of the Phase I report). Once we have site plans indicating that the site will be preserved in place, we will be able to provide a "no adverse effect" recommendation for the overall project.

Let me know if you have any questions or need further information --

- Dixie

Dixie L. Henry, Ph.D.

Preservation Officer, Project Review and Compliance

Maryland Historical Trust

Maryland Department of Planning

100 Community Place

Crownsville, MD 21032

[redacted]

mht.maryland.gov

Please take our customer service survey.

To check on the status of a project submittal, please use our online search: https://mht.maryland.gov/compliancelog/ComplianceLogSearch.aspx.

---------- Forwarded message ---------
From: **Beth Cole - MHT** [redacted]
Date: Wed, Jul 21, 2021 at 10:42 AM
Subject: Re: Piney Run and
To: Baker, Michael - FPAC-NRCS, Annapolis, MD [redacted] Dixie Henry -MDP- [redacted]

Thanks Michael - I am including Dixie Henry in this response as she is the primary review and will follow up with you regarding Piney Run and general coordination procedures. Thanks for bringing this to our attention.

2

Beth

To check on the status of a submittal, please use our online search: https://mht.maryland.gov/compliancelog/ComplianceLogSearch.aspx.

Beth Cole
Administrator, Project Review and Compliance
Maryland Historical Trust
Maryland Department of Planning
100 Community Place
Crownsville, MD 21032

[redacted]
MHT.Maryland.gov
Please take our customer service survey

On Wed, Jul 21, 2021 at 9:21 AM Baker, Michael - FPAC-NRCS, Annapolis, MD <[redacted] wrote:

Hi Beth,

Wanted to know if there has been an update to Piney Run submission. I know that you guys are under staffed and a lot but just wanted to check to make sure it was received. Also wanted to bring to your attention that field staff have been receiving their reviews back from MHT and would appreciate if I could also be added to those emails so I can update our tracker.

Michael Baker

State Planning Specialist

USDA-NRCS

339 Busch's Frontage Rd, Suite 301

Annapolis, MD 21409

[redacted]

[redacted]

3

Figure E - 11. Native American Tribe Coordination

USDA
United States Department of Agriculture

Memorandum

Subject: Tribal Consultation Contacts - Piney Run Watershed Rehab Plan-EA

Date: 11/29/2022

To: Commissioners of Carroll County

From: J'Que C. Jones, PE, State Conservation Engineer

As part of the development of the Watershed Plan – Environmental Assessment for the Piney Run Watershed Rehabilitation project under Agreement # NR193B19XXXXC005, Maryland NRCS has made several attempts to contact and solicit Tribal cooperation and participation in the development of the plan. Michael Baker, State Planning Specialist was the primary point of contact for these efforts.

Three letters of certified mail were delivered to each tribe. Each tribe received each letter twice as a copy was sent to their Tribal Historic Preservation Office and the other to their Chief/President. The first letter was sent out on August 12, 2021, asking for the Tribe's interest in starting a consultation process with our Agency in Maryland. The second letter sent out on October 18, 2021, was specific to the Piney Run Rehabilitation project in which it described the rehabilitation alternatives being considered and requested that questions or comments pertaining to the project be provided. A final set of certified letters specific to the Piney Run project were mailed to the Tribes on October 13, 2022, and October 20, 2022. As of today, there have been no responses to the letters sent out. Copies of the letters sent out are attached.

Each tribe was contacted on November 4, 2021, February 8, 2022, and July 14, 2022, by phone or email. A list of all the federally recognized tribes contacted is shown on the attached spreadsheet. The green coloring demarks that THPO that was contacted. Their respective responses are listed in the comment box found within the attached Tribal Contacts document.

As a result of unresponsiveness or negative responses to requests for participation, tribal consultation requirements have been satisfied, and the development and finalization of the plan can progress. This memo serves as documentation of the efforts made.

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339 Busch's Frontage Road, Suite 301
Annapolis, Maryland 21409-5543
Voice (443) 482-2912
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Should you have questions, please feel free to contact me at (443) 482-2912 or jque.jones@usda.gov or Michael Baker at michael.p.baker@usda.gov .

J'Que C. Jones, PE
NRCS, Annapolis, MD

Natural Resources Conservation Service
339 Busch's Frontage Road, Suite 301
Annapolis, Maryland 21409-5543
Voice (443) 482-2912

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(Stamp date when signed)
[Name of Tribal Leader]
[Title of Contact]
[Name of Tribal Organization]
[Address]
[City, State, ZIP]
Initiation of Tribal Consultation
for Identification of Ancestral Lands in [STATE]
Dear [NAME OF TRIBAL OFFICIAL (with appropriate honorific)]
Chairperson – Honorable

I hope this letter finds you well. My staff and I look forward to opening a dialog with your tribe regarding the interest of the (insert tribe or Nation's name) in developing a working relationship for government-to-government consultation on future projects and undertakings within the State of Maryland. The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) is a federal agency that works with producers and landowners to help them conserve, maintain, and improve the condition of natural resources on their land. The NRCS emphasizes voluntary science-based conservation, and provides both technical and financial assistance for solving natural resource problems to individual landowners and producers. Technical assistance may be in the form of conservation planning or an engineering design. Financial assistance is provided to landowners and producers through Farm Bill programs such as the Environmental Quality Incentives Program (EQIP) or the Conservation Stewardship Program (CSP). Additionally, the NRCS may assist communities with watershed planning and provide financial assistance to implement watershed plans and dam rehabilitation projects.

As a Federal agency, NRCS complies with the National Historic Preservation Act of 1966 (as amended), and implementing regulations, and takes historic properties (i.e., buildings, structures, archeological sites, objects, traditional cultural properties and districts eligible or listed in the National Register of Historic Places) into account for all undertakings that have the potential to affect such properties. Section 800.4(b)(1) of these regulations' states that Federal agency officials must make a "reasonable and good faith effort" to identify historic properties within each project's area of potential effect (APE) that may be affected by their undertakings. This reasonable and good faith effort may include background research, consultation, interviews, sample field investigations, and field survey.

The NRCS is interested in strengthening its tribal relationship by conducting government-to-government consultations with tribal nations. Our goal is to begin an ongoing program of tribal consultation between [TRIBAL ORGANIZATION] and the NRCS Maryland pertinent to Section 106 process, and Executive Order 13175 NRCS welcomes any refinements to the consultation process you may suggest. In addition, my staff will be reaching out to schedule a call or meeting soon. If [NAME OF TRIBAL ORGANIZATION] is interested in arranging a

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consultation meeting for your Nation, have any questions, or need additional information, please contact me by telephone (xxx) xxx-xxxx or email xxxx@xxx.gov. I look forward to hearing from you.

Sincerely,
[NAME]
State Conservationist
CC:
THPO
NRCS CRS

TERRON HILLSMAN
State Conservationist

USDA United States Department of Agriculture
Natural Resources Conservation Service

(Stamp date when signed)
[Name of Tribal Leader]
[Title of Contact]
[Name of Tribal Organization]
[Address]
[City, State, ZIP]

Dear [NAME OF TRIBAL OFFICIAL (with appropriate honorific)]
Chairperson – Honorable

NRCS Maryland seeks [Tribe]'s input on knowledge or awareness of cultural resources as they relate to Piney Run Dam Rehabilitation project. The project location is in Sykesville, Maryland with the area of potential effect (APE) located on the maps within the packet. The project is in the planning phase for rehabilitating the dam that creates Piney Run Lake. The plan is to analyze and describe environmentally friendly alternatives to ensure that the dam remains safe and continues to avoid damaging life and property in the surrounding areas. Federal funding was provided to Carroll County through the NRCS Watershed Rehabilitation Program (OL-566) for the planning phase of the project. Upon completion of the planning phase, the project sponsors could apply for funding from NRCS for the implementation phase.

The planning phase included development and analysis of alternatives and an environmental review. Six alternatives were initially considered, but only the no action and three of the original alternatives were evaluated because the others were deemed unreasonable. The alternatives considered were:

- **Alternative 0** – No action
- **Alternative 1** – Dam modification without water supply infrastructure – This alternative brings the dam up to current specifications and requires the clearing of 6.5 acres of forest near the existing dam.
- **Alternative 2** – Dam modification and water supply infrastructure with a normal pool raise of 2.3 feet – This alternative brings the dam up to current specifications and increases the pool elevation to account for a sediment pool deficiency. This alternative requires clearing of 11.9 acres of forest and impacts 6.5 acres of wetlands and 850 linear feet of stream.
- **Alternative 3** – Dam modification and water supply infrastructure with no raise in pool elevation – This alternative is similar to alternative 2, but without raising the normal pool elevation. This alternative requires clearing of 7.9 acres of forest.

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Annapolis, Maryland 21409-5543
Voice (410) 757-0861 – FAX (855) 432-9027

As part of the review process, the project sponsor contracted with AECOM to prepare a phase 1 archaeological investigation. The phase 1 investigation identified four historic archaeological sites within the APE, one of which they recommended as potentially eligible for listing in the NHRP, one of which they could not make a recommendation, and two of which they recommended were not eligible for listing. In addition to the archaeological investigation NRCS Maryland encourages [Tribe] to share concerns or considerations the [Tribe] may have regarding cultural resources within the APE to conclude the planning phase of this project.

Please contact me at XXX-XXX-XXXX or ramon.ortiz@usda.gov with any question or additional information is required.

Sincerely,
Ramon Ortiz
Acting State Conservationist

Attachments:
Phase 1 Archaeological Investigation

USDA
United States Department of Agriculture

October 8, 2024

[redacted]

Re: Tribal Consultation for Piney Run Dam Watershed Study

Dear [redacted]

The purpose of this letter is to summarize the findings and results of Phase I and Phase II archaeological investigations as well as consultation with the [redacted] associated with the Piney Run Dam Watershed Study. This letter will also provide a finding of effect on historic properties for the overall project.

The United States Department of Agriculture-Natural Resources Conservation Service (NRCS) is providing assistance to the Commissioners of Carroll County for the Piney Run Dam Watershed Study in Carroll County, Maryland. Although Piney Run Dam met all requirements when it was constructed in 1974, the Maryland Department of the Environment (MDE) stated that there are concerns the dam may not meet current safety criteria. The watershed study will allow the County to evaluate the dam and determine options for addressing any identified deficiencies. NRCS determined that the project is an undertaking, as defined in 36 CFR 800.16(y), that has the potential to affect historic properties. NRCS initiated consultation with the [redacted] regarding this study via a letter sent by certified mail on October 18, 2021, which described the project and the rehabilitation alternatives being considered and requested any questions or comments pertaining to the project. The [redacted] was also contacted on November 4, 2021, by phone or email.

Carroll County contracted AECOM to conduct a Phase I archaeological survey of the Piney Run Dam Study project area and a Phase II archaeological evaluation of Site 18CR293, to assist the County in meeting its regulatory obligations under Section 106 of the NHPA. AECOM produced the following reports documenting this work:

- Phase I Archaeological Investigation for the Piney Run Watershed Study, Piney Run Dam Carroll County, Maryland, produced by AECOM for the Carroll County Bureau of Resource Management, April 2020.
- Phase II Archaeological Evaluation of Site 18CR293, Piney Run Watershed Carroll County, Maryland, produced by AECOM for the Carroll County Bureau of Resource Management, February 2024.

The Area of Potential Effects (APE) identified by NRCS for the Phase I survey encompassed 50.58 acres generally east, west, and south of Piney Run Dam (Figures 1 and 2). The Phase I archaeological survey was conducted in December 2019 and consisted of visual surface inspection for above-ground evidence of archaeological sites and the excavation of 217 shovel test pits. This survey resulted in the identification of four historic archaeological sites (18CR292, 18CR293, 18CR294, and

18CR295). One site, 18CR293 was recommended for Phase II evaluation. In addition, the Piney Run Dam is 50 years old as of 2024 and therefore was considered as a potential historic property.

The following sections provide greater detail regarding investigations and findings for the archaeological sites and Piney Run Dam:

18CR292 and 18CR294

Site 18CR292 is located in the uplands west of the dam and represents an isolated refuse disposal pit dating to the early 20th century. The site lacks a clear affiliation with any individual historic occupation, and while it can provide generic insights into some local consumer practices, it lacks the associative values and data potential to yield significant information. Therefore, NRCS recommended Site 18CR292 not eligible for listing in the National Register of Historic Places (NRHP). No further work was recommended.

Site 18CR294 is located at the eastern edge of the APE and consists of a large stone spring box that may date to the 19th century. No artifacts were recovered from 18CR294, which lacks a clear affiliation with any known, nearby historic occupation. Given the absence of potentially meaningful historical and archaeological contexts, 18CR294 likely possesses very limited data potential. For these reasons, NRCS recommended Site 18CR294 not eligible for listing in the NRHP. No further work was recommended.

In a letter dated September 14, 2023, NRCS requested MHT's comments and concurrence on eligibility determinations for Sites 18CR292 and 18CR294. In an email to NRCS dated January 24, 2024, MHT staff concurred that both sites are ineligible for listing in the NRHP and that no further archeological investigations were warranted.

18CR293

Site 18CR293, located immediately southeast of the dam's emergency spillway, represents a small 19th century farmstead. Phase I investigations identified various features including a possible capped well, two barn/outbuilding foundations, a spring box, and a dwelling foundation, arranged in two discrete activity loci representing agricultural and domestic site uses. Artifacts were recovered from intact contexts and exhibited spatial patterns that reflect the separate agricultural and domestic site uses. Site 18CR293 exhibits intact archaeological features, deposits, and discrete activity areas representative of a site type that has not been addressed in the local archaeological record. Given these considerations, Site 18CR293 was recommended potentially eligible for listing in the NRHP and that the site be avoided during future ground disturbing activities.

The site could not be avoided, and Phase II evaluations were conducted in October 2023. The Phase II evaluation of 18CR293 consisted of the excavation of 22 shovel test pits and nine test units and resulted in the recovery of over 7,000 historic artifacts. Based on the Phase II data, Site 18CR293 represents a small 19th to early 20th century farmstead. Features included two outbuilding foundations, an access road, a spring box, and remnants of a dwelling foundation. Artifacts date from the late 18th through 20th century, with most recovered in the vicinity of the house. A review of archival records suggested the house was occupied by farm hands and/or tenant farmers.

- 3 -

Site 18CR293 is not associated with an event important to history (criterion a), is not associated with a significant individual (criterion b) and does not embody a distinctive or exceptional example or work of a master (criterion c). While artifacts and features documented at 18CR293 provide information about the historic farmstead, artifacts were not well stratified. Soil layers were thin and included a mix of artifacts from the long occupation period, and most artifacts were recovered from the upper stratum associated with the demise of the building. The dwelling foundation had deteriorated, with no intact foundation or subsurface features remaining. While the stone and concrete outbuilding foundations remain intact, artifact deposits in this area were minimal, with limited research value. The site does not have potential to yield significant information about area history and the lives of the people who lived and worked on the site (criterion d) and does not retain a high level of integrity. For these reasons, NRCS determined Site 18CR293 not eligible for the NRHP.

In a letter dated March 6, 2024, NRCS requested MHT's comments and concurrence on the eligibility determination for Site 18CR293. MHT signed the letter on March 26, 2024, and concurred with NRCS's determination that 18CR293 is not eligible for the NRHP.

<u>18CR295</u>

Site 18CR295 is an unidentified historic occupation represented by a single positive STP at the western extent of the APE and a nearby stone foundation to the west and outside of the APE. Four historic artifacts were collected from the A/Ap horizon within the STP, including one piece of machine-made bottle glass (1893+) and three wire nails (1890+). Low density archaeological deposits within the APE represent the site periphery, while the core of the site is likely located beyond the APE near the foundation. Because the site core could not be more closely investigated, NRCS found that the site's overall nature, age, extent, cultural affiliation, integrity, and potential NRHP eligibility could not be assessed. NRCS has determined the Limit of Disturbance (LOD) for the Piney Run Dam Watershed Study which indicates that site 18CR295 will be avoided by all ground-disturbing activity (Figures 3 and 4).

In an email to NRCS, dated July 23, 2021, MHT provided their opinion that the proposed undertaking has low potential for impacting significant deposits associated with Site 18CR295 and that no further investigations were needed at this site for this undertaking.

<u>Piney Run Dam</u>

Piney Run Dam was constructed in 1974 and consists of an earthen embankment that represents a common type of dam built in the 1970s. Piney Run Dam is not associated with an event important to history (criterion a), is not associated with a significant individual (criterion b) and does not embody a distinctive or exceptional example or work of a master (criterion c). As a common earthen embankment dam, Piney Run Dam does not have potential to yield significant information about area history and the lives of the people who lived and worked on the site (criterion d). For these reasons, NRCS determined Piney Run Dam not eligible for the NRHP.

In an email exchange dated December 5, 2023, NRCS inquired if MHT would recommend completing a determination of eligibility (DOE) for Piney Run Dam as the dam structure is 50 years old as of 2024. MHT responded that a DOE was not recommended. In addition, MHT stated that in their opinion Piney Run Dam would not be eligible for listing on the NRHP.

In summary, as the result of work associated with the Piney Run Dam Watershed Study, NRCS has determined Sites 18CR292, 18CR293, 18CR294, and Piney Run Dam are not eligible for inclusion in the NRHP. Site 18CR295 is located at the western edge of the APE and extends further west outside of the APE. Because the site core could not be more closely investigated, NRCS could not make a determination on the site's eligibility for the NRHP. NRCS determined the Limit of Disturbance (LOD) for the Study and it was found that site 18CR295 will be avoided by all ground-disturbing activity. NRCS has made a determination of No Historic Properties Affected for the Piney Run Dam Watershed Project.

NRCS Maryland encourages the [redacted] to share any concerns or considerations they may have regarding archaeological investigations and cultural resources within the APE.

Please contact me at [redacted] or [redacted] with any questions or if additional information is required.

Sincerely,

SUZY DAUBERT Digitally signed by SUZY DAUBERT Date: 2024.10.10 08:38:40 -04'00'

Suzy Daubert
State Conservationist

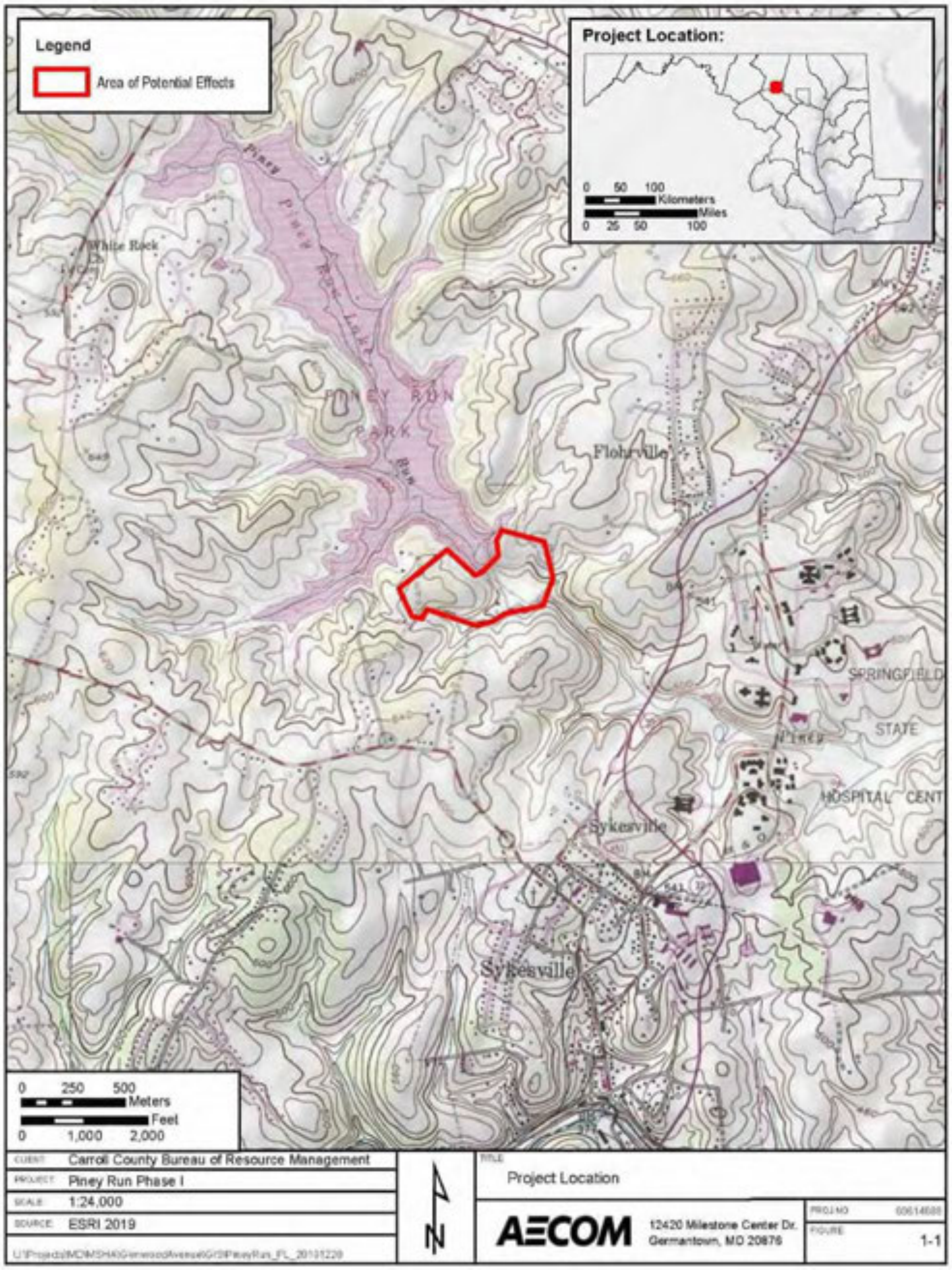

Figure 1. Topographic map showing the APE for the Phase I Archaeological Investigation for the Piney Run Dam Watershed Study.

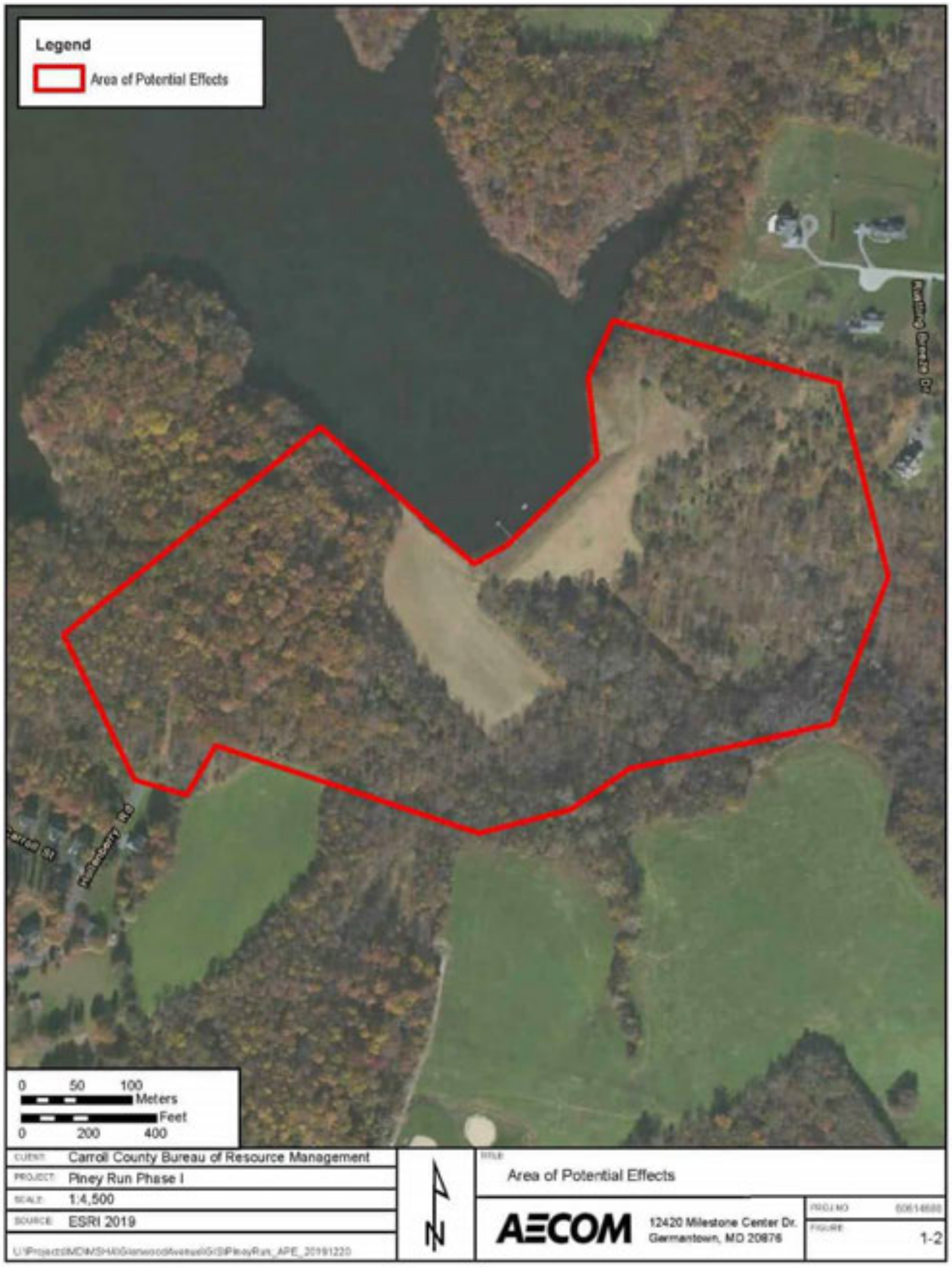

Figure 2. Aerial photograph showing the APE for the Phase I Archaeological Investigation for the Piney Run Dam Watershed Study.

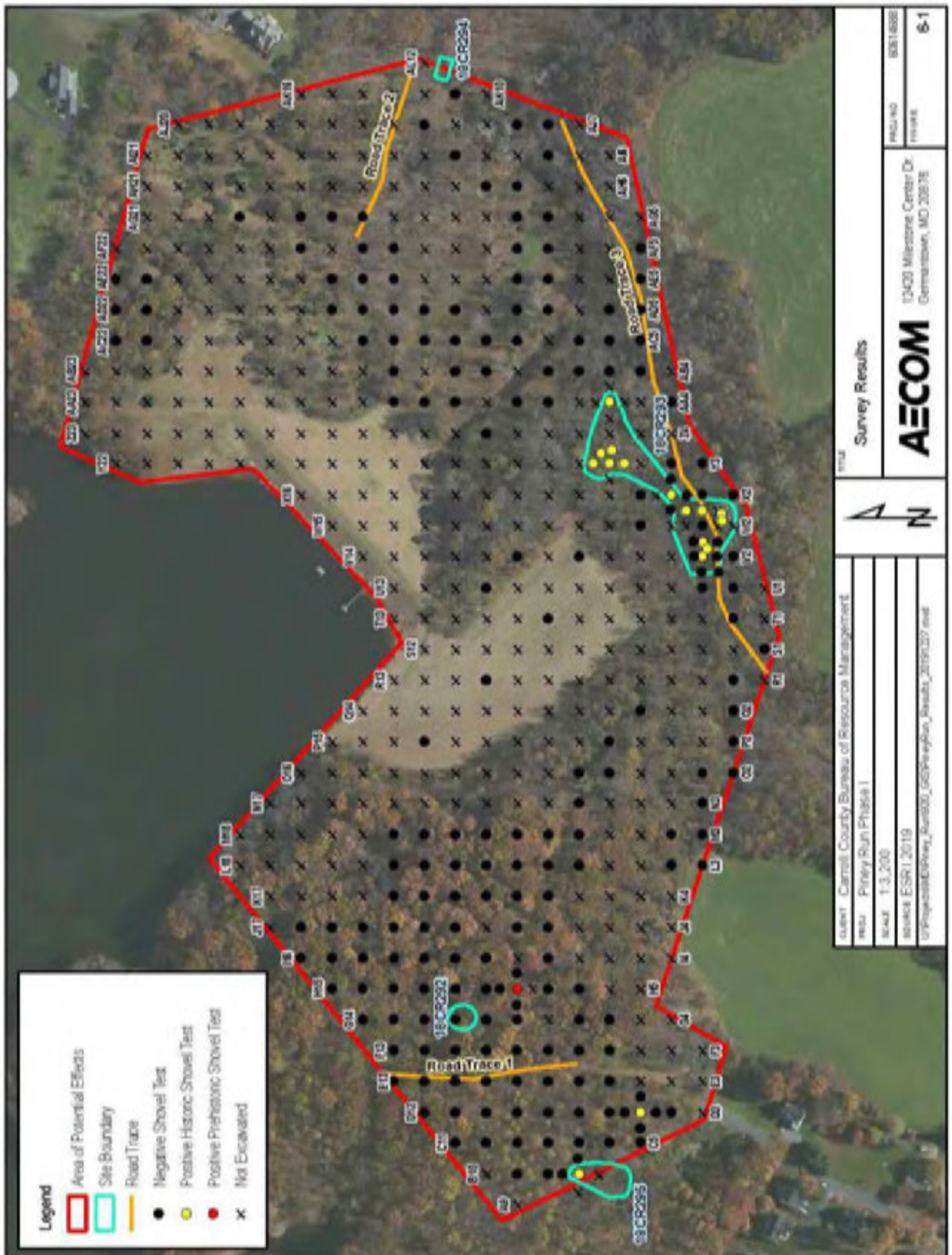

Figure 3. Aerial photograph showing location of showel test pit excavations for the Phase I Archaeological Investigation for the Piney Run Watershed Study including the APE and site locations.

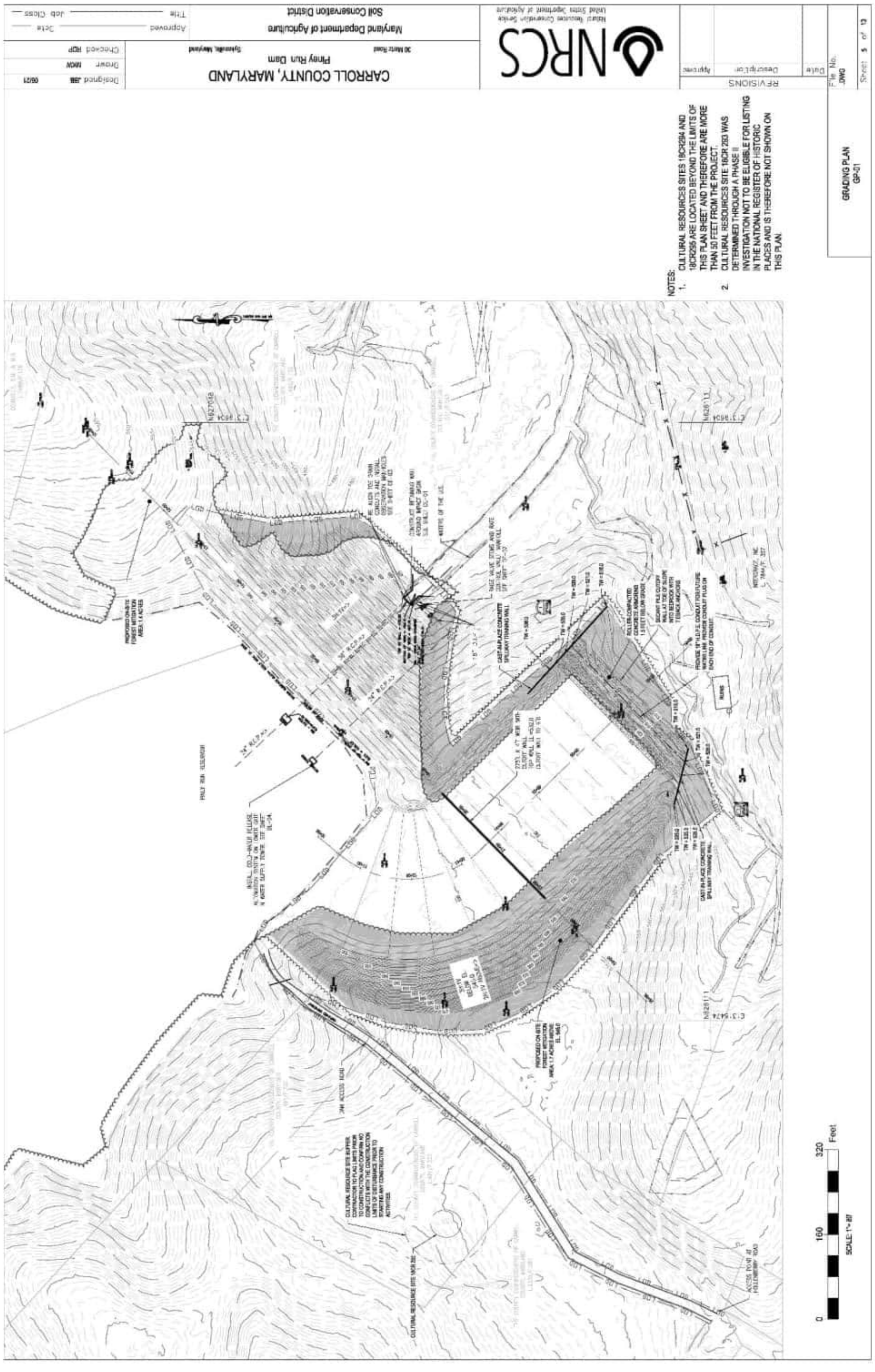

Figure 4. Piney Run Watershed Study plan showing the planned grading and Limit of Distrubance (LOD).

Affiliation	Name	Position	Salutation	Email	Address 1	Address 2	City, State, Zip	Date Called	Michael Baker Comments	Jess Mundt Comments	Phone	Website
Oneida Indian Nation	Raymond Halbritter	Nation Representative	Mr. Halbritter		5218 Patrick Road		Verona, NY 13478				315-829-8900	http://www.oneidaindiannation.com
Oneida Indian Nation	Jesse Bergevin	Historic Resources Specialist	Mr. Bergevin	jbergevin@oneida-nation.org	2037 Dream Catcher Plaza		Oneida, NY 13421-0662	11/4/2021 & 2/8/2022 & 7/14/2022	Left Message -	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024. Mr. Bergevin responded by email on 11/6/2024 "The Oneida Indian Nation has no comments or concerns regarding the project and its studies."	315-829-8463	
Oneida Tribe of Indians of Wisconsin	Tehassi Hill	Tribal Chairman	Mr. Hill	THill7@oneidanation.org	P.O. Box 365		Oneida, WI 54115-0365				920-869-4420	http://www.oneidanation.org
Oneida Tribe of Indians of Wisconsin	Stacie Cutbank	THPO	Ms. Cutbank	bdanforth@oneidanation.org	P.O. Box 365		Oneida, WI 54115-0365	11/4/2021 & 2/8/2022 & 7/14/2022 7/15/2022	Left Message - Spoke with Stacie and sent her emails regarding Piney Run on 7/14/2022. Said she would either get back by the end of the week, or at the start of August 1 to let me know if they are interested in Piney Run or consulations. Email delievery failed called back and asked for updated email. Called back on 7/15 left message	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024. Received a read receipt 11/6/2024.	920-490-3828	
Onondaga Nation	Sidney Hill	Chief	Chief Hill		Onondaga Nation	4040 Route 11	Nedrow, NY 13120				315-496-0302	http://www.onondaganation.org
Onondaga Nation	Joseph Heath	General Counsel	Mr. Heath		Onondaga Nation	4040 Route 11	Nedrow, NY 13120	11/4/2021 & 2/8/2022 & 7/14/2022	Left Message - 7/14/22 called Joe directly busy line	Closeout consultation letter sent by certified mail 10/10/2024. Called Mr. Heath 10/28/2024 and left a message. Called Mr. Heath 11/6/2024 and left a message requesting any comments from the Onondaga Nation and stating that we plan to move forward with the project next week.	315-475-2559	
Onondaga Nation	Anthony Gonyea	Faithkeeper (Beaver Clan)	Faithkeeper Gonyea	ononcomm@gmail.com	Onondaga Nation	4040 Route 11	Nedrow, NY 13120				315-952-3109	
Saint Regis Mohawk Tribe	Beverly Cook	Chief	Chief Cook		Saint Regis Mohawk Tribe Tribal Administration Bu	71 Margaret Terrance Memorial Way	Akwesasne, NY 13655				518-358-2272	http://www.srmt-nsn.gov
Saint Regis Mohawk Tribe	Michael Conners	Chief	Chief Conners		Saint Regis Mohawk Tribe Tribal Administration Bu	71 Margaret Terrance Memorial Way	Akwesasne, NY 13655				518-358-2272	
Saint Regis Mohawk Tribe	Eric Thompson	Chief	Chief Thompson		Saint Regis Mohawk Tribe Tribal Administration Bu	71 Margaret Terrance Memorial Way	Akwesasne, NY 13655				518-358-2272	
Saint Regis Mohawk Tribe	Darren Bonaparte	THPO	Mr. Bonaparte	darren.bonaparte@srmt-nsn.gov	Saint Regis Mohawk Tribe Tribal Administration Bu	71 Margaret Terrance Memorial Way	Akwesasne, NY 13655	11/4/2021 & 2/8/2022 & 7/14/2022	Left Message	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024.	518-358-2272 ext. 2183	
Tuscarora Nation	Leo R. Henry	Chief	Chief Henry		2006 Mt. Hope Road		Lewiston, NY 14092				716-601-4737	www.tuscaroraenvironment.org
Tuscarora Nation	Bryan Printup	Chiefs Council	Mr. Printup	bprintup@hetf.org	5226 Walmore Road		Lewiston, NY 14092	11/4/2021 & 2/8/2022 & 7/14/2022	Asked for some security codes could not leave message - Left message for environmental office 7/14/2022	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024.	716-264-6011	
Seneca-Cayuga Nation	Sarah S. Channing	Chief	Chief Channing		23701 South 655 Road	10 Hwy	Grove, OK 74344				918-787-5452 ext. 6013	http://www.sctribe.com
Seneca-Cayuga Nation	William Tarrant	THPO	Mr. Tarrant	wtarrant@sctribe.com	P.O. Box 453220		Grove, OK 74345	11/4/2021	No interest in Piney Run Dam Rebshabilation. William says there is not a lot of interest of the tribe in Maryland, mostly NY, PA. May reach out at later date	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024.	918-787-5452 ext. 6061	
Delaware Nation	Deborah Dotson	Tribal President	President Dotson		P.O. Box 825		Anadarko, OK 73005				405-247-2448 ext. 1101	http://www.delawarenation.com
Delaware Nation	Erin Paden	Historic Preservation Director	Ms. Paden- email undeliverable. They have a new THPO Katelyn Lucas, (405) 544-8115, klucas@delawarenation-nsn.gov	epaden@delawarenation-nsn.gov Undeliver	Cultural Preservation Department	P.O. Box 825	Anadarko, OK 73005	11/4/2021	Prefers to be reached via email. They are interested in consulation, but they are not interested in the Pine Run dam Rehab.	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent to Ms. Paden with signed letter attached on 10/28/2024. Email was undeliverable. The tribe has a new THPO and a follow up email was sent to her with the signed letter attached. Second follow up email sent to new THPO with signed letter attached and request for a read receipt on 11/6/2024.	405-247-2448 ext. 1403	
Delaware Tribe of Indians	Chester "Chet" Brooks	Chief	Chief Brooks	cbrooks@delawaretribe.org	5100 Tuxedo Blvd		Bartlesville, OK 74006				918-337-6590	http://delawaretribe.org
Delaware Tribe of Indians	Larry Heady	THPO	Dr. Obermeyer	lheady@delawaretribe.org	1200 Commercial Street Roosevelt Hall, RM 212	Emporia State University	Emporia, KS 66801				620-341-6633	
Delaware Tribe of Indians	Susan Bachor	Historic Preservation Representative	Ms. Bachor	Emailed both addresses: smbachor@gmail.com, sbachor@delawaretribe.org (email failed)	P.O. Box 64		Pocono Lake, PA 18347	11/4/2021 & 2/8/2022 & 7/14/2022	Left Message - 7/14/2022 Only interested in county along the Chesapeake no interest in Piney Run, will email for other consulations	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024.	610-761-7452	
Absentee-Shawnee Tribe of Oklahoma	John Raymond Johnson	Governor	Governor Johnson		2025 S. Gordon Cooper Drive		Shawnee, OK 74801				405-275-4030 ext. 188	http://www.astribe.com/astribe

Absentee-Shawnee Tribe of Oklahoma	Devon Frazier	THPO	Ms. Frazier	dfrazier@astribe.com / 106NAGPRA@astribe	2025 S. Gordon Cooper Drive		Shawnee, OK 74801	11/4/2021	Cecil, Garrett, Harford, Howard, Montgomery and Alleghany. Piney Run is not within the current counties. Sent email for starting consulation	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent to both addresses with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024. Received a read receipt from Clayton Martinez on 11/6/2024.	405-275-4030 ext. 6243	
Absentee-Shawnee Tribe of Oklahoma	Carol Butler	Cultural Preservation Director	Ms. Butler	cbutler@astribe.com / 106NAGPRA@astribe	2025 S. Gordon Cooper Drive		Shawnee, OK 74801				405-275-4030 ext. 6245	
Eastern Shawnee Tribe	Glenna J. Wallace	Chief	Chief Wallace		P.O. Box 350		Seneca, MO 64865				918-666-2435	http://www.estoo-nsn.gov
Eastern Shawnee Tribe	Brett Barnes	Language Director	Mr. Barnes	bbarnes@estoo.net	70500 E. 128 RD		Wyandotte, OK 74370				918-238-5151 ext. 1833	
Eastern Shawnee Tribe	Paul Barton	THPO	Mr. Barton	thpo@estoo.net	70500 E. 128 RD		Wyandotte, OK 74370	11/4/2021 & 2/8/2022 & 7/14/2022 7/15/2022	Left Message Answered on 7/14/2022 will email Paul and call back on 7/15	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024.	918-666-5151 ext. 1833	
Shawnee Tribe	Ben Barnes	Chief	Chief Barnes	info@shawnee-tribe.com	P.O. Box 189	29 S. Hwy 69A	Miami, OK 74355				918-542-2441	http://www.shawnee-tribe.com
Shawnee Tribe	Tonya Tipton	THPO	Ms. Tipton	tonya@shawnee-tribe.com		29 S. Hwy 69A	Miami, OK 74355	11/4/2021 & 2/8/2022 & 7/14/2022	Left Message	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024.	918-542-2441 ext. 105	
Cayuga Nation	Clint Halftown	Federal Representative	Mr. Halftown		P.O. Box 803		Seneca Falls, NY 13148				315-568-0750	http://www.cayuganation-nsn.gov
Cayuga Nation	Sharon Leroy	THPO?	Ms. Leroy	sharon.leroy@cayuganation-nsn.gov	P.O. Box 803		Seneca Falls, NY 13148	11/4/2021 & 2/8/2022 & 7/14/2022	left message	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024.	315-568-0750	
Stockbridge-Munsee Community Band of Mohican Indians	Shannon Holsey	Tribal President	Honorable Shannon Holsey	shannon.holsey@mohican-nsn.gov	N8476 MohHeConNuck Road	P.O. Box 70	Bowler, WI 54416				715-793-4387	http://www.mohican.com
Stockbridge-Munsee Community Band of Mohican Indians	Bonney Hartley	THPO	Ms. Bonney Hartley	bonney.hartley@mohican-nsn.gov	65 Spring Street		Williamstown, MA 01267	11/4/2021 & 2/8/2022 &7/14/2022	left message	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024. 10/28/2024 Jeffrey C Bendremer Ph.D., RPA THPO responded, "Though we routinely consult on such projects, Carroll County, Maryland is situated outside of the Stockbridge-Munsee Community Traditional Homeland/Area of Interest. Therefore, the Stockbridge-Munsee Community Tribal Historic Preservation Office has no comment regarding the aforementioned action."	413-884-6048	
Tonawanda Band of Seneca Nation	Roger Hill	Chief	Honorable Roger Hill	tonseneca@aol.com	7027 Meadville Road		Basom, NY 14013				716-542-4244 or 716-542	none
Tonawanda Band of Seneca Nation	Christine Abrams	Cultural Preservation	Ms. Abrams	tonseneca@aol.com	7027 Meadville Road		Basom, NY 14013	11/4/2021	I spoke with Chistine and she says they are currently uninterested inc onsulation with projects in Maryland.	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024.	716-542-4244 or 716-542-2341	
Pamunkey Indian Tribe	Robert Gray	Chief	Chief Gray	robert.gray@pamunkey.org	1054 Pocahontas Trail	Pamunkey Indian Reservation	King William, VA 23086					
Pamunkey Indian Tribe	Bradby Brown	Assistant Chief, Deputy THPO	Mr. Brown	pamunkeytribe@pamunkey.org	1054 Pocahontas Trail	Pamunkey Indian Reservation	King William, VA 23086	11/4/2021 & 7/14/2022	sent an email	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024.		

Pamunkey Indian Tribe	Shaleigh Howells	Cultural Resource Director	Shaleigh	shaleigh.howells@pamunkey.org Undeliverable 10/28/2024. They have a new Cultural Resource Director: Kendall Stevens (kendall.stevens@pamunkey.org)	1054 Pocahontas Trail	Pamunkey Indian Reservation	King William, VA 23086	11/4/2021 2/8/2022	1)sent an email 2) Shaleigh prefers digital records to be sent to your email and also chief Gray. The Tribe is not interested in consulation with NRCS in MD at this time but may reconsider this position in the future (a little over a year). Shaleigh has asked to send Piney Run to her through email.	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent to Ms. Howells with signed letter attached on 10/28/2024. Email was undeliverable. Sent a second follow up email to new Cultural Resource Director, Kendall Stevens with the letter attached (kendall.stevens@pamunkey.org). Second follow up email sent to new email with signed letter attached and request for a read receipt on 11/6/2024.		
Chickahominy Indian Tribe	Stephen R. Adkins	Chief	Chief Adkins	stephen.adkins@chickahominytribe.org	Chickahominy Indian Tribe	8200 Lott Cary Road	Providence Forge, VA 23140	11/4/2021 & 2/8/2022 & 7/14/2022	left a message	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024.	804-829-5548	
Chickahominy Indian Tribe - Eastern Division	Gerald A. Stewart	Chief	Chief Stewart	consultations@cit-ed.org	Chickahominy Indians Eastern Division	2895 Mt. Pleasant Road	Providence Forge, VA 23140	11/4/2021	Doris Austin Dept Travel Administrator and currently they do no thave interest in projects done in Maryland.	Closeout consultation letter sent by certified mail 10/10/2024. New email address identified: consultations@cit-ed.org. From the website it is unclear if Gerald Stewart is still the chief. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent to the new email address with signed letter attached and request for a read receipt on 11/6/2024.	804-966-7815	
Upper Mattaponi Tribe	W. Frank Adams	Chief	Chief Adams	admin@umitribe.org	Upper Mattaponi Indian Tribe	13476 King William Road	King William, VA 23086	11/4/2021 & 2/8/2022 & 7/14/2022	left message	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024.	804-769-0041	http://www.uppermattaponi.org
Rappahannock Tribe	G. Anne Richardson	Chief	Chief Richardson	chiefannerich@aol.com	Rappahannock Tribe Cultural Center	5036 Indian Neck Rd.	Indian Neck, VA 23148	11/4/2021	sent email	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024.		
Monacan Indian Nation	Kenneth Branham	Chief	Chief Branham	tribaloffice@monacannation.com	Monacan Indian Nation	P.O. Box 960	Amherst, VA 24521	11/4/2021 & 2/8/2022 & 7/14/2022	left message - 7/14/2022 tribe was without THPO just hired new one left message for new THPO	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024.	434-946-0389	
Nansemond Indian Tribe	Samuel Bass	Chief	Chief Bass	samflyingeagle48@yahoo.com	Nansemond Indian Nation	1001 Pembroke Lane	Suffolk, VA 23434	11/4/2021	sent email	Closeout consultation letter sent by certified mail 10/10/2024. Follow up email sent with signed letter attached on 10/28/2024. Second follow up email sent with signed letter attached and request for a read receipt on 11/6/2024.		

State Recognized Tribes

Affiliation	Name	Position	Salutation	Email	Address 1	Address 2	City, State, Zip	Phone	Website
Accohannock Indian Tribe, Inc.	Mike Hinman	Tribal Council Chair	Mr. Hinman		28380 Crisfield Marion Road		Marion Station, MD 21838	410-968-0194 or 410-603-6197	
Accohannock Indian Tribe, Inc.	Pat Carson	Tribal Co-chair, Treasurer	Mr. Carson	pat_carson12@msn.com	28380 Crisfield Marion Road		Marion Station, MD 21838	443-783-0538	
Piscataway Indian Nation	Billy Red Wing Tayac	Chief	Chief Tayac		P.O. Box 312		Port Tobacco, MD 20677	301-932-0808	
Piscataway-Conoy Tribe of Maryland	Tribal Council		Tribal Council	piscatawayconoycouncil@gmail.com	P.O. Box 638		Bryans Road, MD 20616	240-210-3232	http://piscatawayconoytribe.com/index.html
Piscataway-Conoy Subgroups:									
Choptico Band of Indians	Rico Newman	Historic Preservation Officer	Mr. Newman	rico.newman@gmail.com	3953 Pine Cone Circle		Waldorf, MD 20602	301-744-9553	
Cedarville Band of Piscataway Indians	Natalie Standing-on-the-Rock Proctor	Tribal Chair	Ms. Proctor	piscatawayindians@gmail.com	American Indian Cultural Center	16816 Country Lane	Waldorf, MD 20601	240-640-7213	https://www.piscatawayindians.com
Piscataway Businesses/Organizations with "Maryland Indian Status":									
Maryland Indian Tourism Association	Rico Newman			same email/address/phone as above					
Conoy Creations	Natalie Standing-on-the-Rock Proctor			same email/address/phone as above					
Maryland Commission on Indian Affairs	Keith Colston	Administrative Director	Mr. Colston	keith.colston@maryland.gov	301 W. Preston Street Suite 1500		Baltimore, MD 21201		

Other Maryland Tribes

Affiliation	Name	Position	Salutation	Email	Address 1	Address 2	City, State, Zip	Phone	Website
Assateague Peoples Tribe	Michael G. Morabito	Chief	Chief Morabito	bearseeseagles@msn.com	300 Russell Road		Bethany Beach, DE 19930	302-539-8890	
Nause-Waiwash Band of Indians, Inc.	Donna "Wolf Mother" Abbott	Chief	Chief Abbott	wkdwrknmom@aol.com	212 East Appleby Ave.		Cambridge, MD 21613	410-724-6795	www.turtletracks.org
Pocomoke Indian Nation	Norris C. Howard, Sr.	Paramount Chief	Chief Howard	Quindocqua@aol.com	3355 Allen Rd.		Eden, MD 21822	410-742-6795	http://www.pocomokeindiannation.org/index.html
Baltimore American Indian Center			Sir or Madam	Info@BaltimoreAmericanIndianCenter.Org	113 South Broadway		Baltimore, MD 21231	410-675-3535	https://baltimoreamericanindiancenter.org

DRAFT REPORT

PHASE I ARCHAEOLOGICAL INVESTIGATION FOR THE PINEY RUN WATERSHED STUDY, PINEY RUN DAM CARROLL COUNTY, MARYLAND

PREPARED FOR:
CARROLL COUNTY BUREAU OF RESOURCE MANAGEMENT
225 NORTH CENTER STREET
WESTMINSTER, MD 21157

PREPARED BY:
PETE REGAN, MA, RPA

PRINCIPAL INVESTIGATOR:
SCOTT SEIBEL, MA, RPA

AECOM
12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876

APRIL 2020

AECOM

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ABSTRACT

Under contract to the Carroll County Bureau of Resource Management (BRM), AECOM conducted a Phase I archaeological survey in support of the Piney Run Watershed Study at Piney Run Dam, Carroll County, Maryland. The BRM initiated this study to develop a Watershed Project Plan as the initial phase of work ultimately intended to mitigate design deficiencies identified at the Piney Run Dam. The Area of Potential Effects (APE) for the current archaeological study comprises approximately 20.47 hectares (50.58 acres) generally east, west, and south of the dam. This study was initiated to assist the BRM in meeting regulatory obligations under Section 106 of the National Historic Preservation Act of 1966, as amended. The goals of this study were to identify the presence, extent, nature, and potential significance of archaeological deposits, if any, within the APE.

The survey consisted of surface inspection and the excavation of 217 shovel test pits (STPs) and resulted in the recovery of one prehistoric artifact and 242 historic artifacts and the identification of four historic archaeological sites. Site 18CR292, located in the uplands west of the dam, represents an isolated refuse disposal pit dating to the early twentieth century. The site lacks a clear affiliation with any individual historic occupation, and while it can provide generic insights into some local consumer practices, it lacks the associative values and data potential to yield significant information. Therefore, AECOM recommends 18CR292 not eligible for listing in the National Register of Historic Places (NRHP). No further work is recommended.

Site 18CR293, located immediately southeast of the dam's emergency spillway, represents a small nineteenth century farmstead. Features include a possible capped well, two barn/outbuilding foundations, a spring box, and a dwelling foundation, arranged into two discrete activity loci segregating agricultural from domestic site uses. Artifacts were recovered from intact contexts and exhibited spatial patterns that reflect the separate agricultural/domestic site uses. While numerous nineteenth century farmsteads have been excavated in Carroll County, none appear to have been investigated within the Piney Run valley. Site 18CR293 exhibits intact archaeological features, deposits, and discrete activity areas representative of a site type that has not been addressed in the local archaeological record. Given these considerations, AECOM recommends 18CR293 potentially eligible for listing in the NRHP and that the site be avoided during potential future ground disturbing episodes. If the site cannot be avoided, a Phase II evaluation is recommended to determine its NRHP eligibility.

Site 18CR294, located at the eastern edge of the APE, consists of a large stone spring box that may date to the nineteenth century. No artifacts were recovered from 18CR294, which lacks a clear affiliation with any known, nearby historic occupation. Given the absence of potentially meaningful historical and archaeological contexts, 18CR294 possesses very limited data potential. For these reasons, AECOM recommends the site not eligible for listing in the NRHP. No further work is recommended.

Site 18CR295 is an unidentified historic occupation represented by a single positive STP and a nearby stone foundation west of the APE. Low density archaeological deposits within the APE represent the site periphery, while the core is likely located beyond the APE near the foundation. Because the site core could not be more closely investigated, the site's overall nature, age, extent, cultural affiliation, integrity, and potential NRHP eligibility could not be assessed. AECOM recommends additional work only in the event that site avoidance is not possible.

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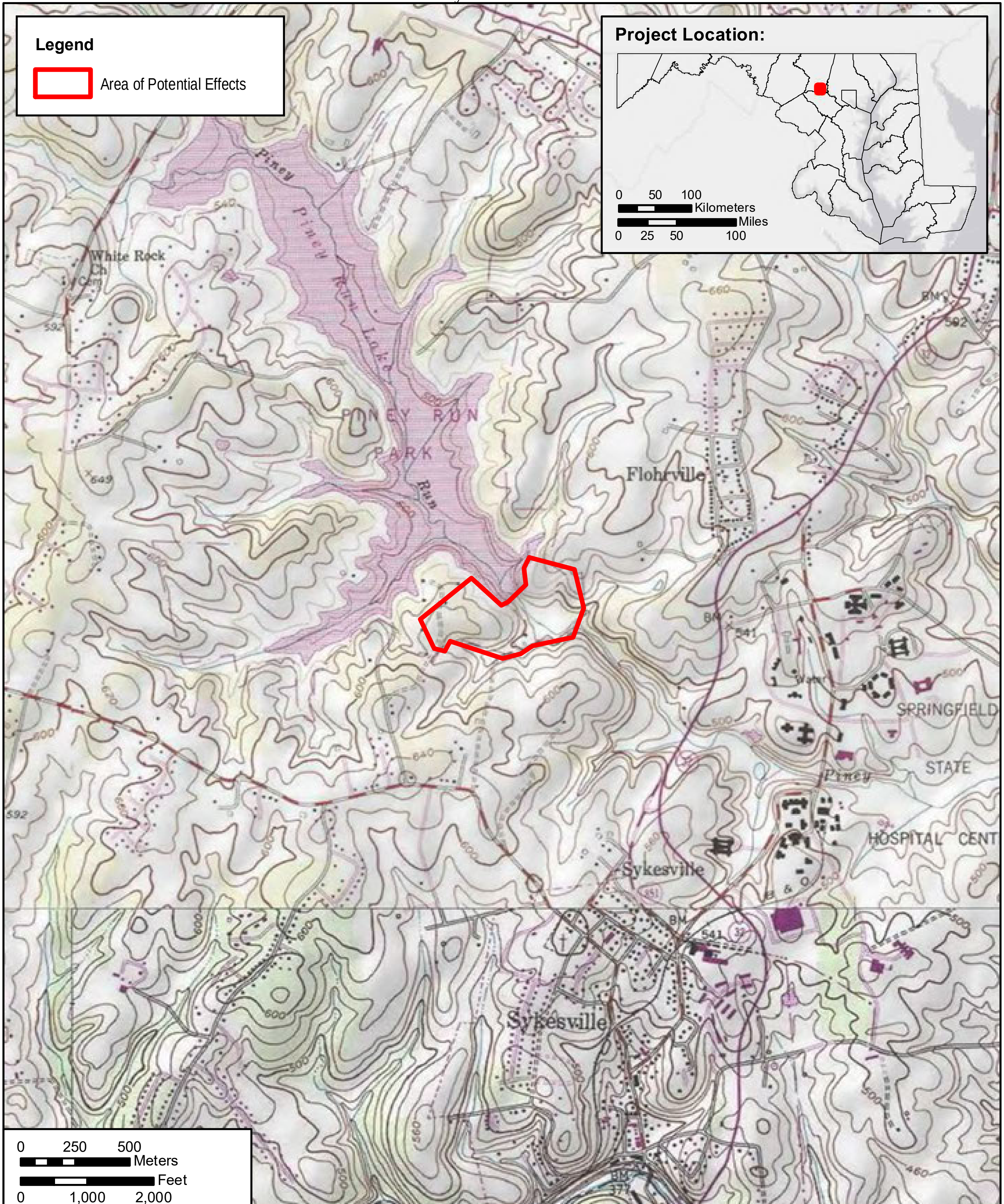
1.0 INTRODUCTION

Carroll County Bureau of Resource Management (BRM) contracted AECOM to conduct an archaeological Phase I survey in support of the Piney Run Watershed Study, located at Piney Run Dam, Carroll County, Maryland (Figure 1-1). This investigation was undertaken as part of a broader initiative to mitigate design deficiencies that have become apparent in the dam. The current study's project area is coterminous with the Area of Potential Effects (APE), encompassing approximately 20.47 hectares (50.58 acres) generally east, west, and south of Piney Run Dam (Figure 1-2). The APE is located within Maryland Archaeological Research Unit 14, Patapsco-Back-Middle Drainages (Figure 1-3).

The goal of the Phase I investigation was to determine the presence or absence of archaeological sites within the APE that may be eligible for listing in the National Register of Historic Places (NRHP). The undertaking is federally funded and requires federal permits, making it subject to Section 106 of the National Historic Preservation Act of 1966, as amended. All work was conducted in accordance with the Maryland Historical Trust's (MHT) *Standards and Guidelines for Archaeological Investigations in Maryland* (Shaffer and Cole 1994), the *Standards and Guidelines for Archaeological Investigations in Maryland, Technical Update #1* (Morehouse et al. 2018), and the Secretary of the Interior's Standards and Guidelines for Curation (36 CFR 79).

Archaeological field investigations were conducted from December 3 to 6, 2019. Scott Seibel served as the Principal Investigator, and Pete Regan was the Field Director. Benjamin Stewart served as Crew Chief, while Kayla Marciniszyn and Barbara Helton served as field technicians. Kayla Marciniszyn served as Laboratory Director. Nina Shinn served as the geographic information systems (GIS) specialist.

Following this Introduction, the report includes seven sections of text: Project Location and Description, Cultural Context, Previous Investigations, Research Design, Results, Summary and Recommendations, and References Cited. Appendix A contains the Qualifications of the Investigators, Appendix B contains the Artifact Catalog, and Appendix C contains the Archaeological Site Forms.



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase I
SCALE:	1:24,000
SOURCE:	ESRI 2019

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N

TITLE
Project Location

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 1-1

CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase I
SCALE:	1:4,500
SOURCE:	ESRI 2019

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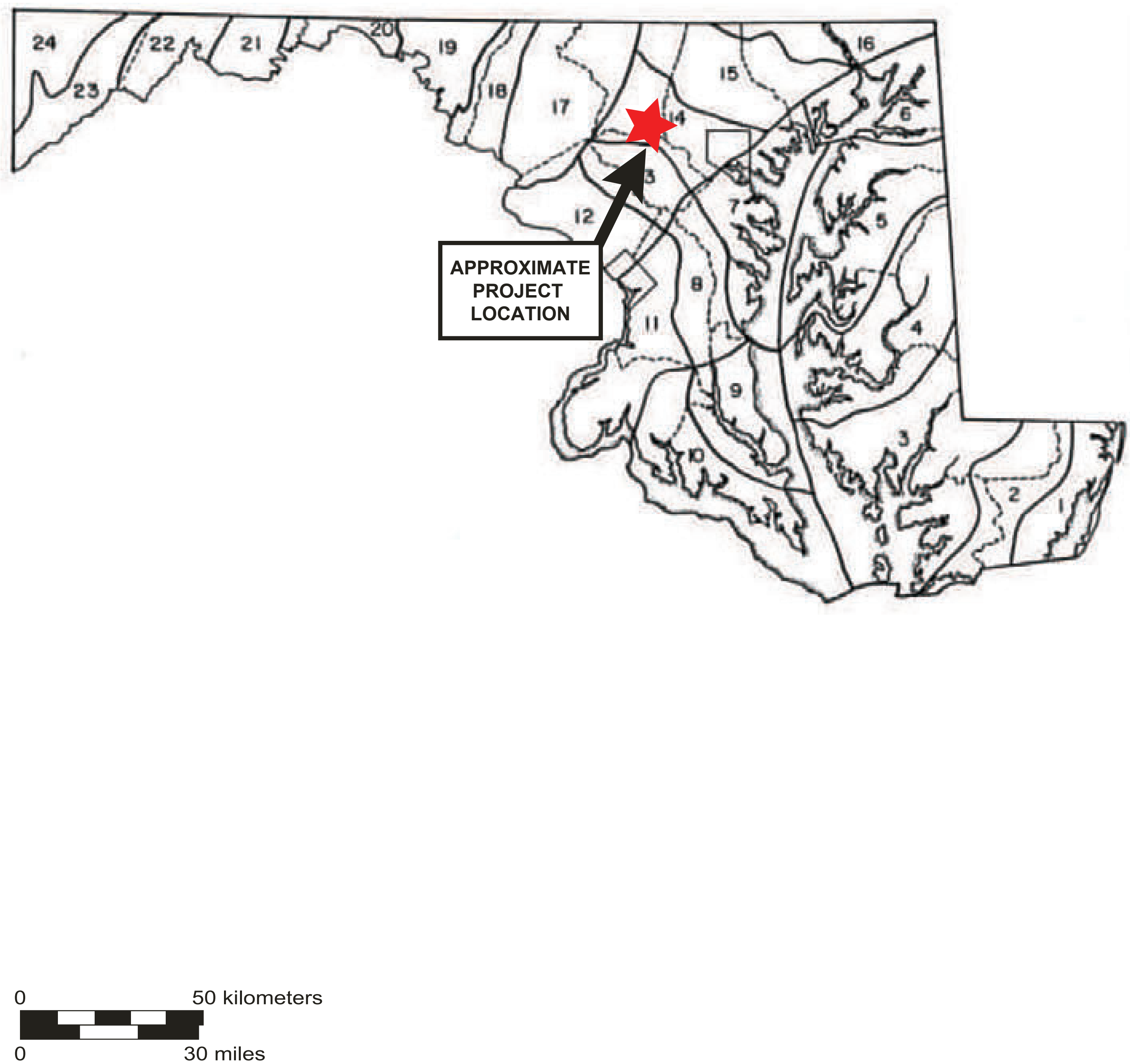
TITLE
Area of Potential Effects

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 1-2



CLIENT	Carroll County Bureau of Resource Management
PROJ	Piney Run Phase I
SCALE	As Shown
SOURCE	N/A

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TITLE
Maryland Archaeological Research Units

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 1-3

2.0 PROJECT LOCATION AND DESCRIPTION

2.1 PROJECT LOCATION

The APE is located generally east, west, and south of Piney Run Dam along Piney Run less than 1 kilometer (km) (0.6 mile [mi]) north of the Sykesville corporate limits in Carroll County, Maryland. The APE extends up to 300 meters (m) (984 feet [ft]) east, 460 m (1,509 ft) west, and 205 m (673 ft) south of the center of the Piney Run Dam crest. Portions of the APE boundary correspond to the Piney Run Reservoir shoreline and the property lines of parcel 0714002626; elsewhere the APE has no physical or legal boundaries.

2.2 GEOLOGY AND PHYSIOGRAPHY

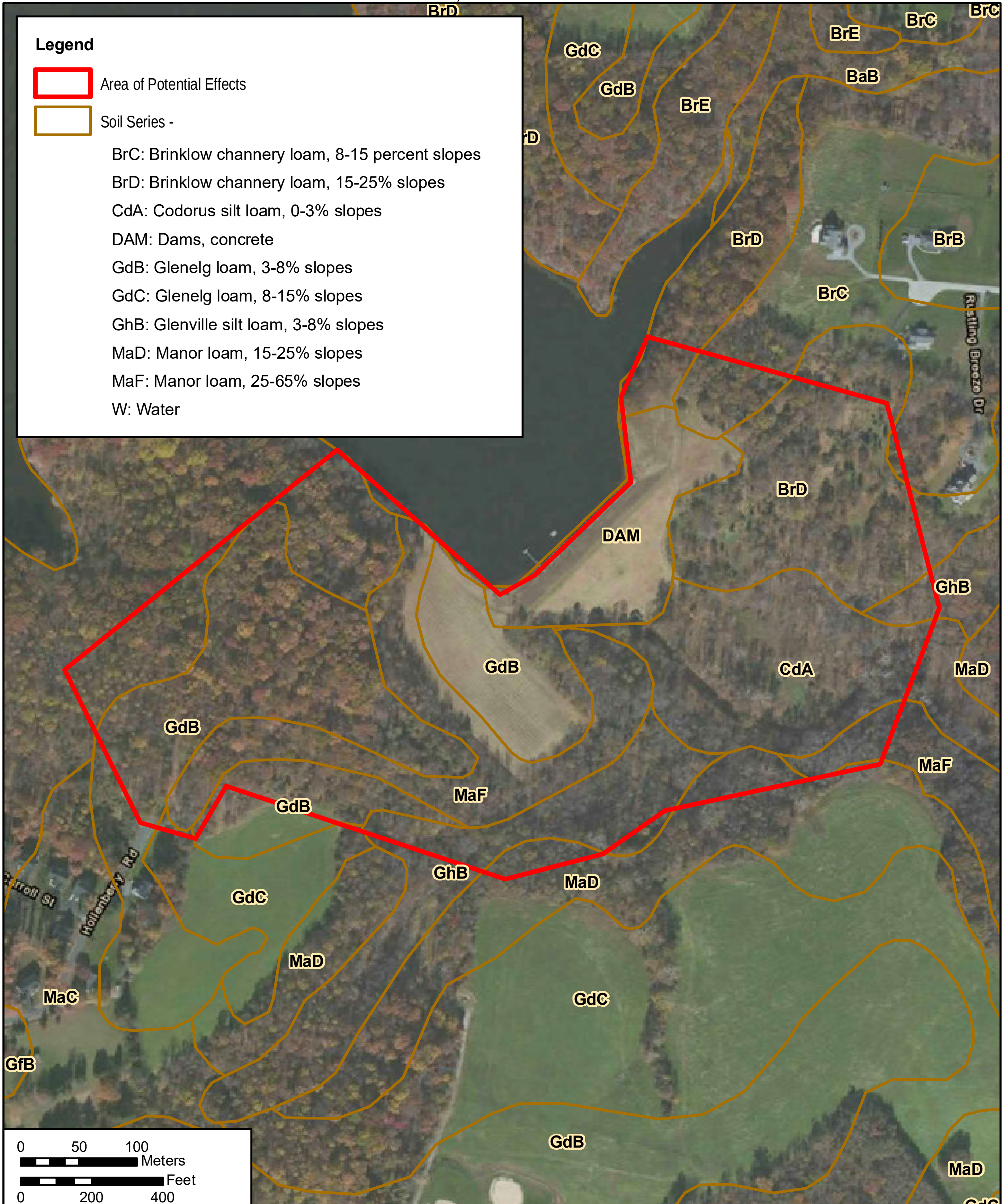
The APE is located in the Hampstead Upland District of the Piedmont Plateau Physiographic Province's Harford Plateaus and Gorges Region (Reger and Cleaves 2008). Spanning from the Coastal Plain west to Catoctin Mountain, the Piedmont Plateau exhibits a highly variable geologic profile (Maryland Geological Survey [MGS] 2012). The eastern portion of the province, in which the APE is located, is comprised of igneous and metamorphosed igneous and sedimentary rocks with pegmatite and granitic pluton intrusions (MGS 2012). The western portion is largely comprised of metamorphosed volcanic rocks. The Hampstead Upland District features rolling to steep terrain, often dissected by steep-walled gorges (Reger and Cleaves 2008). The APE is within the Morgan Run Formation, which primarily consists of "fine- to medium-grained, lustrous, silver-gray to greenish-gray, garnetiferous mica schist and quartz-mica schist" containing discontinuous layers and lenses of quartzite (Muller 1994:n.p.). Areas of Alluvium occur in floodplains of streams and consist of interbedded "light gray to brown gravel, sand, silt, and gray-blue to gray-brown clay" (Muller 1994:n.p.). The gravel is dominantly quartz, and the sand and silt are dominantly quartz-mica mixtures.

2.3 HYDROLOGY AND TOPOGRAPHY

Piney Run is the major waterbody within the immediate vicinity of the APE, bisecting it as the stream flows southeast from its impoundment in Piney Run Reservoir. Piney Run, a third-order stream, flows from its headwaters near the rural village of Winfield to its discharge into the Patapsco River approximately 10 km (6.2 mi) southeast of the APE. Topography within the APE is defined by rolling uplands interrupted by incised stream valleys. Side slopes are often very steep, though toe and summit slopes are typically gentle. The largest expanse of level terrain occurs on the Piney Run floodplain, southeast of the dam. In many places, the natural topography has been significantly impacted by the dam embankment/abutments, the emergency spillway, and large borrow/spoil wasting areas created during the dam's construction. Elevations within the APE range between 142 and 177 m (465 and 580 ft) above mean sea level.

2.4 PROJECT AREA SOILS

The United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) has mapped five soil units within the APE (USDA NRCS 2019a; Figure 2-1). These include Brinklow channery loam (map symbols BrC and BrD), Codorus silt loam (CdA), Glenelg loam (GdB and GdC), Glenville silt loam (GhB), and Manor loam (MaD and MaF). Additionally, the USDA NRCS has mapped dams/concrete (DAM) and water (W) for small portions of the APE. Relevant APE soils data, including drainage class, parent material, slope, and typical pedon, are presented in Tables 2-1 through 2-6 (USDA NRCS 2019a, 2019b).



CLIENT: Carroll County Bureau of Resource Management
PROJECT: Piney Run Phase I
SCALE: 1:4,500
SOURCE: ESRI 2019 and USDA NRCS 2019a
U:\Projects\MD\MSHA\GlenwoodAvenue\GIS\PineyRun_Soils_20191220

N

TITLE
Project Area Soils

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 2-1

Table 2-1. Project Area Soils Summary

Soil	Map Unit(s)	Drainage Class	Parent Material	Slope (%)
Brinklow Channery Loam	BrC, BrD	Well-Drained	Weathered Schist/Phyllite Residuum	8-25
Codorus Silt Loam	CdA	Moderately Well-Drained	Phyllite/Schist/Diabase/Greenstone Loamy Alluvium	0-3
Glenelg Loam	GdB, GdC	Well-Drained	Weathered Mica Schist Residuum	3-15
Glenville Silt Loam	GhB	Moderately Well-Drained	Metamorphic Rock Colluvium or Phyllite Residuum	3-8
Manor Loam	MaD, MaF	Well-Drained	Weathered Mica Schist Residuum	3-8

Table 2-2. Brinklow Channery Loam Typical Pedon

Horizon	Depth (cm)	Color	Texture
Ap	0-25	Brown (7.5YR 5/4)	Channery Silt Loam
Bt	25-48	Strong Brown (7.5YR 5/8)	Channery Silt Loam
BC	48-63	Strong Brown (7.5YR 5/8), Reddish Yellow (7.5YR 7/6), and Yellowish Red (5YR 5/6)	Channery Loam
Cr	63-89	Reddish Yellow (5YR 7/6)	Very Channery Loam
R	89+	N/A	Hard Phyllite Bedrock

Table 2-3. Codorus Silt Loam Typical Pedon

Horizon	Depth (cm)	Color	Texture
Ap	0-23	Brown (10YR 4/3)	Silt Loam
Bw1	23-46	Dark Yellowish Brown (10YR 4/4)	Silt Loam
Bw2	46-76	Brown (10YR 5/3)	Loam
C1	76-137	Light Yellowish Brown (10YR 6/4)	Loam
C2	137-165	Light Yellowish Brown (10YR 6/4)	Loam

Table 2-4. Glenelg Loam and Silt Loam Typical Pedon

Horizon	Depth (cm)	Color	Texture
Ap1	0-15	Brown (10YR 4/3)	Loam
Ap2	15-25	Brown (7/5YR 4/4)	Clay Loam
Bt1	25-46	Strong Brown (7.5YR 5/8)	Clay Loam
Bt2	46-64	Strong Brown (7.5YR 5/6)	Clay Loam
Bt3	64-76	Yellowish Brown (10YR 5/6)	Clay Loam
BCt	76-107	Yellowish Red (5YR 5/6) and Yellowish Brown (10YR 5/6)	Loam
CBt	107-137	Yellowish Red (5YR 5/6) and Yellowish Brown (10YR 5/6)	Loam
C	137-193	Strong Brown (7.5YR 5/8), Brownish Yellow (10YR 6/8), and Yellow (10YR 7/6)	Extremely Channery Sandy Loam

Table 2-5. Glenville Silt Loam Typical Pedon

Horizon	Depth (cm)	Color	Texture
Ap	0-23	Dark Yellowish Brown (10YR 4/4)	Silt Loam
Bt2	23-41	Yellowish Brown (10YR 5/6)	Silt Loam
Bt2	41-48	Yellowish Brown (10YR 5/6)	Silt Loam
Btx	48-63	Brown (10YR 5/3)	Silt Loam
Btgx	63-84	Light Brownish Gray (10YR 6/2) and Brown (10YR 5/3)	Silt Loam
BC	84-99	Yellowish Brown (10YR 5/4)	Silt Loam
C	99-208	Yellowish Brown (10YR 5/4)	Channery Loam

Table 2-6. Manor Loam Typical Pedon

Horizon	Depth (cm)	Color	Texture
A1	0-5	Very Dark Grayish Brown (10YR 3/2)	Loam
A2	5-15	Dark Yellowish Brown (10YR 4/4)	Sandy Loam
Bw1	15-33	Strong Brown (7.5YR 4/6)	Sandy Loam
Bw2	33-56	Strong Brown (7.5YR 4/6)	Sandy Loam
C1	56-76	Dark Yellowish Brown (10YR 4/4), Strong Brown (7.5YR 5/8), Yellowish Red (5YR 4/6)	Sandy Loam
C2	76-112	Olive Brown (2.5Y 4/4), Strong Brown (7.5YR 5/6), and Pink (7.5YR 7/4)	Very Channery Sand
C3	112-135	Olive Brown (2.5Y 4/4), Light Brown (7.5YR 6/3), and Yellowish Red (5YR 5/8)	Channery Loamy Sand
C4	135-183	Olive Brown (2.5Y 4/4), Dark Yellowish Brown (10YR 4/4), and Reddish Yellow (7.5YR 6/8)	Channery Loamy Sand

2.5 CURRENT LAND USE

The APE currently consists of rolling upland forests and lightly wooded floodplains within a publicly accessible recreation area that is part of Piney Run Park. Modern disturbances include the dam embankment/abutments, the emergency spillway, borrow/spoil wasting areas created during the dam's construction, dam and reservoir infrastructure, and modern access roads. These disturbances comprise a significant portion of the APE.

3.0 CULTURAL CONTEXT

The MHT has developed cultural contexts that provide a necessary framework for the description and analysis of known and anticipated cultural resources (Weissman 1986). These contexts are the basis for evaluating the significance of resources within the APE. The contexts are organized by geographic region, time/developmental period, and theme. The time periods listed in the following prehistoric and historic contexts are those identified by the MHT as important historic contexts for the state (Weissman 1986). Where necessary, dates and terminology have been updated to incorporate new information.

3.1 PREHISTORIC CONTEXT

Regional prehistory is traditionally divided into three major periods: the Paleoindian (10,000–7500 B.C.), Archaic (7,500–2,000 B.C.), and Woodland (2000 B.C.–A.D. 1600) periods. Taken together, the major eras of Mid-Atlantic prehistory represent a timescale beginning with the earliest regional occupations and concluding with the watershed period of contact with European and African cultures. While there may be evidence of human occupation in western North America and South America before 10,000–12,000 B.C., there is no conclusive evidence in the Mid-Atlantic region for human occupation before the Paleoindian period. There is, however, a great deal of debate over the issue, and archaeological sites such as Cactus Hill in Virginia (e.g., McAvoy and McAvoy 1997), Meadowcroft Rockshelter in southwestern Pennsylvania (e.g., Adovasio et al. 1978), and the Topper Site in South Carolina (e.g., Parfit 2000; Rose 1999) have provided tantalizing yet controversial and inconclusive evidence for human occupations predating the Paleoindian period.

Major alterations to Native American lifeways help characterize each period, as trends in settlement patterns, subsistence strategies, exchange networks, and material culture-experienced diachronic change. The Archaic and Woodland periods are further subdivided into Early, Middle, and Late periods, which are characterized by changes in material culture, environmental adaptation, subsistence strategies, settlement patterns, technology, and socio-political configurations. Since no potentially significant prehistoric resources were found during the current investigation, the following prehistoric context is a brief discussion of the defining qualities of each period as expressed by the prehistoric inhabitants of the Mid-Atlantic in general.

3.1.1 Paleoindian Period (10,000–7,500 B.C.)

The end of the Pleistocene epoch (ca. 12,000–10,000 years ago) represents the terminus of the Ice Age or at least the beginning of a long interglacial episode. The environment during this time was quite different from modern conditions. Moisture that was locked up in the glacial ice sheets resulted in lower sea levels, and more exposure of land area along coastal areas. Areas that were exposed during this time were subsequently inundated by the global rise in sea level that began at the end of Pleistocene when climatic amelioration resulted in melting continental ice sheets. During this period of post-glacial warming, the climate was probably 3 to 8 degrees Celsius colder than at present and the vegetation consisted of an open spruce parkland forest composed of spruce, pine, fir and alder (Brush 1986; Owens et al. 1974; Sirkin et al. 1977). While the dates for the Paleoindian period are continuously debated, it is generally accepted that human populations had become established in spatially discrete areas of North America by 10,000 B.C.

The Paleoindian toolkit included fluted projectile points, which were typically manufactured from high-quality lithic materials chosen for their predictable and consistent flaking properties.

Projectile point types included Clovis, Cumberland/Barnes, Crowfield, Hardaway-Dalton, and Hardaway Side-Notched. Other tools in the Paleoindian toolkit included knives, endscrapers, sidescrapers, gravers, burins, denticulates, *pieces esquillées*, wedges, perforators, and generalized unifaces and bifaces (Dent 1995).

Preferred lithic materials for these projectile points were high-quality cryptocrystalline rock such as jasper and chert (Dent 1995; McCary 1984), though tools made from locally available quartz and quartzite cobbles have been documented at sites in the Mid-Atlantic region (e.g., Ebright 1992; McAvoy and McAvoy 1997). Archaeologists have postulated that Paleoindian hunter-gatherers traveled long distances to obtain raw materials for tool production, as has been shown by studies of lithic procurement systems centered on the Thunderbird site and other Mid-Atlantic sites (e.g., Custer 1984; Gardner 1977).

Paleoindian period settlements consisted of seasonally-occupied camps, from which forays were made to obtain specialized resources, such as stone for tool manufacture (Custer 1984; Dent 1995; Gardner 1977). Site types postulated for the Paleoindian period include base camps, quarry sites, quarry reduction stations, quarry-related base camps, base camp maintenance stations, outlying hunting stations, and isolated projectile point finds (Gardner 1977). These site types are considered part of the "seasonal round" of Paleoindian settlement. The primary means of subsistence was the hunting of large game such as moose, elk, and deer, although plants, fish, and other wild game were also important food resources (Dent 1995; Kavanagh 1982; McNett 1985).

Much of what archaeologists know about Paleoindians comes from isolated finds of fluted projectile points, the majority of which are found in Coastal Plain settings (Dent 1995). Ebright (1992) postulated that in the Piedmont province, settlement may have been focused on riverine settings. Kavanagh (1982) reported two fluted point finds west of the APE: one at site 18FR17, located at the confluence of Tuscarora Creek and the Monocacy River; and the second, an isolated find, on a terrace of the Monocacy River. A single projectile point dating to the mid-Paleoindian period was reported on a terrace of the Potomac River in Frederick County, and eight Hardaway-Dalton points have been documented in the Monocacy River Valley (Kavanagh 1982).

3.1.2 Archaic Period (7,500–2,000 B.C.)

The Archaic period is conventionally sub-divided into the Early (7,500–6,000 B.C.), Middle (6,000–4,000 B.C.), and Late (4,000–2,000 B.C.) subperiods. In the Mid-Atlantic area, Archaic sites are much more numerous, larger, and richer in artifacts than the earlier Paleoindian sites. They represent a series of adaptations that were increasingly sedentary and focused on the resources available along large rivers and major tributaries. Other, often smaller, sites of this period located away from the main streams probably represent seasonal or other specialized activities. Increasing territoriality and regional diversity are reflected in the varieties of artifacts, especially projectile points, throughout the Archaic Period.

Evidence from Paleoindian and Early Archaic sites suggest that the transition from the Paleoindian way of life was not a sharp break, but rather a gradual transition (Custer 1990). This transition was associated with a major climatic change that marks the end of the Pleistocene and beginning of the Holocene. The cool and moist climate of the late Ice Age shifted to a warmer and drier climate that approximates that of today. Rising sea levels inundated the lower Susquehanna River Valley and began forming the Chesapeake Bay estuary and its large salt and brackish water marshes, habitats that provided a rich and diverse subsistence base (Kraft 1976). As temperatures increased during the early Holocene, vegetation in the region shifted from coniferous forests of spruce to mixed deciduous/coniferous forests of hemlock, birch, hickory, and oak (Brush 1986; Custer 1990; Owens et al. 1974; Sirkin et al. 1977). After 7,000 B.C. the spread of deciduous woodlands into upland areas, which previously had been predominantly spruce, hemlock, and pine forests, opened up new habitats to be exploited by animals and humans (Custer 1990).

The Archaic period represents a regional lifestyle shift driven in part by changes in climatic, biotic, and environmental conditions that occurred at the end of the Pleistocene. While the Paleoindian foraging system continued through the Early and Middle Archaic subperiods, settlement strategies eventually shifted in focus to macro-group base camps with outlying resource procurement sites. Newly emerging ecosystems enabled Mid-Atlantic populations to expand into regions with productive freshwater environments, shifting early base camp sites from lithic to biotic resources (Custer 1990).

By the end of the Archaic period, numerous technomic innovations had been developed throughout the Mid-Atlantic: broadspear points, steatite bowls and net weights, bannerstones, and ground stone celts are all represented in the material assemblage toward the close of the Archaic period (Mouer et al. 1981; Barse et al. 2006; Dent 1995).

3.1.3 Woodland Period (2,000 B.C.–A.D. 1600)

The Woodland period is conventionally divided into the Early (2,000–500 B.C.), Middle (500 B.C.–A.D. 900), and Late (A.D. 900–1600) subperiods based on changes in ceramic types, lithic technologies, subsistence patterns, and social development. The climate during the Woodland period is characterized by a return to cool, moist conditions and establishment of vegetation that is characteristic of the region today. The Woodland period is marked by the introduction of ceramics, significant population growth, and an increasingly sedentary way of life. Hunting and gathering of wild floral and faunal resources remained important, but incipient horticulture, based on maize cultivation, eventually formed an important part of the subsistence base.

It was previously thought that the transition between the Archaic and Woodland periods, between 2,000–1000 B.C., represented the introduction of horticulture (e.g., Fritz 1993; Smith 1992, 1995). Although Early Woodland groups in the South and Midwest used cultivated plants, there is presently no evidence that cultivated foods played a role in the diet of Early Woodland people in the area. Very efficient hunting and gathering systems (Caldwell 1958), including riverine and marine species exploitation, may have made the acceptance of cultigens slow at first. Only after A.D. 800–900, when varieties of tropical cultigens adapted to local conditions arrived in the Mid-Atlantic area, did cultivated foods begin to assume an important role (Smith 1995). These tropical cultigens complemented cultigens of the Eastern Agricultural Complex (erect knotweed, goosefoot, little barley, maygrass, squash, sunflower, and sumpweed) that had been part of the prehistoric diet for centuries.

Early Woodland settlement patterns were still riverine-based, with larger settlements, like that at the Marcey Creek site in Arlington County, Virginia (Manson 1948), often at the junction of fresh water and brackish water streams. Smaller camps, like those discovered near Mattawoman Creek in Charles County (Child et al. 1995) were established seasonally in areas where there was high potential for other resources.

The earliest ceramic types from the area are the steatite-tempered Marcey Creek and Selden Island wares, which were replaced by the sand or crushed quartz-tempered Accokeek wares. Stone tools characteristic of the Early Woodland period include a variety of projectile point styles, drills, perforators, flake tools, scrapers, bifaces, anvil stones, net sinkers, mortars, pestles, manos, metates, groundstone tools (e.g., axes, adzes, celts), ground slate, gorgets, and tools made from animal bone and teeth (Dent 1995).

The Middle Woodland period (500 B.C. –A.D. 900) generally is not well-defined, and researchers disagree about the exact boundaries of the period. Dent (1995:235) has referred to this period of "technological homogenization" where "ceramic and projectile point variability becomes limited to fewer types." Despite the presence of fewer ceramic and projectile point styles, the Middle Woodland period represents a continuation and further development of cultural complexity that culminates in the Late Woodland period. In addition, intensification in trade networks over a large region is one of the notable trends evident by the onset of the Middle Woodland period. It is thought that warmer and drier conditions may have prevailed during this period (Kellogg and Custer 1994).

3.1.4 European Contact (ca. A.D. 1600)

Native American culture at the time of contact with Europeans was a continuation of the Woodland lifeways. However, at this time, materials of European manufacture, acquired via trade, were also being incorporated into the indigenous tool kit. Subsistence was largely based on agriculture, though wild plants and game continued to be important. Settlements in the Mid-Atlantic region were typically nucleated villages of dome shaped wigwams and semi-rectangular long-house structures constructed of sapling poles and covered by grass, reeds, or tree-bark panels. Sometimes villages were fortified with wooden palisade walls. Societies were stratified and organized into chiefdoms that at times became confederated paramount chiefdoms (Dent 1995). Captain John Smith's explorations of the Chesapeake Bay area during the years 1608–1610 marked the first well-documented contact between European explorers and Native Americans in the region. Captain Smith's journal (Sultana Projects 2019) describes his travels and maps Indian villages along the extensive estuaries of the Potomac River. Captain Smith noted six tribes living on the northern side of the Potomac River, with the largest population found at the community of Moyaone, possibly near the modern town of Accokeek, Maryland (Stephenson et al. 1963).

Sixteenth and seventeenth century societies living in the Potomac River valley and along Maryland's western shore belonged largely to the Potomac and Piscataway chiefdoms, many of which were allied into loose confederacies (Grumet 1992). Further upriver lived the more independent Portobagos, Doegs, and Nacotchtankes, of whom little is known. European exploration and settlement in the area continued through the 1600s, with relations between the Native Americans and Europeans marked by periods of peaceful coexistence interrupted by times of tension and hostility (Potter 2006). As more land was granted to colonists and local tribes were encroached upon, relations further deteriorated. Natives of the Maryland coastal plain probably first felt the impact of European contact through contagious diseases and the movements of other native groups. By the 1650s, the Europeans had taken an aggressive role in claiming lands and driving out the Native Americans. Disease and warfare virtually exterminated the extant Native American cultures, and those that survived eventually were forced out of their homelands. By 1697, surviving peoples of the Potomac Valley began to move west of the Fall Line and into the depopulated Susquehanna Valley (Grumet 1992). At the start of the eighteenth century, most surviving local Native Americans had left the area. However, descendants of survivors continue to live in Maryland today, and some have become organized as the Piscataway Indian Nation, and the Piscataway Conoy Tribe of Maryland. The groups have not been granted Federal recognition but are recognized by the State of Maryland (MHT 2019).

3.2 EUROAMERICAN HISTORIC CONTEXT

The following discussion divides the historic period of Maryland and Carroll County into five subperiods following those identified by the MHT as important historic contexts for the state. These include Euro-American Contact and Settlement (1570–1725); Rural Agrarian Intensification (1725–1815); Agricultural-Industrial Transition (1815–1870); Industrial Dominance (1870–1930); and Modern (1930–Present).

3.2.1 Euro-American Contact and Settlement (1570–1725)

In 1634, Europeans established St. Mary's City, the first permanent settlement in Maryland. St. Mary's City was the capital of the Colony of Maryland and remained so until the capital was moved to Anne Arundel County in 1694. The first historical record of the name Baltimore County did not appear until 1659 in a writ issued to the county sheriff; formal boundaries were first mentioned in 1674, when Cecil County was created from the eastern portion of the county (Brooks and Rockel 1979; Lanman 2009). Baltimore County originally included parts of what are now Cecil, Harford, Carroll, Anne Arundel, Howard, and Kent counties, as well as Baltimore City. The county was named after the second Lord Baltimore, Cecil Calvert, who took his title from his barony estates in Longford County, Ireland (Brugger 1988).

The charter from King Charles I gave Cecil Calvert ownership over the approximately seven million ac of land of the Maryland colony. From 1634 through 1680, the Calverts promoted the settlement of the colony through the headright system in which small tracts of land were granted to those who funded their own or others' passage to the colony, usually 50 ac per "head". Over 34,000 land patents are known to have been recorded under the headright system, a figure that is thought to account for 80 percent of the settlers entering Maryland prior to 1684 (Maryland State Archives 2018). During the early settlement period, settlements focused on the Potomac and Patuxent Rivers, and Maryland quickly became an important tobacco-producing colony. The landscape remained sparsely populated, however, with few resident landlords.

3.2.2 Rural Agrarian Intensification Period (1725–1815)

Agriculture, specifically tobacco cultivation, remained the primary occupation of settlers and residents in the Baltimore County area throughout most of the eighteenth century, though the county was largely uninhabited at the beginning of the century. In the early part of the eighteenth century there were fewer than 500 families living within the county boundaries, and most of those were concentrated along the coastline (Brooks and Rockel 1979). Initially the inhabited landholdings in the county consisted of small clearings with simple one or two room houses. The small clearings eventually grew, giving way to large farms with a number of outbuildings and workers.

The widespread cultivation of tobacco, a highly land- and labor-intensive cash crop, contributed towards the persistence of larger land holdings and the rise of slave ownership in the region. The falling value of tobacco also led to increased dependence on enslaved labor in the eighteenth century, and by 1737, slaves made up 38.5 percent of the total taxable population of Baltimore County (Brooks and Rockel 1979). In 1747, in an effort to regulate the quality and quantity of tobacco produced in the colony, the colonial legislature instituted tobacco inspections, a system already in place in Virginia. Tobacco inspection points were established throughout the colony, each with warehouses and inspectors (Brugger 1988). Tobacco remained the principle cash crop throughout the colonial period in the Baltimore County area; however, the rapid depletion of the soil from intensive tobacco cultivation led to early crop diversification, and staples such as wheat and corn supplemented tobacco as major cash crops. Towns began to develop throughout the colony around major land routes, ports, and mills (Brugger 1988).

Meanwhile, further west in the county, the area that would become Carroll County would remain sparsely occupied until well into the nineteenth century (Wesler et al. 1981; Bunting and D'Amario 1999). Few navigable waterways and a landscape bisected by deep gullies discouraged settlement by wealthy landowners interested in high yield crops like tobacco. The land was settled by German immigrants from Pennsylvania, who established small grain farms, and built mills on the many rushing streams in the area. Settlements consisted of small hamlets connected by road networks to mills and harbors on the Patapsco River (D'Amario 1976). The primary industry was grain milling.

3.2.3 Agricultural-Industrial Transition (1815–1870)

The continued exhaustion of the soil from tobacco cultivation and the subsequent decline in quality and price of tobacco resulted in economic and demographic changes throughout the Chesapeake region. Societies were formed to experiment with and disseminate alternative agricultural practices such as crop rotation and diversification (Brugger 1988). One method to improve soils was through the introduction of organic and mineral materials, such as lime. German chemist Justus Freiherr von Liebig is often considered the father of modern "agricultural chemistry" for demonstrating the importance of nitrogen and noting that plants require inorganic nutrients to grow (e.g., Justus 1847). This type of scientific treatment of soils and promotion of these farming practices began to appear in popular publications in the 1840s and 1850s. For example, Samuel Sands' publication, *The American Farmer*, ran monthly in Baltimore starting in 1845. The first issue was chiefly concerned with advice on different types of manure, including the use of lime, to "resuscitate worn-out lands" (*American Farmer* 1845:19). Similarly, the 1849 British publication *On the Use of Lime in Agriculture* is a 300-page step-by-step manual on the proper preparation and use of lime to improve soils, covering different types of limestone, procurement, burning, stacking, and field application (Johnston 1849). Books and journals that explained the benefits and proper use of mineral and organic materials to improve farm produce found a ready market in Maryland. In the limestone-rich Piedmont areas of Baltimore and Carroll counties, lime kilns for private use were a common element of farms during this period (Chapman Publishing Company 1897).

In addition to attempts to improve soil quality, large land holdings were divided into smaller tracts for small-scale, family-owned diversified farms that produced a variety of crops. Commerce and industry became increasingly important, influencing the development of new transportation systems. In 1828 the construction of the Baltimore and Ohio Railroad began at Mt. Clare in what is now Baltimore City (O'Donnell 1968). It was hoped the railroad would open up access to the port at Baltimore to farms and industries farther west. The Baltimore and Susquehanna Railroad was completed in 1832, with a track running north from Baltimore to York, Pennsylvania, and by 1838 a train was making the round-trip journey between the two cities once a day (Clemens 1983).

In 1830, the Baltimore and Ohio Railroad built a stop at a small hamlet of Sykesville. The town grew around the rail stop, and nearby farmers were able to diversify crops and grow more perishable foods that could now be rapidly shipped to markets by rail (Tyler et al. 2015). Carroll County became a distinct jurisdictional entity in 1837 (Wesler et al. 1981).

The late Antebellum period and Civil War brought much friction into Carroll County. The German farmers with small plots tended to be against slavery, while the English farmers with larger plantations favored slavery but not secession (Hall 2005). The split sympathies put Carroll County residents against each other. During the war, Sykesville was raided by J.E.B. Stuart and his cavalry.

3.2.4 Industrial Dominance (1870–1930)

Farming continued to be the prime economic engine of Carroll County in the early twentieth century. There was little growth outside of the burgeoning mill towns along the Patapsco, like Daniels and Ellicott City in neighboring Howard, County.

In 1868 much of Sykesville was destroyed by flooding (Hall 2005). The town was originally centered on the Howard County side of the Patapsco River, but following the flood, the city was rebuilt on higher ground, on the Carroll County side of the river. Most of the Victorian buildings extant in downtown Sykesville were built by architect J.H. Fowble during the 1890s. The town was incorporated in 1904 (Wimmer 1985).

3.2.5 Modern (1930–Present)

The county remained largely rural into the 1930s. During the Depression many of the small farm plots were foreclosed. Large sections of Sykesville’s business district were destroyed by fire in 1937 (Downtown Sykesville Connection 2018). Following the Second World War, Sykesville and surrounding environs began to grow rapidly as part of the post-war suburban expansion. Today Carroll County and its population centers of Sykesville, Eldersburg, and Mt. Airy are closely intertwined economically and culturally with Baltimore and Frederick.

3.3 PROJECT AREA HISTORY

Historic maps and aerial photographs were reviewed to develop a preliminary history of the APE, characterizing historic land use patterns and the built environment to the extent possible. Historic images from the Library of Congress, United States Geological Survey (USGS), Johns Hopkins University, and other repositories were examined as appropriate.

While historic maps from the seventeenth through early nineteenth centuries were available for review, none provided sufficient detail to determine land use practices and occupancy status within the APE. It is expected that during the seventeenth and eighteenth centuries, the APE likely was unoccupied, given the generally dispersed nature of Carroll County’s rural population at the time. While the population density remained relatively low during the early nineteenth century, it is possible that rural domestic, agricultural, and/or industrial (e.g., mining, milling) occupations may have been extant within or adjacent to the APE.

The earliest available maps detailing developments within the vicinity of the APE were separately produced in 1862 by Simon J. Martenet and J.N. Macomb (Figures 3-1 and 3-2). The Martenet map includes significantly more detail that the Macomb map, the latter being a simplified version that used the former as a basis. Both maps show no development within or adjacent to the APE, though several residences are shown to the northwest and various industries are shown downstream to the southeast. The APE was isolated from the principal road networks, perhaps contributing to its underdevelopment and/or exclusion from mapping. It is interesting to note that the Macomb map shows a small, incompletely drawn road spur leading north from a bend in what is now Obrecht Road and on a trajectory that may have led north into the APE. Several unmapped historic road traces were observed during this project, and it is possible that the incomplete road Macomb illustrated would have connected to one of these. Neither the Martenet nor Macomb maps depicted tertiary rural roads, so it is possible that minor routes had been established within the APE by this time. Theoretically, unmapped historic occupations could have existed along these routes.

CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase I
SCALE:	1:24,000
SOURCE:	Martenet 1862

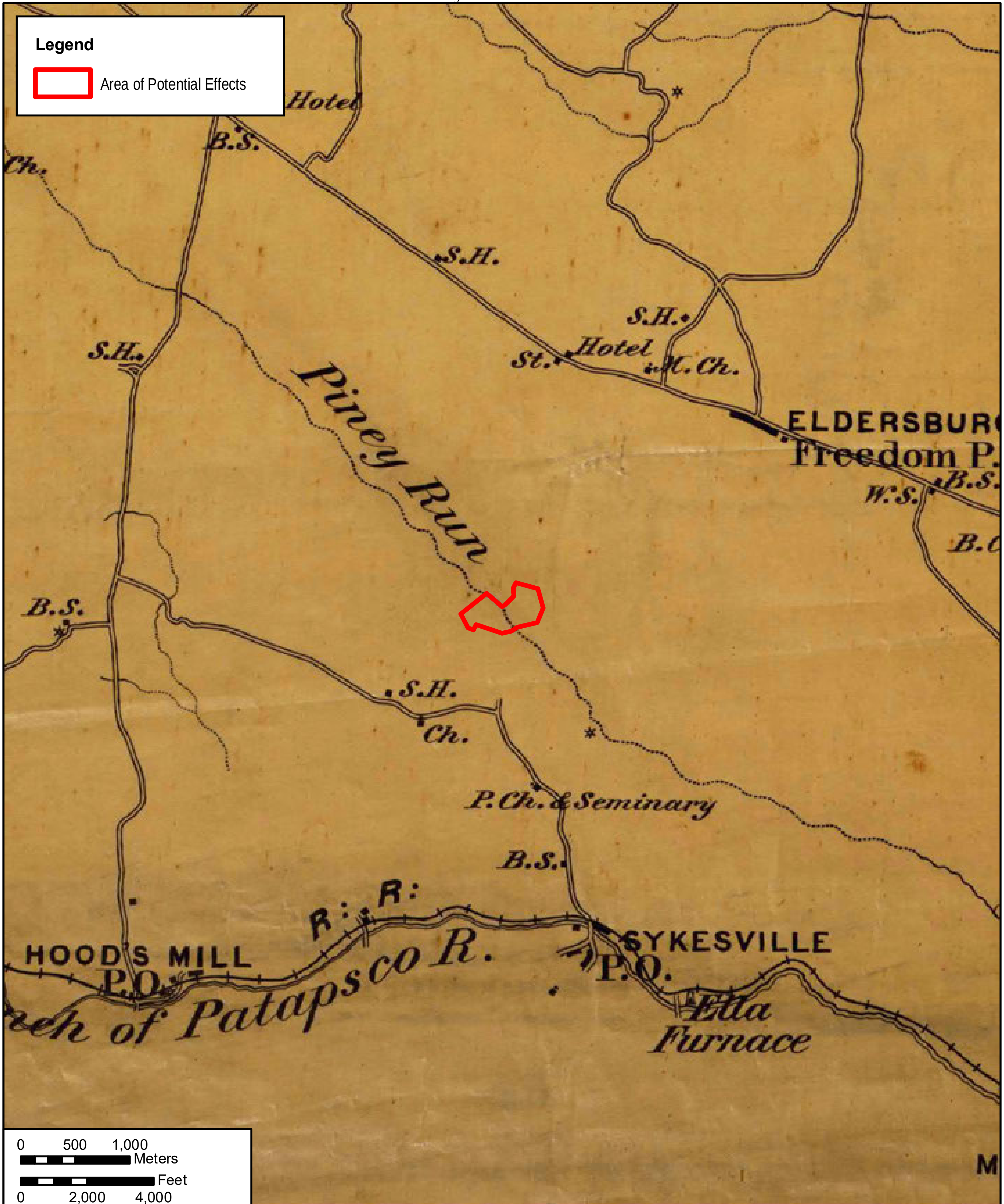
U:\Projects\MD\MSHA\GlenwoodAvenue\GIS\PineyRun_1862Martenet_20191220

N

TITLE
1862 Martenet Map

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-1



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase I
SCALE:	1:48,000
SOURCE:	Macomb 1862

U:\Projects\MD\MSHA\GlenwoodAvenue\GIS\PineyRun_1862Macomb_20191223

TITLE
1862 Macomb Map

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO	60614688
FIGURE	3-2

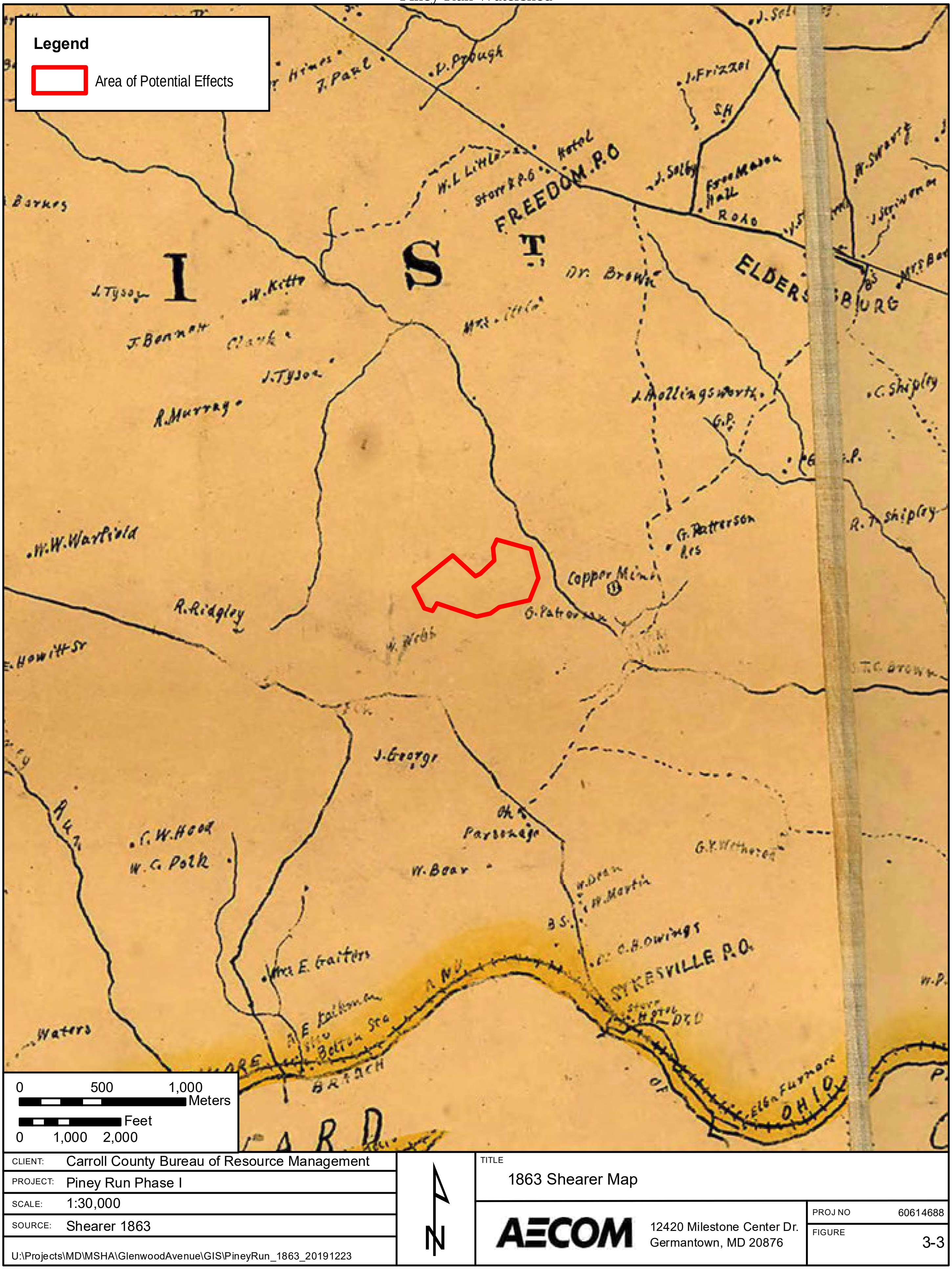
In 1863, William Shearer produced a more rudimentary map of Carroll County that somewhat crudely depicts the principal roads and waterways in the vicinity of the APE (Figure 3-3). Useful only as a schematic, Shearer's map does not illustrate road alignments, stream courses, and historic occupations with the spatial accuracy evident in the 1862 maps above. It correctly shows how principal features of the cultural landscape were arranged relative to one another, but their distances and orientations appear to be general approximations. Fewer residential and industrial occupations are shown compared to the 1862 Martenet map, though Shearer depicted some dwellings absent from earlier maps. Despite the inaccuracies, Shearer's map generally concurs with the 1862 maps insofar as no improvements were shown within the APE.

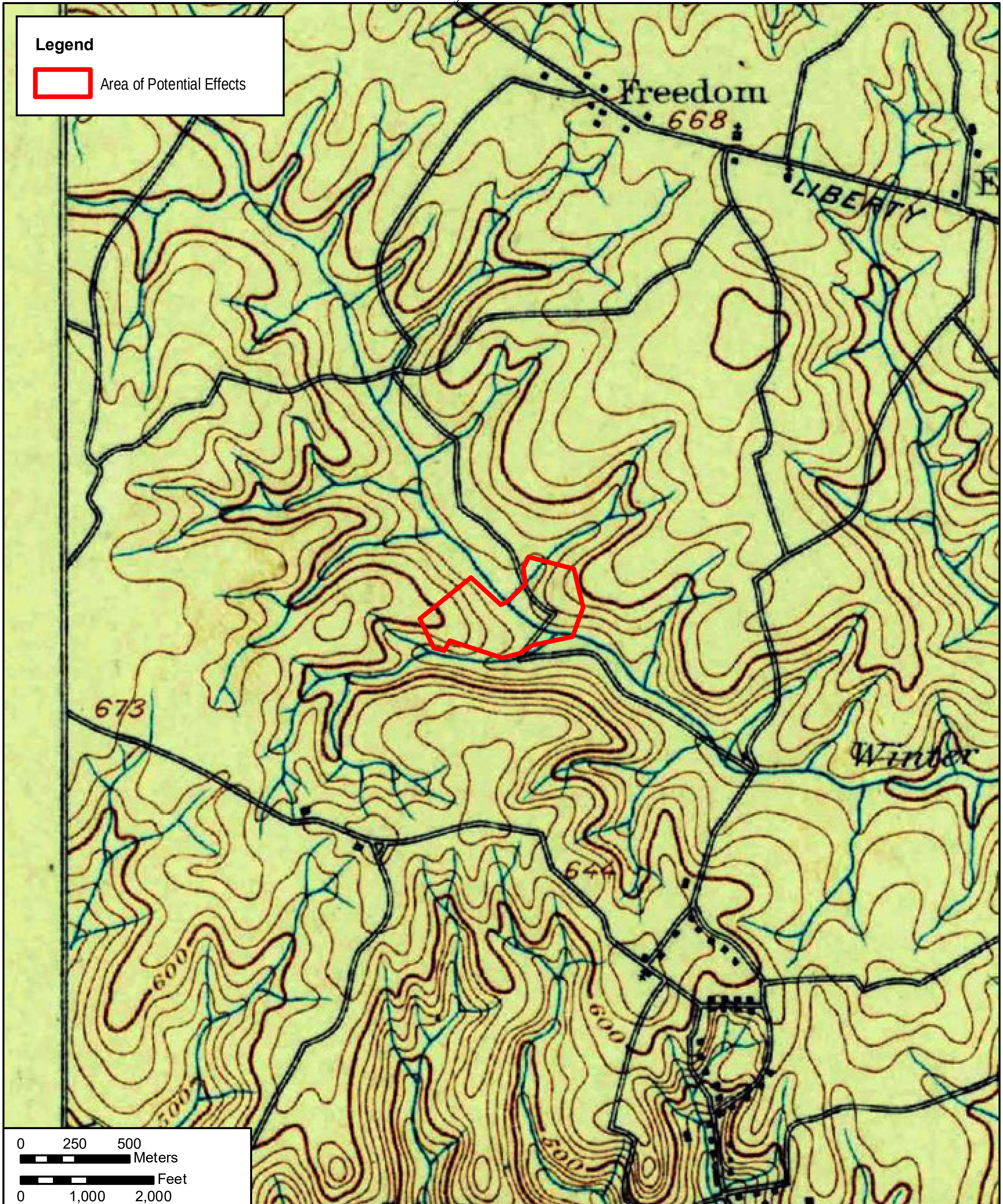
The 1892 United States Geological Survey's (USGS) Ellicott quadrangle provided some additional details regarding the rural road network within the APE (Figure 3-4). A nonextant road is shown branching northwest from what is now Maryland Route 32 (MD 32), following the footslopes and floodplain on the south side of "Winter Run" (now Piney Run). Shortly after entering the APE, this road abruptly turns northeast to cross an unnamed stream as well as Piney Run before continuing northwest to intersect what is now a portion of Martz Road submerged beneath Piney Run Reservoir. The map only selectively illustrated local buildings, giving preference to those associated with towns/villages; more dispersed buildings (e.g., farmsteads) typically were not shown, with the exception of those serving industrial or institutional purposes (e.g., mills, churches, schoolhouses). Therefore, while no buildings are depicted within the APE or vicinity, this does not indicate that none existed.

The 1906 USGS Ellicott quadrangle shows significantly more detail than its 1892 predecessor (Figure 3-5). The unnamed road shown in 1892 connecting what is now MD 32 and Martz Road was only partially extant by 1906, the northwestern two-thirds of it having fallen into disuse. However, the segment linking MD 32 to the APE still survived as an unimproved route following Piney Run to an unidentified occupation located south/southwest of the existing Piney Run Dam. Located on the north side of the road and built into the footslopes of the Piney Run valley, it appears likely that this occupation was domestic/agricultural in nature. While it is possible that it could have served an industrial purpose, such as milling or mining, this seems unlikely. The absence of a millrace (illustrated for mills elsewhere) and its distance upslope from Piney Run suggest it was not a mill, while its distance from any improved roads or other means of transport suggests it was not a mining operation. Its general isolation would have made hauling raw and/or finished materials more than a kilometer over an unimproved road impractical, whereas a farmstead would have been more self-sufficient and probably less reliant on regular travel.

In 1911, the United States Post Office Department (USPOD) issued a rural delivery service map of Carroll County, showing residences, delivery points, and the road network (Figure 3-6). No occupations are depicted within or adjacent to the APE, though several dwellings appear in the broader vicinity. The unimproved road depicted on the 1906 USGS map is still shown, though the building at its northwestern terminus is not. Whether the building was unoccupied, or whether its isolation precluded its illustration, is not clear.

A 1943 aerial photograph provides the earliest available true representation of improvements and land uses within the APE (Figure 3-7). In general, agricultural fields and forest stands characterize contemporaneous land uses, along with what appear to be at least three farmsteads within/adjacent to the APE. In the southcentral portion of the APE, a farmstead is clearly visible and corresponds to the historic occupation first illustrated on the 1906 USGS map. The small complex was accessed via a dirt road leading north-northeast from what is now Obrecht Road. Two barns/outbuildings


Legend
Area of Potential Effects
FREEDOM P.O
ELDERSBURG
Dr. Brown
Copper Mine
Parsonage
SYKESVILLE P.O.
R. Ridgley
W. W. Warfield
R. Murray
J. Tyson
G. Patterson
J. Hollingsworth
C. Shipley
R. T. Shipley
J. George
W. Bear
C. W. Hood
W. C. Polk
G. Y. Wethered
C. B. Owings
Mrs E. Gaither
OHIO
0 500 1,000 Meters
0 1,000 2,000 Feet
CLIENT: Carroll County Bureau of Resource Management
PROJECT: Piney Run Phase I
SCALE: 1:30,000
SOURCE: Shearer 1863
U:\Projects\MD\MSHA\GlenwoodAvenue\GIS\PineyRun_1863_20191223
N
TITLE
1863 Shearer Map
AECOM
12420 Milestone Center Dr.
Germantown, MD 20876
PROJ NO 60614688
FIGURE 3-3



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase I
SCALE:	1:24,000
SOURCE:	USGS 1892

U:\Projects\MD\MSHA\GlenwoodAvenue\GIS\PineyRun_1892_20191223

N

TITLE
1892 USGS Map

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-4

CLIENT: Carroll County Bureau of Resource Management
PROJECT: Piney Run Phase I
SCALE: 1:24,000
SOURCE: USGS 1906

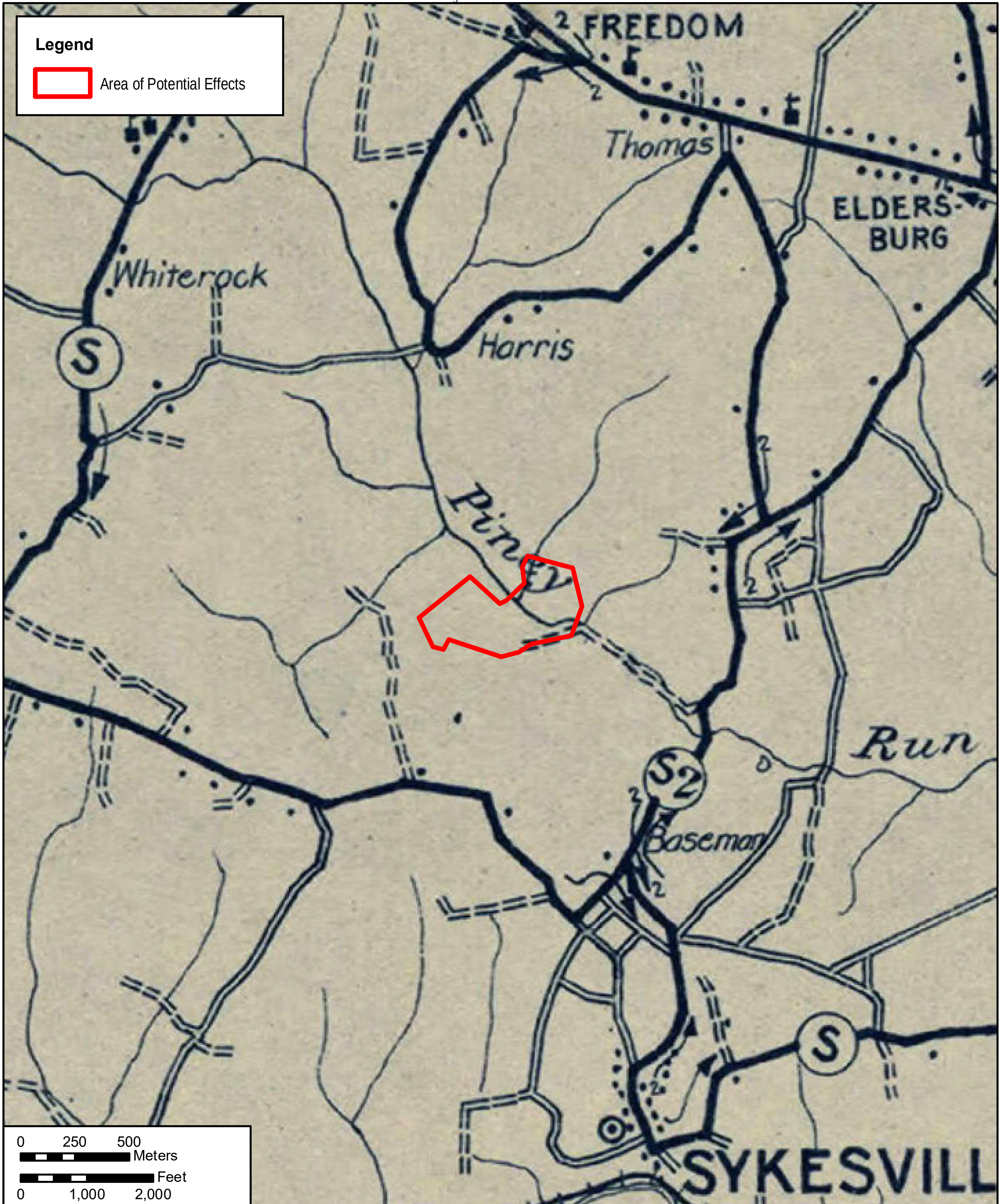
U:\Projects\MD\MSHA\GlenwoodAvenue\GIS\PineyRun_1906_20191224

N

TITLE
1906 USGS Map

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-5



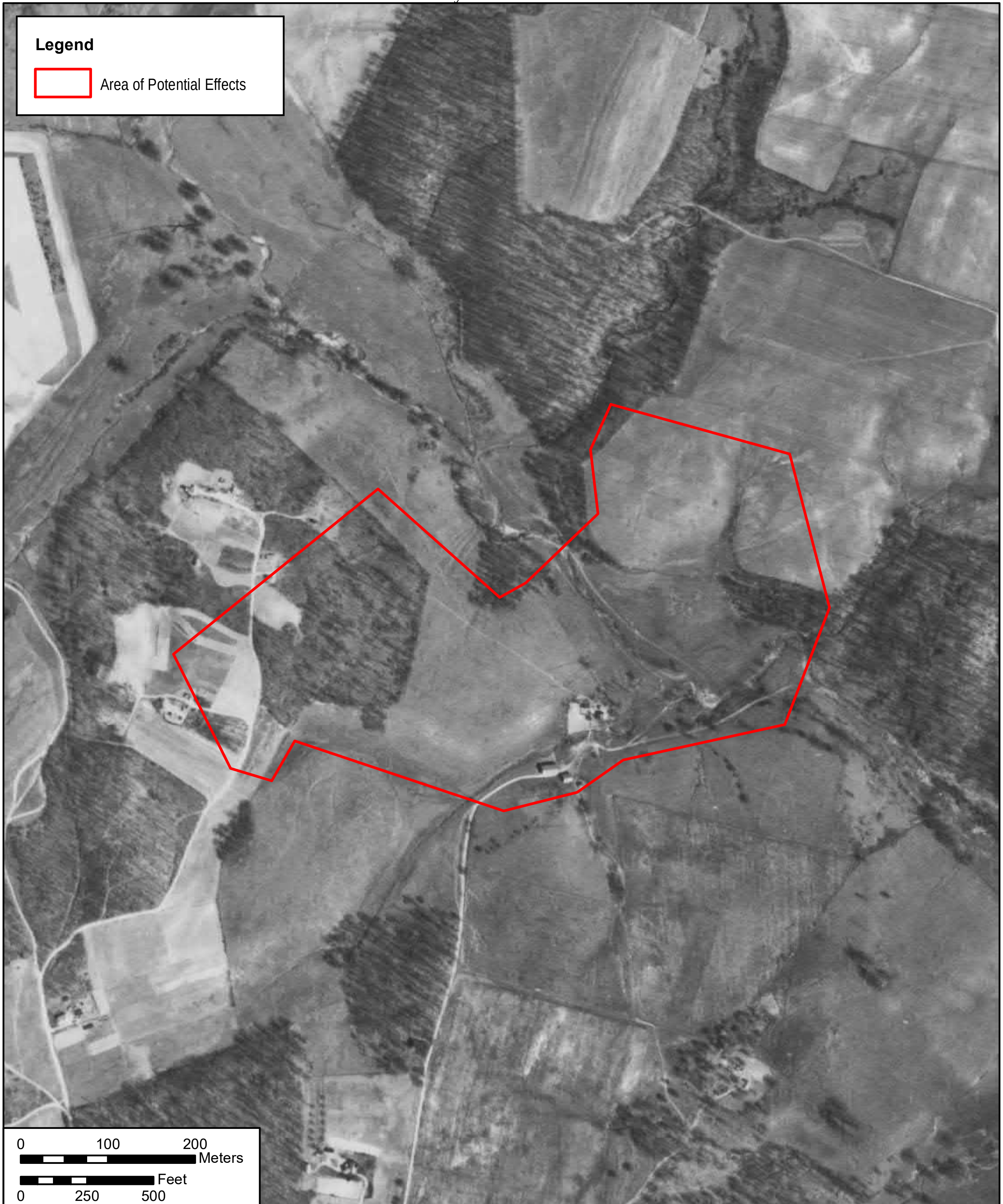
CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase I
SCALE:	1:24,000
SOURCE:	USPOD 1911

U:\Projects\MD\MSHA\GlenwoodAvenue\GIS\PineyRun_1911_20191226

TITLE
1911 USPOD Map

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-6



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase I
SCALE:	1:6,000
SOURCE:	Image Courtesy of BRM

N

TITLE
1943 Aerial Photograph

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-7

are clearly visible along either side of this road, with a third building (or possibly a small building complex) located to the northeast on the opposite side of a small stream. The vegetation in this space is sharply contrasted against the surrounding agricultural fields and could represent yard space. The potential yard space and distance from the barns/outbuildings suggests this may have served as the occupation's residential area.

A second farmstead is visible just beyond the far western edge of the APE, accessed by another dirt road leading north from what is now Obrecht Road. The farmstead's layout is difficult to discern due to poor image quality, but it appears to include several buildings clustered relatively close together, one of which may be within a few feet of the APE boundary. Following this dirt road farther north, it leads to a building located on the APE's northwestern boundary. It is not clear if this represents a distinct farmstead, or an outbuilding/secondary dwelling associated with the larger farmstead clearly visible to the north/northwest beyond the APE.

The 1944 USGS Finksburg quadrangle is the earliest available 7.5-minute map and provides a simplified view of the built environment depicted in the 1943 aerial photograph (Figure 3-8). Each building is represented with the same generic solid black square symbol, making it impossible to differentiate between a range of possible functions (e.g., industrial, agricultural, domestic). However, the 1953 USGS Finksburg quadrangle used unique symbols to distinguish broad classes of building types (Figure 3-9). Solid black squares were used to identify Class 1 buildings, (structures sheltering human activities; e.g., dwellings), while open squares correspond to Class 2 buildings (structures protecting machines, materials, or animals; e.g., large barns/sheds). The farmstead in the southcentral part of the APE includes a Class 2 building that corresponds to the large barn shown in the 1943 aerial photograph, as well as a Class 1 building to the northeast that almost certainly represents a dwelling (as the 1943 photograph suggested). The farmstead just west of the APE was represented by a single dwelling on the 1953 map, though the 1943 photograph suggested additional buildings (possibly too small for USGS illustration standards) were present. The farmstead along the northwestern APE boundary was represented by a dwelling as well, and it is unclear from historic maps and aerial photographs whether any outbuildings were located nearby. As suggested above, this dwelling could represent an independent property or it could have been affiliated with the larger farmstead north/northwest of the APE.

A 1958 aerial photograph shows that the farmstead in the southcentral part of the APE may have fallen into disuse, though poor image quality and contrast makes it difficult to determine (Figure 3-10). While the two barns/outbuildings clearly visible on the 1943 aerial photograph are still evident, the location of the dwelling immediately to the northeast appears to be overgrown. A small access road linking the barns to the dwelling has all but faded by this time and no yard spaces are clearly visible. Additionally, some tree growth has returned to the far northern end of the agricultural fields surrounding this property, possibly indicating a lapse in agricultural activity. It is therefore possible that the farmstead was abandoned by this time, though the photograph's quality makes this difficult to confirm. No buildings are clearly apparent within the farmsteads along the western and northwestern boundaries of the APE, but this is a product of poor image quality; subsequent aerial photography confirms they were still standing at this time.

A marked up 1963 aerial photograph provides additional details on ownership and occupancy statuses for the properties that comprised the APE (Figure 3-11). The farmstead in the southcentral part of the APE, on property belonging to "Frank Beaseman" (Beasman), was partially circled and labeled "VAC" (almost certainly "vacant"). By this time, the photograph clearly shows that the farmstead's access road had fallen into disuse while the area around the former dwelling had

CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase I
SCALE:	1:18,000
SOURCE:	USGS 1944

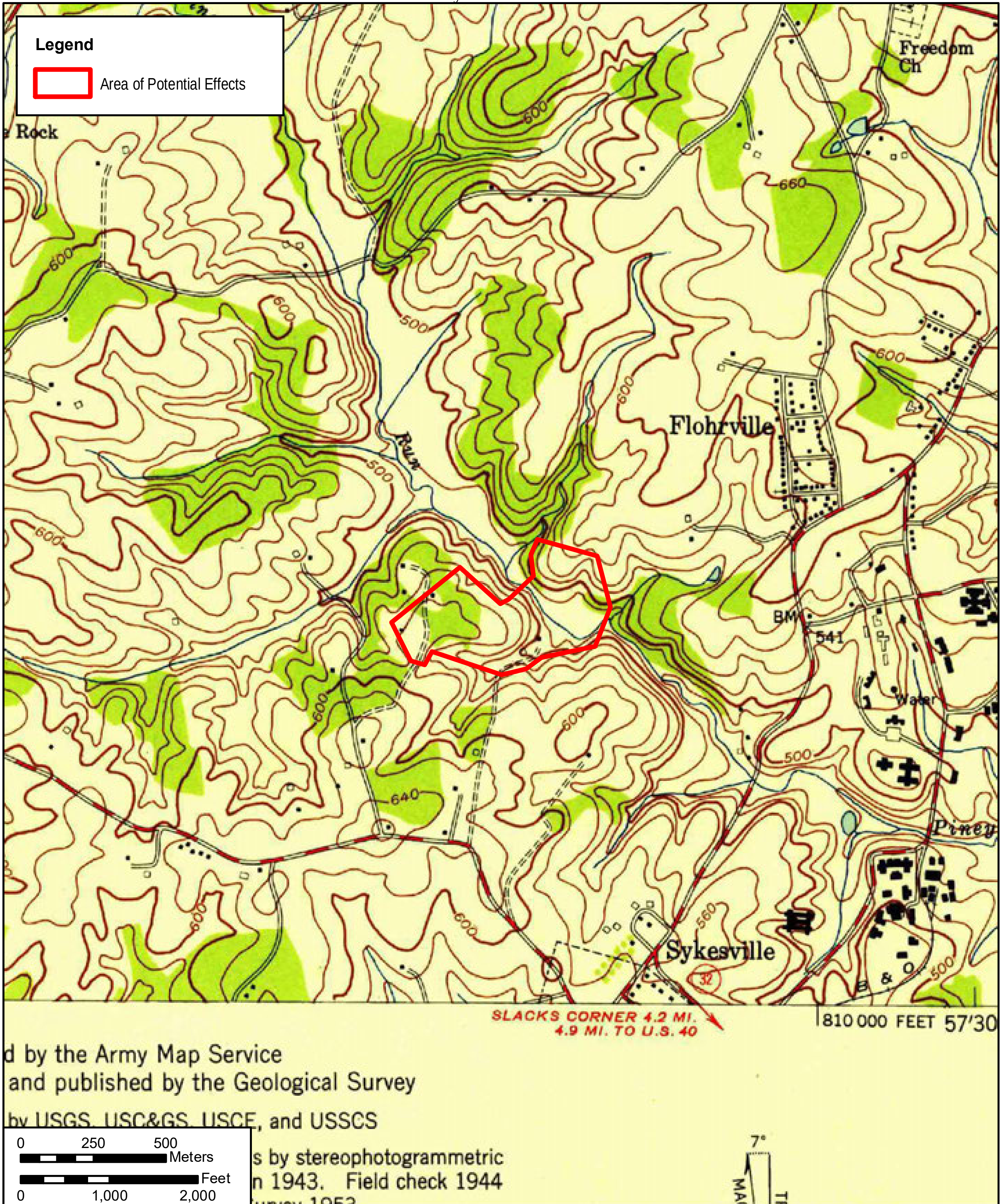
U:\Projects\MD\MSHA\GlenwoodAvenue\GIS\PineyRun_1944_20191226

N

TITLE
1944 USGS Map

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-8



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase I
SCALE:	1:18,000
SOURCE:	USGS 1953

U:\Projects\MD\MSHA\GlenwoodAvenue\GIS\PineyRun_1953_20191226

N

TITLE

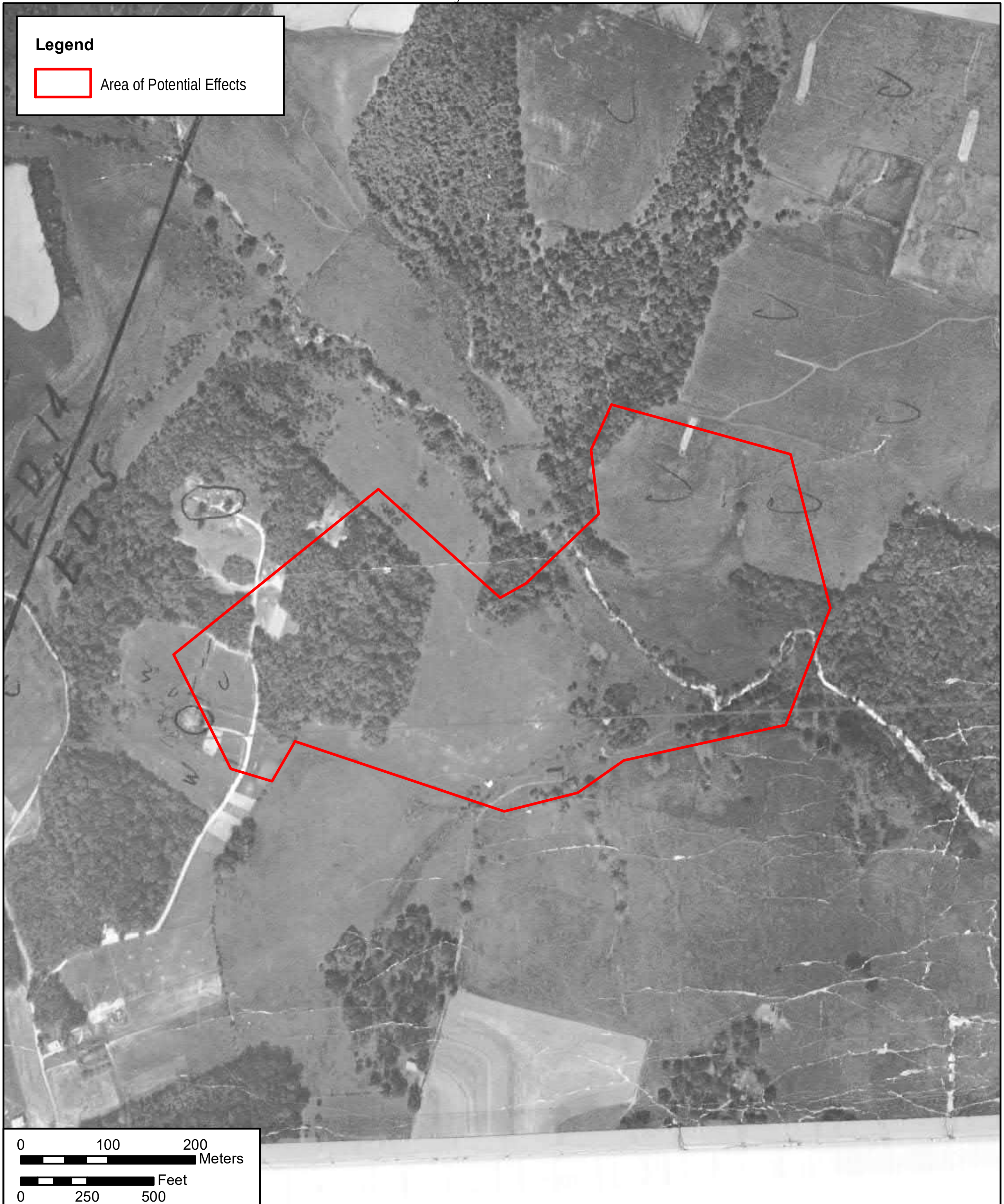
1953 USGS Map

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688

FIGURE 3-9



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase I
SCALE:	1:6,000
SOURCE:	Image Courtesy of BRM

TITLE
1958 Aerial Photograph

AECOM 12420 Milestone Center Dr. Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-10

CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase I
SCALE:	1:6,000
SOURCE:	Image Courtesy of BRM

TITLE
1963 Aerial Photograph

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

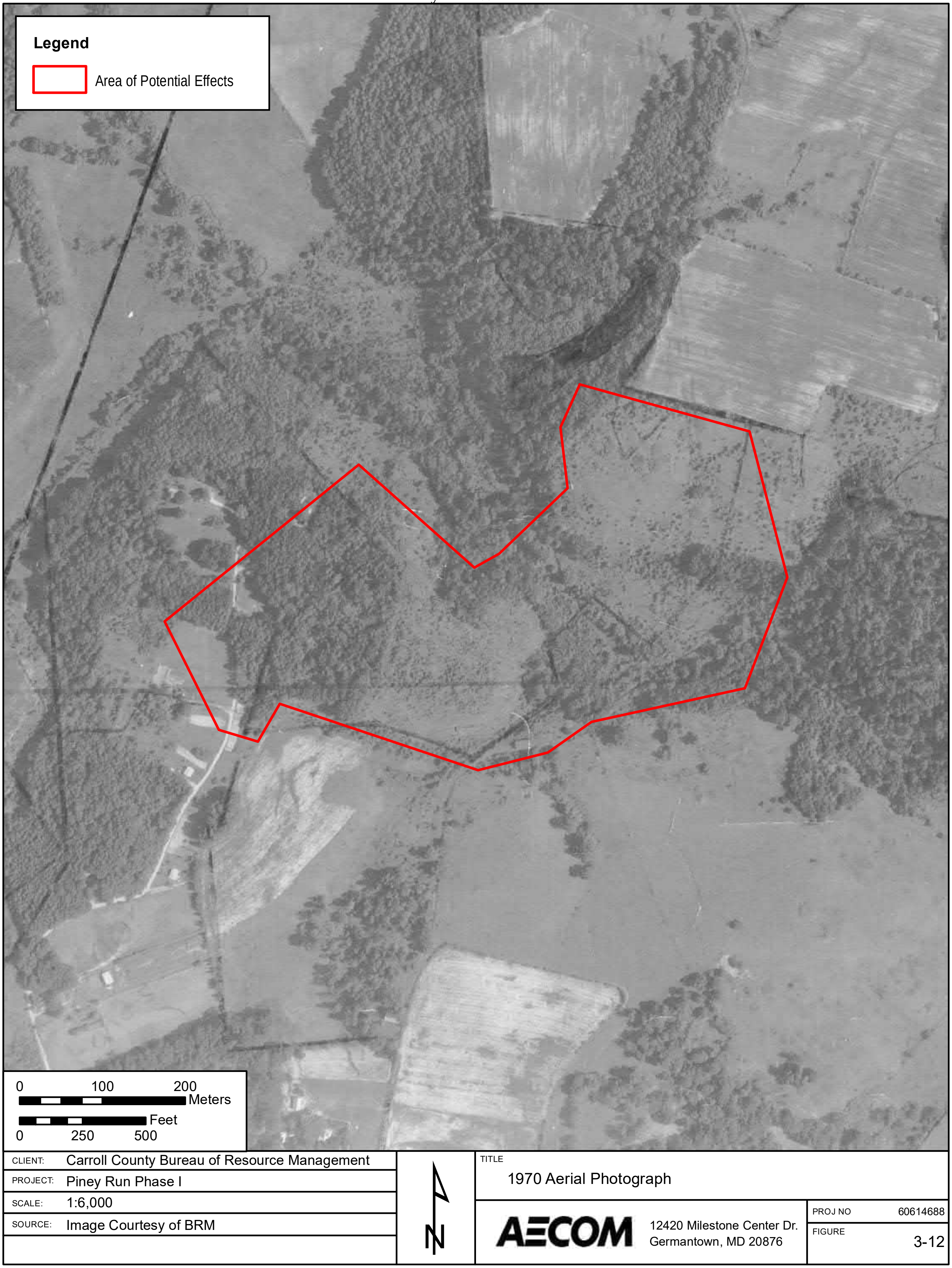
PROJ NO 60614688
FIGURE 3-11

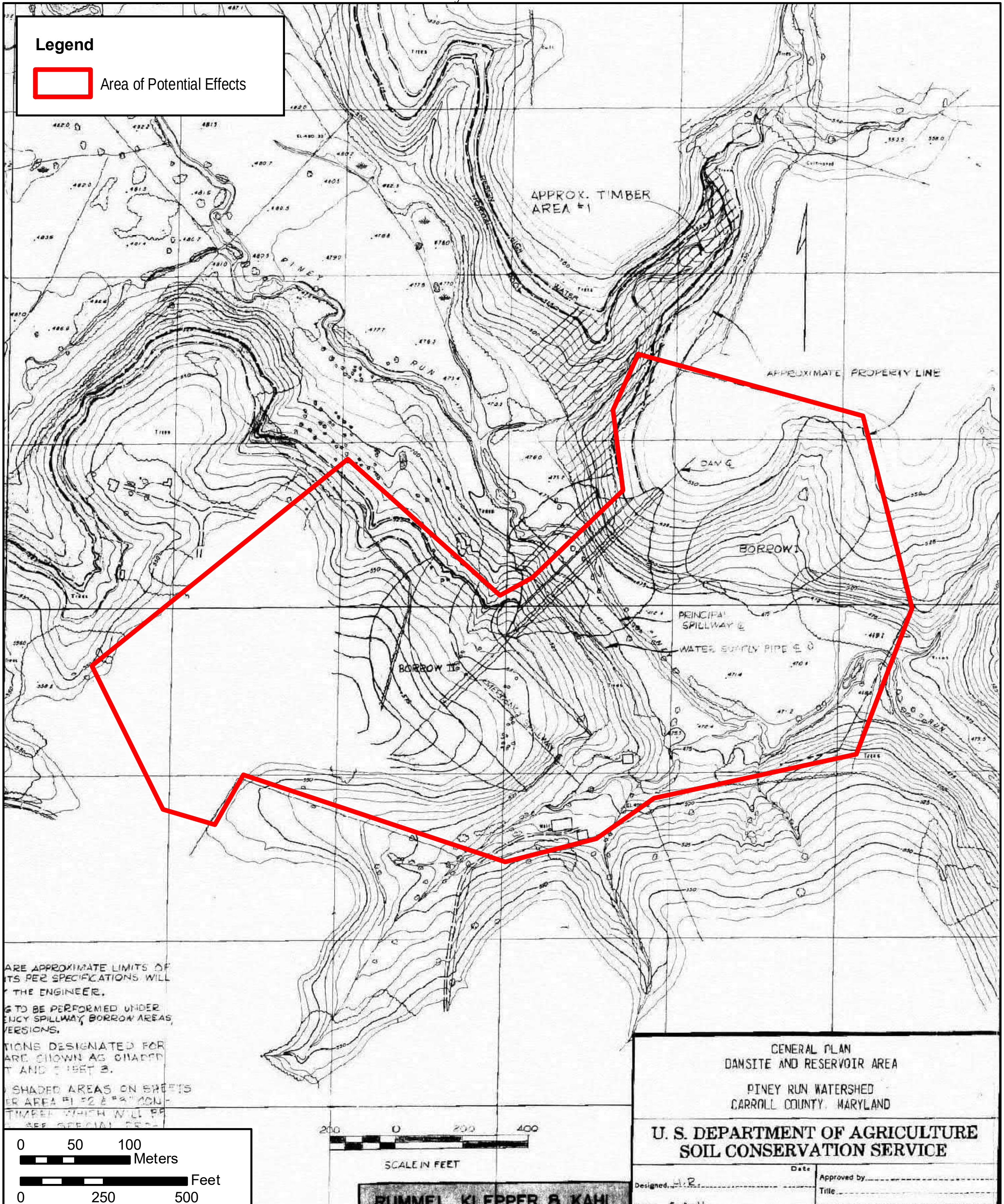
become increasingly overgrown. Returning tree and shrub growth are clearly evident throughout the fields surrounding the farmstead, substantiating evidence from the 1958 photograph that agricultural activities had ceased. The farmstead near the western boundary of the APE was still extant, though poor image resolution makes it difficult to distinguish individual buildings. The owner's name is not clearly legible on the photograph, though the surname probably reads "Dorsey". The farmstead on the northwestern boundary of the APE was also extant, though specific details of the building arrangement are also obscured by poor image quality. The owner's surname, Carroll, is legible but the given name is not.

A 1970 aerial photograph shows increasingly dense forest growth returning to the former agricultural fields that once dominated the central and eastern portions of the APE (Figure 3-12). In the southcentral part of the APE, the large barn is the only remnant of the previous farmstead still clearly visible. The farmstead at the west end of the APE appears to have been demolished by this time, though local tree growth makes this difficult to state conclusively. Tree growth also obscures details of the farmstead located along the APE's northwestern boundary, though the encroaching forest could be an indication it was no longer occupied.

A photorevised edition of the 1953 USGS map was released in 1971, but the built environment within the APE was not updated from its 1953 appearance despite the broad changes shown on the foregoing aerial photographs. In 1972, however, as-built drawings were prepared for the construction of the Piney Run dam and reservoir, encompassing the APE (Figure 3-13). The site plan drawing provides coverage for most of the APE and clearly shows three structures located south/southeast of the emergency spillway (located on the southwest side of the dam embankment, collocated with "Borrow II"). The easternmost and westernmost buildings respectively correspond to the Class 1 and 2 buildings shown on the 1953 USGS map. As noted above, these likely represent a dwelling and barn. A third building immediately southeast of the barn represents the outbuilding originally visible in the 1943 aerial photograph. The small complex was accessed by the same unimproved road extending northward from what is now Obrecht Road as shown on mid-century maps and aerial photographs. The only other built feature noted for this complex is a well shown at the large barn's southwest corner. No other buildings are apparent within the APE, though the plan did not detail the area that would have included the two farmsteads previously shown along the west and northwest boundaries of the APE.

A statewide topographic map produced by MGS in 1976 did not illustrate any of the historic occupations within the APE (Figure 3-14). In the southcentral part of the APE, a park road and turnabout are illustrated where the farmstead once stood, though it is unclear if this road was ever fully constructed. A road and turnabout are illustrated in the western part of the APE as well and in the vicinity of the farmstead that lately stood along the APE's northwestern boundary. This road follows the trajectory of a historic farmstead access road but is not passable today.


Legend
Area of Potential Effects
0 100 200
Meters
Feet
0 250 500
CLIENT: Carroll County Bureau of Resource Management
PROJECT: Piney Run Phase I
SCALE: 1:6,000
SOURCE: Image Courtesy of BRM
N
TITLE
1970 Aerial Photograph
AECOM
12420 Milestone Center Dr.
Germantown, MD 20876
PROJ NO 60614688
FIGURE 3-12

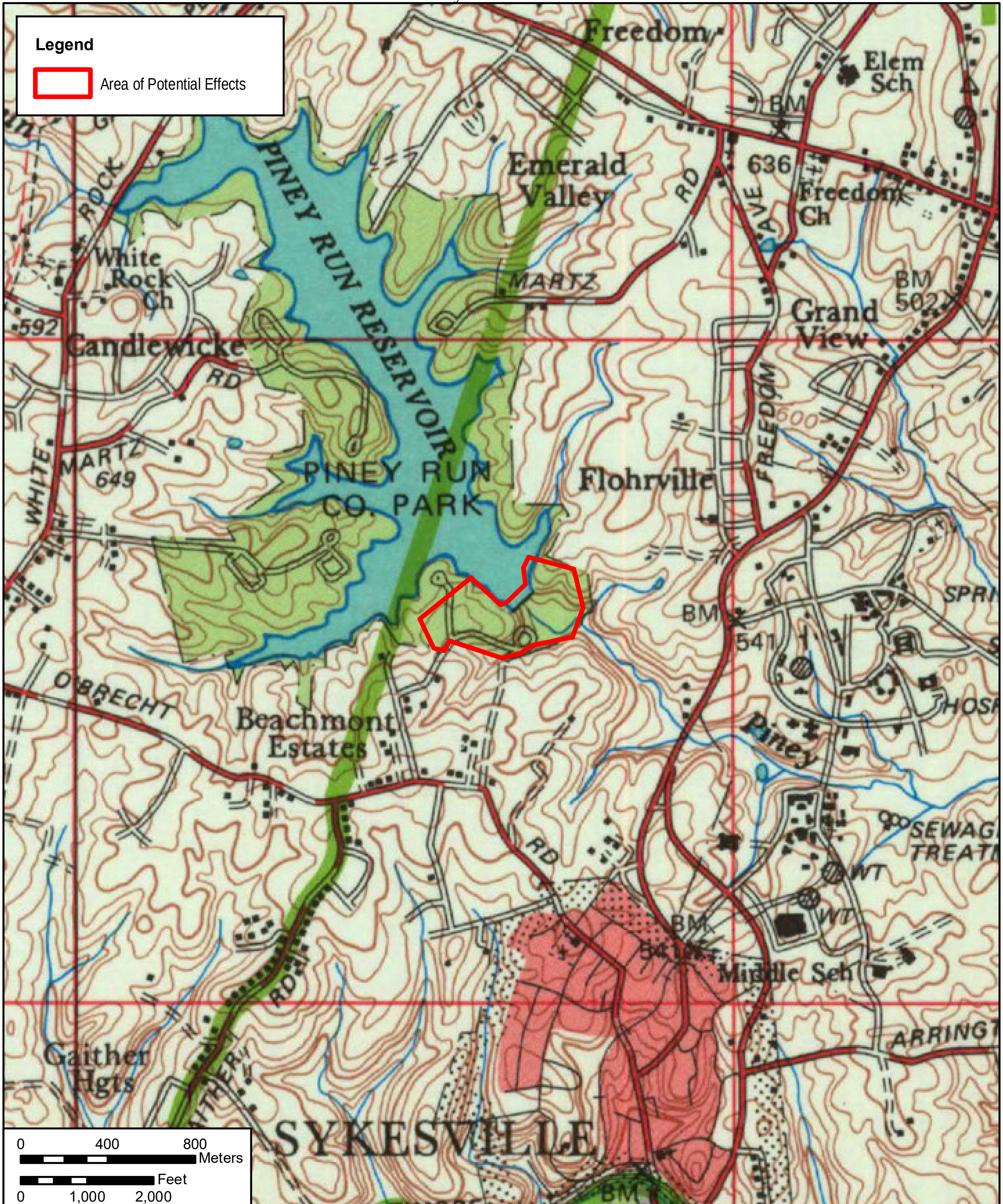


CLIENT: Carroll County Bureau of Resource Management
PROJECT: Piney Run Phase I
SCALE: 1:4,800
SOURCE: County Commissioners of Carroll County 1972
U:\Projects\MD\MSHA\GlenwoodAvenue\GIS\PineyRun_1972_20191226

TITLE
Piney Run Dam and Reservoir Site Plan

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-13



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase I
SCALE:	1:24,000
SOURCE:	MGS 1976

U:\Projects\MD\MSHA\GlenwoodAvenue\GIS\PineyRun_1976_20191226

N

TITLE
1976 MGS Map

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-14

4.0 PREVIOUS INVESTIGATIONS

Previous cultural resources investigations, archaeological sites, and above-ground resources registered with MHT within 1.6 km (1 mi) of the APE were reviewed as part of this project. The primary objective of this research was to characterize the cultural resources profile of the surrounding area as an aid for contextualizing the results of the current study.

4.1 PREVIOUS CULTURAL RESOURCE INVESTIGATIONS

Six previous cultural resource investigations have been registered with MHT within 1.6 km (1 mi) of the APE. In 1980, Wesler et al. conducted surveys along 326 systematically selected half-mile road segments across Maryland's piedmont region (Wesler et al. 1981). Two such segments were investigated along MD 32, resulting in the identification of no archaeological deposits.

In 1993, the American University conducted a Phase I survey of a 2-ha (5-ac) area for a proposed water treatment facility associated with Piney Run Reservoir (Dent and Jirikowic 1994). One hundred thirty-five STPs were excavated, resulting in the recovery of an isolated quartz flake and the identification of a ruin immediately east of the project's limits and within the current APE. The ruin was depicted on an incomplete excavation plan map adjacent to a trail in the valley south of the spillway (Figure 4-1). While the investigators did not record it as a site, they described it as:

> the remains of what appears to have been a wooden barn constructed on a foundation of local micaceous schist fieldstone. The structure measures 30 x 60 feet, with 10 foot openings on both ends and a silo foundation just east of the ruins. The hardware used in the structure indicate it was constructed in the 20th century (Dent and Jirikowic 1994:26).

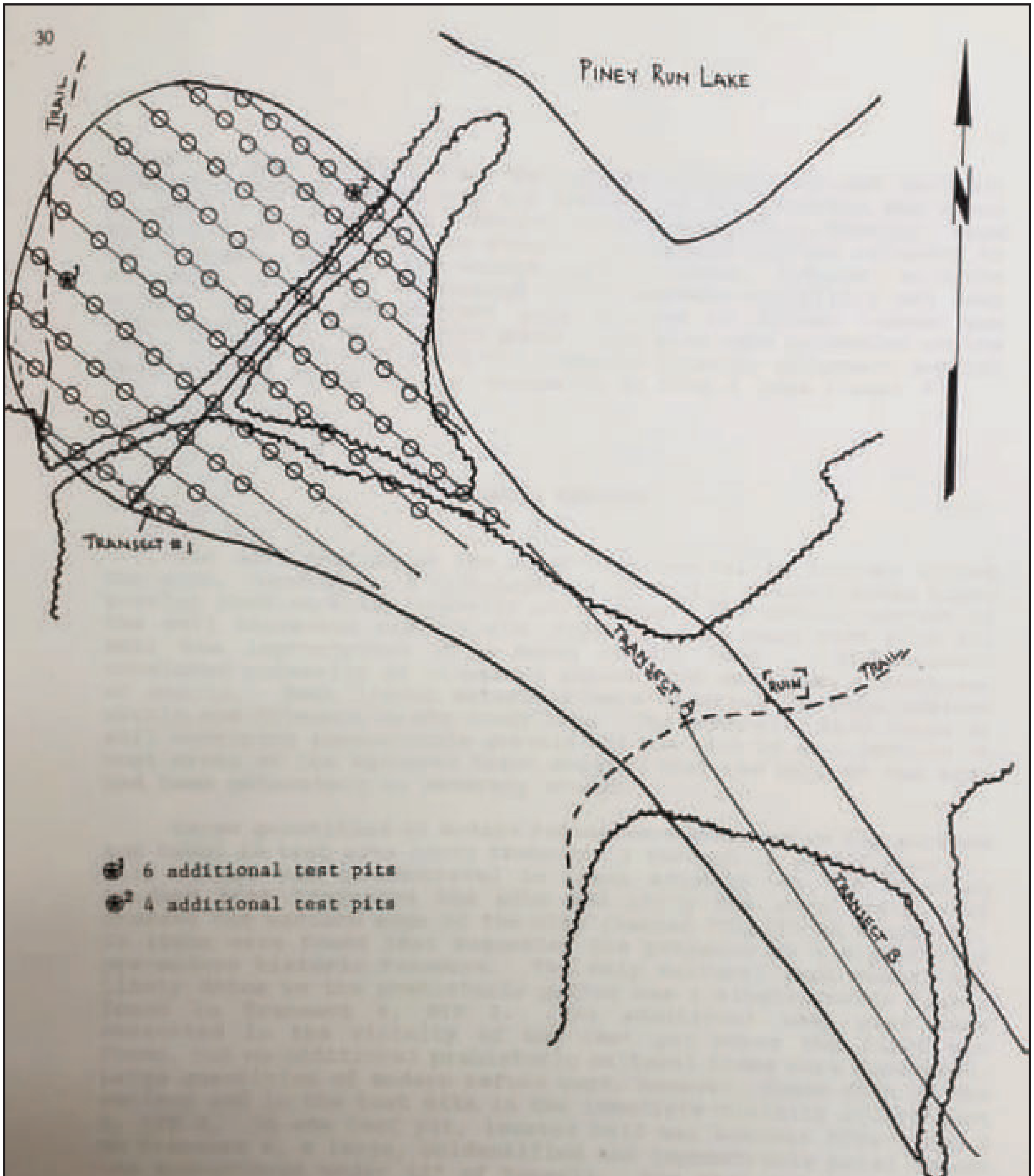
No subsurface investigation occurred within the ruins, and no evidence for additional structural features was observed. This building is the same as that which first appeared on the 1944 USGS map and identified as a Class 2 building on the 1953 USGS map (Figures 3-8 and 3-9).

In 2003, Robert Wall & Associates conducted a Phase I survey of the proposed reconstruction of MD 32 at Maryland Route 851 (Wall 2003). The project area encompassed approximately 6.9 ha (17 ac), most of which was agricultural fields. No archaeological sites or isolated artifacts were identified during pedestrian survey and systematic shovel testing.

In 2004, Charles Hall conducted a Phase I survey of 97 acres on the grounds of the Springfield State Hospital and Phase II evaluations of 18CR172, 18CR255, and 18CR256 (Hall 2005). Site 18CR172 represents a nineteenth century domestic occupation subsequently used as a hospital facility. Site 18CR255 is a low-density, nondiagnostic prehistoric lithic scatter. Site 18CR256 is an early to mid-twentieth century concentration of hospital dining hall refuse. Sites 18CR172 and 18CR256 were recommended eligible for listing in the NRHP, while 18CR255 was not.

In 2015, Applied Archaeology and History Associates, Inc. (AAHA) conducted a Phase I survey of 5.1 ha (12.61 ac) in advance of the construction of the proposed Freedom Readiness Center (AAHA 2015). Fifty-two STPs were excavated, and a systematic pedestrian survey was conducted, resulting in the identification of 18CR283, a collection of late historic concrete foundations. The site was recommended not eligible for listing in the NRHP.

In 2017, AECOM conducted a Phase I survey in advance of stream restoration efforts along Piney Run over 1 km (0.8 mi) east of the APE (Koziarski 2018). In total, 886 STPs were excavated, resulting in the identification of 18CR287 and 18CR288. Site 18CR287 represents the remnants



6 additional test pits
4 additional test pits

FIGURE 9: LOCATION OF SHOVEL TEST PITS AND TRANSECTS

Transect A: 22 shovel test pits
Transect B: 8 shovel test pits

Scale: 1" = 200'

CLIENT	Carroll County Bureau of Resource Management
PROJ	Piney Run Phase I
SCALE	As Shown
SOURCE	Dent and Jirikowic 1994:30
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics	

TITLE
American Universty Partial Excavation Plan

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 4-1

of the eighteenth to twentieth century Elias Brown mill, while 18CR288 represents a nineteenth to twentieth century rock quarry. Neither site was determined to possess good research potential, and both were recommended not eligible for listing in the NRHP.

4.2 PREVIOUSLY RECORDED ARCHAEOLOGICAL SITES

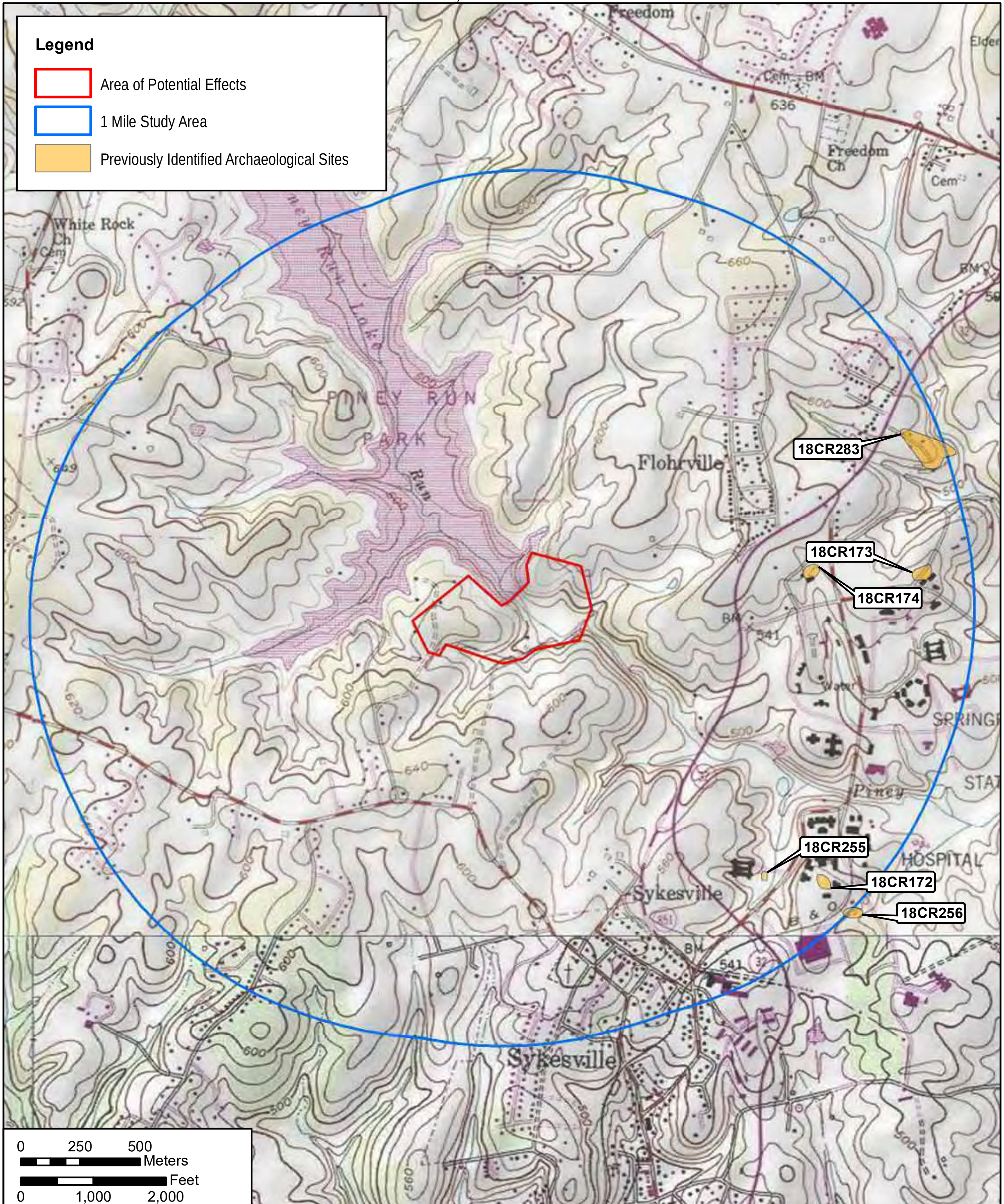
Six archaeological sites have been registered with MHT within 1.6 km (1 mi) of the APE (Table 4-1; Figure 4-2). These resources include one prehistoric and five historic sites. Historic sites include domestic, industrial, and institutional sites dating from the late eighteenth to the early twentieth century. The prehistoric site represents a low-density lithic scatter lacking diagnostic material. MHT staff have determined 18CR172 and 18CR256 eligible for listing in the NRHP, while two sites have been determined not eligible by MHT and the other two have not been assessed.

Table 4-1. Archaeological Sites within 1.6 km (1 mi) of the APE

Site Number	Site Name	Site Type	Temporal Affiliation	NRHP Status
18CR172	Buttercup Cottage	Farm House / Hospital Building	Mid-19th to Early 20th C.	Eligible
18CR173	Martin Gross "K" Cottage	Hospital Cottage / Industrial Site	Late 19th to 20th C.	Unassessed
18CR174	Patterson House	Mansion / Hospital Building	Late 19th to Early 20th C.	Unassessed
18CR255	Warfield Prehistoric Scatter #1	Lithic Scatter	Unknown Prehistoric	Not Eligible
18CR256	Warfield Dump	Dining Hall Debris	Early 20th C.	Eligible
18CR283	Springfield North Gate	Hospital Structure	Early 20th C.	Not Eligible

4.3 PREVIOUSLY RECORDED ABOVE-GROUND RESOURCES

Over 80 above-ground resources have been registered within 1.6 km (1 mi) of the APE, most of which are associated with the Springfield Hospital Center to the east. The center was established in 1894 as a psychiatric hospital built on the "cottage design" that has grown to include 62 historic buildings (Bowlin 1986). Parts of the Sykesville Historic District also fall within a 1.6-km (1-mi) radius of the APE. The district includes 97 resources constructed between 1850 and 1925 and is listed in the NRHP.



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase I
SCALE:	1:22,000
SOURCE:	ESRI 2019

TITLE: Archaeological Sites within 1 Mile of APE

AECOM 12420 Milestone Center Dr. Germantown, MD 20876

PROJ NO 60614688

FIGURE 4-2

5.0 RESEARCH DESIGN

5.1 OBJECTIVE

The primary objective of the Phase I survey was to identify the presence, extent, nature, age, and potential significance of archaeological deposits, if any, within the APE.

5.2 METHODS

5.2.1 Research

Background research was undertaken using resources available from the MHT library and Maryland's cultural resource information system (MEDUSA) to characterize archaeological and above-ground resources within the vicinity of the APE. Digital archives, site forms, survey reports, and GIS data were examined to provide a depiction of the local archaeological record as part of this project's broader contextual framework. Electronic resources were utilized to compile cartographic data and supplementary historic context information to more thoroughly detail the area's cultural background. These include digital materials available from the Library of Congress, Johns Hopkins University, and other repositories as appropriate.

5.2.2 Field Methods

The Phase I survey consisted of STP excavation along a 20-m (65.6-ft) controlled grid oriented to true north and limited to the APE. Radial STPs were excavated at 10-m (32.8-ft) intervals in cardinal directions around positive primary STPs. In some locations, judgmental STPs were excavated to provide additional survey coverage of specific landforms and to aid archaeological site investigation. Each STP measured 40 centimeters (cm) (1.3 ft) in diameter and was excavated 10 cm (0.33 ft) into sterile subsoil. No STPs were excavated in areas of standing water, on slopes greater than 15 percent, or in areas of extensive disturbance. STPs were assigned unique alphanumeric identifiers representing coordinates along the survey grid's y (alphabetic) and x (numeric) transects; letters increase west to east and numbers increase south to north. Radial and judgmental STPs were identified by distances in cardinal directions from a primary STP. For example, judgmental STP W-3 E2.5 S12.5 is located 2.5 m (8.2 ft) east and 12.5 m (41 ft) south of primary STP W-3. Where archaeological sites were identified, site boundaries were determined by the distribution of positive STPs, cultural features, and pertinent landform characteristics (e.g., slope/waterbody constraints).

Field data were recorded on standard field forms and in general field notes. The forms included Munsell soil color, soil texture, profiles, features present, artifacts recovered, excavator's initials, and the date of excavation. The locations of STPs were noted on field maps and recorded using a global positioning system (GPS) unit. Archaeological features were documented on site plans, in photographs, and on feature forms describing the features' shapes and dimensions, location, and interpretation/feature types.

All soils were screened through 6.34-millimeter (mm) (0.25-inch [in]) hardware mesh to ensure uniform artifact recovery. Collected artifacts were bagged in plastic sealing bags labeled with all relevant provenience information, including project name, site name/locus (as appropriate), STP, feature number (as appropriate), stratum, level, the number of artifacts recovered, excavator initials, and date. Obviously modern artifacts (e.g., plastic) were generally noted on forms and discarded in the field. Very small brick fragments were occasionally found in low quantities with other historic artifacts; these were noted and discarded in the field.

5.2.3 Laboratory Analysis

Artifacts were transported to the AECOM archaeological laboratory in Gaithersburg, Maryland, where they were cleaned, cataloged, and analyzed according to the Secretary of the Interior's *Standards and Guidelines for Curation* (United States Department of the Interior 1991) and Morehouse et al.'s (2018) *Technical Update No. 1 of the Standards and Guidelines for Archaeological Investigations in Maryland*. The objectives of laboratory analysis and cataloging were to determine the date, function, cultural affiliation, and preliminary significance of the artifacts to the extent possible. Artifacts will be curated with the Maryland Archaeological Conservation Laboratory (MACL) in St. Leonard, Maryland.

As appropriate, artifacts were gently washed using tap water and a soft toothbrush before being analyzed, cataloged, and rebagged according to provenience. Artifact data were entered into a Microsoft Access 2010 database. The same attributes were recorded for all artifacts, including lot number (corresponding to provenience), artifact number (sequential numbers arbitrarily assigned within a lot), count, material (i.e., the main material composition of the artifact), and form (i.e., intended use). The original form was often difficult to determine given the fragmentary nature of the artifacts, resulting in the form designation of "fragment." Identical, or nearly identical, artifacts within a provenience were grouped together under the same catalog number. (Note: catalog number = lot number plus artifact number).

Many of the historic artifacts were identifiable as to material, form, and function, while others required research to determine their function and/or dates of manufacture. Numerous internet resources were helpful such as MACL's *Diagnostic Artifacts in Maryland* (2015), the Florida Museum's *Historical Archaeology Ceramic Type Collection* (2019), and the BLM/SHA *Historic Glass Bottle and Identification and Information* (Lindsey 2020). Artifact dating and identification were based on the following sources: The Clorox Company (2019); Deetz (1996); The Green Spark Plug Company (2018); Lindsey (2020); Miller et al. (2000); *The New Movie Magazine* (1933); O'Rourke (1991); South (1977); and Visser (1997).

The same attributes were recorded for all artifacts, including: count; material (i.e., the main material composition of the artifact); class, type, and object. The object was often difficult to determine given the fragmentary nature of artifacts. Additional group-specific attributes were recorded as appropriate.

Identical, or nearly identical, artifacts within a provenience were grouped together under the same catalog number (note: The catalog number is the bag number followed by artifact number.) For example, all the window glass fragments within a single bag number (i.e., all from the same provenience) would be given the same artifact number. Whenever possible, mendable artifacts were grouped together. An attempt was made to classify all historic ceramics according to published pottery types (e.g., whiteware, pearlware, stoneware). Those sherds not easily recognized were assigned a descriptive name based on surface treatment and paste. Diagnostic ceramic, glass, and metal artifacts were used to estimate dates for site activities.

Historic artifacts were classified using Orser's (1988) functional typology (Table 5-1), which provides a means for interpreting the function of specific historic artifact classes. Within Orser's system, historic artifacts were analyzed according to material type and function, when possible. One additional category (6 Unknown) was added to the functional typology to better capture unidentified artifacts. An additional subcategory was added to the labor category (5c Household) to capture artifacts used during household work (e.g., cleaning products).

Table 5-1. Functional Typology (Modified from Orser 1988)

1. Foodways	
	a. Procurement – Ammunition, fishhooks, fishing weights, etc.
	b. Preparation – Baking pans, cooking vessels, large knives, etc.
	c. Service – Fine earthenware, flatware, tableware, etc.
	d. Storage – Coarse earthenware, stoneware, glass bottles, canning jars, bottle stoppers, etc.
	e. General Foodways – Unidentified glass and ceramic containers
	f. Floral – Nut shells, seeds, fruit pits, phytoliths, pollen
	g. Faunal – Animal bones, antlers, horns, shells and other remains.
2. Clothing	
	a. Fasteners – Buttons, eyelets, snaps, hooks, eyes, etc.
	b. Manufacture – Needles, pins, scissors, thimbles, etc.
	c. Other – Shoe leather, metal shoe shanks, clothes hangers, etc.
3. Household/Structural	
	a. Architectural/Construction – Nails, flat glass, spikes, mortar, bricks, slate, etc.
	b. Hardware – Hinges, tacks, nuts, bolts, staples, hooks, brackets, etc.
	c. Furnishings/Accessories – Stove parts, furniture pieces, lamp parts, fasteners, etc.
4. Personal	
	a. Medicinal – Medicine bottles, droppers, etc.
	b. Cosmetic – Hairbrushes, hair combs, jars, etc.
	c. Recreational – Smoking pipes, toys, musical instruments, souvenirs, etc.
	d. Monetary – Coins, etc.
	e. Decorative – Jewelry, hairpins, hatpins, spectacles, etc.
	f. Other – Pocketknives, fountain pens, pencils, ink wells, etc.
5. Labor	
	a. Agricultural – Barbed wire, horse shoes, harness buckles, hoes, plow blades, scythe blades, etc.
	b. Industrial – Tools, etc.
	c. Household – Household cleaning products, clothes iron, etc.
6. Miscellaneous	
	a. Automotive – Car/vehicle components
	b. Unknown – Functionally unidentifiable or unassignable artifacts

5.3 EXPECTED RESULTS

Given the APE's proximity to several mapped historic occupations, it was expected that at least one rural domestic/agricultural site dating to the late nineteenth/early twentieth century would be encountered. As noted in Section 3.3, historic mapping revealed one farmstead dating to at least the turn of the twentieth century within the APE and immediately south/southeast of the emergency spillway. At the outset of this investigation, it was unclear if archaeological deposits associated with this historic occupation would have survived the construction of the dam and spillway in the 1970s. Mid-twentieth century mapping suggested at least two possible dwellings within the immediate vicinity of the APE's western and northern boundaries, though it was not clear if deposits associated with these occupations would fall within the APE. It was likewise expected that prehistoric sites may be present within the APE, particularly southeast of the dam where Piney Run follows along its natural channel. Depending upon local topographic and hydrological conditions, it was though that prehistoric sites may be located on the broad floodplain and any adjacent terraces.

6.0 RESULTS

In total, 217 STPs were excavated, resulting in the recovery of one prehistoric artifact and 242 historic artifacts and the identification of three historic road traces and four archaeological sites (Figure 6-1). The following discussion addresses general field conditions, soil profiles, and testing results before describing the four newly identified archaeological sites in greater detail.

6.1 FIELD CONDITIONS

Natural landforms within the APE consist of rolling forested uplands dissected by incised stream valleys with moderately sized floodplains. Throughout the APE, the topographic relief ranges from minor to severe, with slopes greater than 15 percent being very common and significantly limiting STP excavation in many areas.

West of Piney Run, the north half of the APE consists of gently sloping knolls that rapidly steepen as they approach the Piney Run Reservoir to the north and an unnamed tributary to Piney Run to the south (Figure 6-2). The knolls appear to have been recently used as casual dumping grounds for late historic/modern household and automotive refuse. A disused road, identified as Road Trace 1, tracks north across this portion of the APE, leading from Hollenberry Road to what was once a small cluster of dwellings north of the APE as shown on historic maps (Figure 6-3).

The south half of the APE west of Piney Run consists of a narrow stream valley gradually descending east to Piney Run and steep hillsides rising to the south/southeast (Figure 6-4). A disused road, identified as Road Trace 3, tracks southwest-northeast along the APE’s southern margin; initially level with the narrow stream valley, the road rises to the northeast where it becomes incised into the steep side slopes above Piney Run.

East of Piney Run, the APE consists of a broad floodplain bound by generally steep slopes rising to relatively level summits to the north and east (Figure 6-5). Extensive portions of the floodplain exhibited standing water and appear to be semi-permanent wetlands (Figure 6-6). Another disused road, identified as Road Trace 2, tracks northwest into the APE, stopping abruptly at what initially appeared to be a natural, gently sloping stream terrace (Figure 6-7). Subsequent review of as-built construction documents associated with Piney Run Dam indicated that this terrace was entirely artificial and used as a soil borrow/wasting area.

Large portions of the APE exhibit significant prior ground disturbance. Disturbances include the dam embankment and abutments; the emergency spillway west of the dam; the impact basin where the reservoir’s outflow pipe discharges into a modified channel; borrow areas identified as “Borrow I” and “Borrow II” on Figure 3-13; buried infrastructure/utilities; and access roads leading to both of the dam’s abutments (Figures 6-8 through 6-11). In general, STPs were not excavated in areas of prior disturbance, though some tests were placed within “Borrow I” and “Borrow II” (collocated with the emergency spillway) to characterize soils and determine the presence of any potentially intact buried surfaces (i.e., undisturbed strata with archaeological remnants of historic and/or prehistoric activities).

6.2 SHOVEL TESTING

Shovel testing was limited by excessive slopes, large areas of prior ground disturbance, and to a lesser extent, standing water in the vicinity of Piney Run and an unnamed tributary to the west. As a result, more than half of the STPs plotted at 20-m (65.6-ft) intervals across the APE could not be excavated (Figure 6-1).

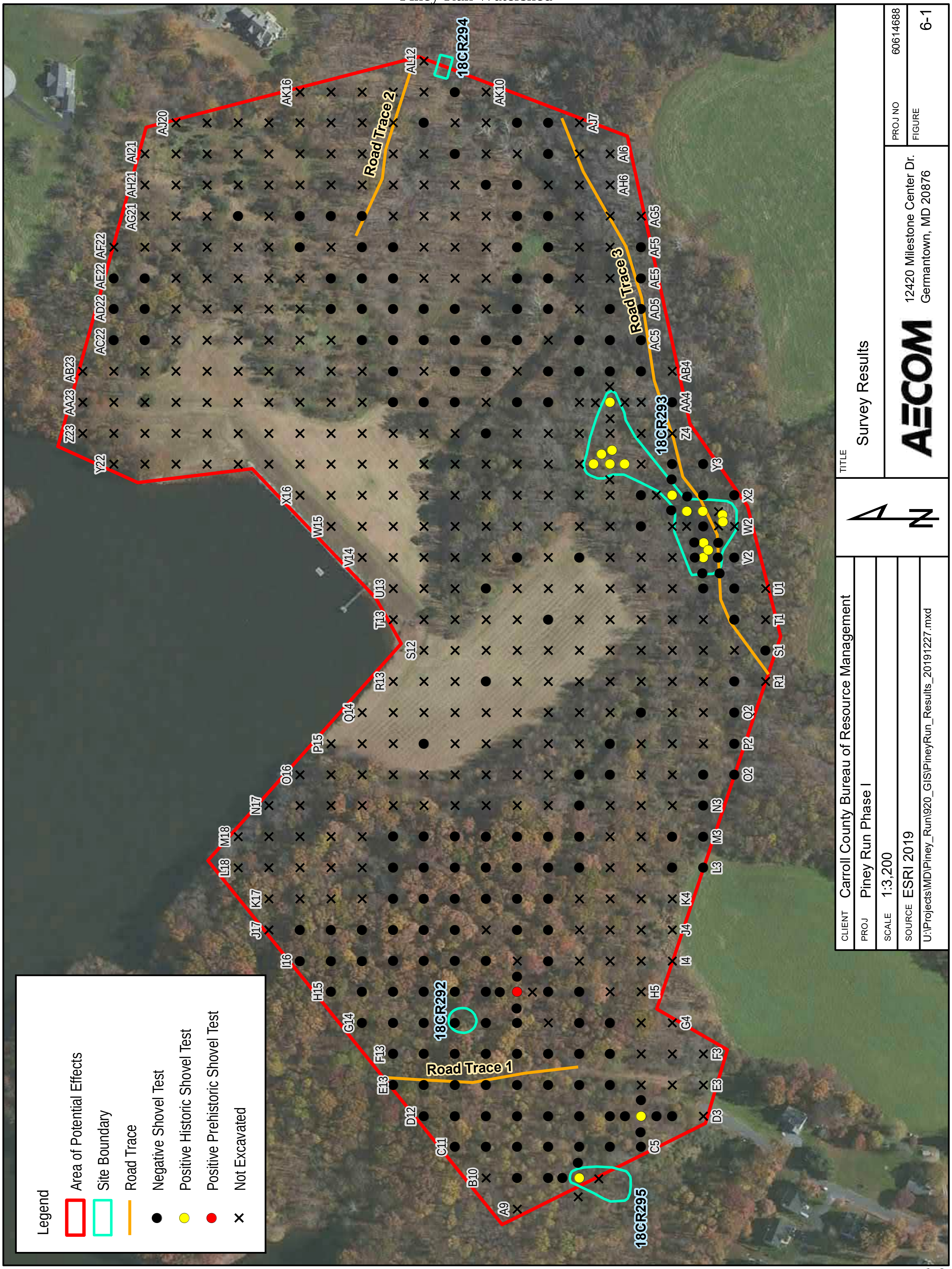

Legend
Area of Potential Effects
Site Boundary
Road Trace
Negative Shovel Test
Positive Historic Shovel Test
Positive Prehistoric Shovel Test
Not Excavated
18CR292
18CR293
18CR294
18CR295
Road Trace 1
Road Trace 2
Road Trace 3
TITLE
Survey Results
AECOM
12420 Milestone Center Dr.
Germantown, MD 20876
PROJ NO 60614688
FIGURE 6-1
CLIENT Carroll County Bureau of Resource Management
PROJ Piney Run Phase I
SCALE 1:3,200
SOURCE ESRI 2019
U:\Projects\MD\Piney_Run\920_GIS\PineyRun_Results_20191227.mxd

Figure 6-2. Sloping Forested Uplands West of Piney Run, Facing Northeast

Figure 6-3. Road Trace 1, Facing South

CLIENT Carroll County Bureau of Resource Management		TITLE Project Photographs	
PROJ Piney Run Phase I			
SCALE N/A		AECOM 12420 Milestone Center Dr. Germantown, MD 20876	PROJ NO 60614688
SOURCE N/A			FIGURES 6-2 and 6-3
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Figure 6-4. Unnamed Stream Valley West of Piney Run, Facing South

Figure 6-5. Piney Run Floodplain, Facing Southeast

CLIENT	Carroll County Bureau of Resource Management	TITLE	Project Photographs
PROJ	Piney Run Phase I		
SCALE	N/A	AECOM 12420 Milestone Center Dr. Germantown, MD 20876	PROJ NO 60614688
SOURCE	N/A		FIGURES 6-4 and 6-5
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics			

Figure 6-6. Wetlands on Piney Run Floodplain, Facing Southeast

Figure 6-7. Road Trace 2, Facing Southeast

CLIENT	Carroll County Bureau of Resource Management	TITLE	Project Photographs	
PROJ	Piney Run Phase I			
SCALE	N/A	AECOM	12420 Milestone Center Dr. Germantown, MD 20876	PROJ NO 60614688
SOURCE	N/A			FIGURES 6-6 and 6-7
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Figure 6-8. Piney Run Dam, Facing East

Figure 6-9. Emergency Spillway, Facing South

CLIENT	Carroll County Bureau of Resource Management
PROJ	Piney Run Phase I
SCALE	N/A
SOURCE	N/A

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TITLE
Project Photographs

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURES 6-8 and 6-9

Figure 6-10. Impact Basin, Facing Southeast

Figure 6-11. Access Road West of Dam, Facing Southwest

CLIENT	Carroll County Bureau of Resource Management	TITLE	Project Photographs
PROJ	Piney Run Phase I	PROJ NO	60614688
SCALE	N/A	FIGURES	6-10 and 6-11
SOURCE	N/A		

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AECOM 12420 Milestone Center Dr. Germantown, MD 20876

Areas found to be suitable for STP excavation were located in three general areas. West of Piney Run and northwest of its unnamed tributary, a series of wide, relatively level hill summits provided the largest continuous shovel testing area. West of Piney Run and along the southern edge of the APE, the stream valley of the unnamed tributary provided numerous testing opportunities along its floodplain and adjacent terraces. East of Piney Run, shovel testing typically clustered on the Piney Run floodplain and a gently sloping terrace that partially served as soil borrow/wasting area "Borrow I" during the dam's construction. North of the floodplain, the APE encompassed only a limited area of relatively level hill summits free of dam construction disturbances and suitable for shovel testing.

The center of the APE is dominated by the dam and emergency spillway. A few STPs were excavated on the emergency spillway to characterize stratigraphy and determine if any potentially intact buried surfaces lay beneath more recent fill deposits. However, it was not anticipated that such surfaces would be present, given the significant amount of ground disturbance required to create the emergency spillway. The dam's construction report noted that 22,500 cubic yards of soil were removed from this area ("Borrow II") and redistributed in "Borrow I"; this amount of earth moving suggested a minimal possibility for buried surfaces in the emergency spillway (Kerslake ca. 1975).

Soil profiles throughout the APE generally exhibited minor variations that typically corresponded to landform/setting. Three broad profile types emerged, though a small number of STPs associated with the use/occupation of various archaeological features do not fall into these categories; such STPs are addressed in the appropriate site discussions in section 6.4 below.

Stratigraphic profile Type 1 was identified in STPs excavated within upland portions of the APE. These typically revealed the existing surface mineral layer/plowzone (A/Ap horizon) overlying culturally sterile subsoil (B horizon). This A/Ap-B horizon stratigraphic sequence was also documented in some locations along the Piney Run floodplain.

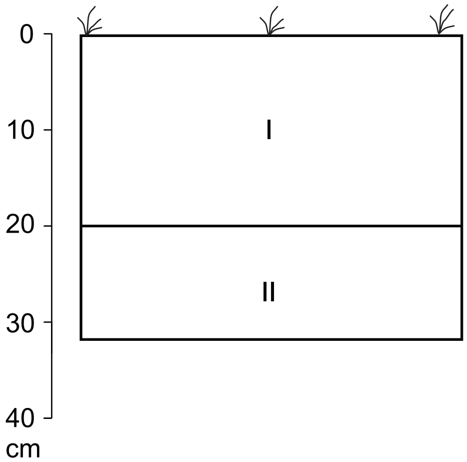
Type 2 was identified in some floodplain STPs where three strata were documented. This stratigraphic sequence is interpreted as the A/Ap horizon atop two distinct components of the B horizon or an A/Ap and B horizon overlying a poorly developed mineral layer (C horizon).

Type 3 was identified in areas of prior significant ground disturbance, primarily along the emergency spillway. This area was selectively ground-truthed to confirm dam construction documentation suggesting a heavily modified ground disturbance. STPs in this area typically revealed a single stratum of fill overlying the C horizon. Representative profiles are illustrated in Figure 6-12.

6.3 ARTIFACTS

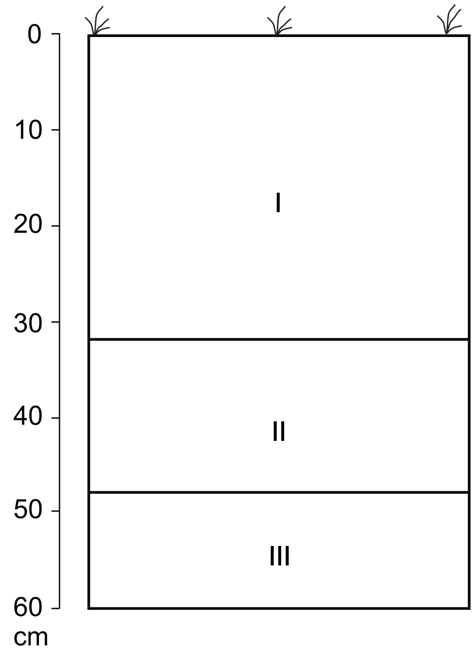
One prehistoric artifact and 242 historic artifacts were recovered during this investigation (Table 6-1). Of these, 13 were collected from the ground surface, while the remaining 230 were recovered from 17 STPs. All artifacts were recovered west of Piney Run and primarily near the southern and western boundaries of the APE. Miscellaneous historic artifacts, dominated by unidentifiable glass and iron, were most common (n=89; 36.6 percent), closely followed by historic foodways (n=77; 31.7 percent) and household/structural (n=72; 29.6 percent) material. Significantly lower quantities of labor, personal, and prehistoric artifacts comprise the remainder of the assemblage.

Type 1, STP H-11



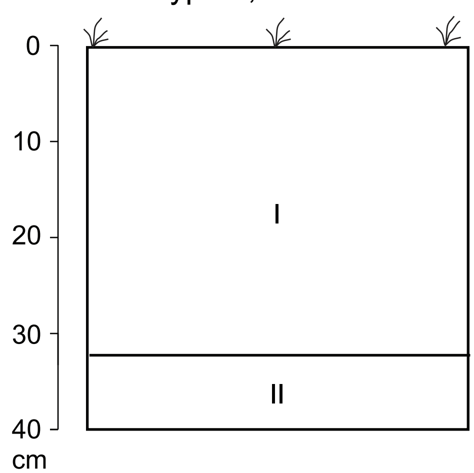
I = Brown (7.5YR 4/4) silt loam Ap horizon
II = Strong brown (7.5YR 5/6) silty clay loam B horizon

Type 2, STP AG-8



I = Dark yellowish brown (10YR 4/4) silt loam A horizon
II = Yellowish brown (10YR 5/6) silt loam B horizon
III = Light yellowish brown (2.5Y 6/4) silty clay loam B or C horizon

Type 3, STP R-10



I = Dark yellowish brown (10YR 3/4) loam fill
II = Light olive brown (2.5Y 5/6) channery silty clay loam C horizon

CLIENT	Carroll County Bureau of Resource Management
PROJ	Piney Run Phase I
SCALE	As Shown
SOURCE	N/A
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics	

TITLE	Representative STP Profiles
AECOM, 12420 Milestone Center Dr. Germantown, MD 20876	
PROJ NO	60614688
FIGURE	6-12

Table 6-1. Artifact Summary

STP	Group						Count
	Foodways	Household/ Structural	Labor	Miscellaneous	Personal	Prehistoric	
Surface	11		1		1		**13**
AA-6	1	1		49			**51**
B-7	1	3					**4**
D-5	1						**1**
H-9						1	**1**
V-3	17	6		1			**24**
V-3 E10		2		1			**3**
V-3 E5 S2.5		2					**2**
W-3 E10	2						**2**
W-3 E10 N10		3	1	4			**8**
W-3 E2.5 S12.5		1					**1**
W-3 W7.5 S12.5		1		2			**3**
X-4		2					**2**
Y-6	1	1					**2**
Y-6 8E 10S	23	35		16			**74**
Y-6 N10		3		2			**5**
Y-6 N5 E5	3	7		9			**19**
Y-6 S10	17	5		5	1		**28**
Total	**77**	**72**	**2**	**89**	**2**	**1**	**243**

Of these, 241 historic artifacts are associated with three newly identified archaeological sites and will be discussed with the site descriptions below. The remaining historic artifact and the prehistoric artifact are isolated finds. The isolated historic artifact is part of an ironstone plate (1842-1930) identified in STP D-5. This STP is located near several push piles northwest of Hollenberry Road in an area used for modern refuse disposal. The push piles, likely created when this part of Hollenberry Road was repurposed for dam access, signify high levels of local disturbance. This artifact cannot be attributed to a particular historic occupation, as it could derive from one of several nearby former residences. Furthermore, it has likely been redistributed when Hollenberry Road was modified. Site 18CR295 is the closest known historic occupation, but it is located over 40 m (131 ft) away. Several other historic occupations are known to have existed nearby, any one of which may have disposed of the artifact as roadside refuse.

The single prehistoric artifact is a tertiary quartz flake identified in STP H-9, located on a gently sloping hill summit. Radial STP excavation and a pedestrian inspection of the surrounding area revealed no additional artifacts or any ideal landforms (e.g., stream terrace) where lithic maintenance/production would have been likely. Dent and Jirikowic (1994) identified a quartz flake on a nearby hillslope, but this artifact was located over 100 m (328 ft) away. While these two isolates indicate prehistoric activities in the vicinity, no evidence for a definitive habitation, resource procurement, or lithic reduction site was identified.

6.4 ARCHAEOLOGICAL SITES

Four newly identified archaeological sites were recorded during this survey: 18CR292 is an early twentieth century refuse pit; 18CR293 is an early nineteenth to early twentieth century farmstead; 18CR294 is a likely nineteenth century spring box; and 18CR295 is a possible nineteenth century domestic occupation. Each site is described in greater detail below.

6.4.1 18CR292

Site 18CR292 is located in the northwest portion of the APE, immediately southeast of STP G-11 (Figures 6-1 and 6-13). The surrounding landform consists of a series of forested hill summits gradually descending north toward what is now a submerged hollow along the Piney Run stream valley (Figure 6-14). This portion of the APE contains a widely dispersed scatter of discarded metal, glass, plastic, and rubber materials, most of which appear to date to the second half of the twentieth century (Figure 6-15). Site 18CR292 is situated approximately 40 m (131 ft) east of Road Trace 1 and encompasses 0.02 ha (0.05 ac).

This site is defined by Feature 1, a lobe-shaped pit measuring up to 5.5 m (18 ft) long by 2.5 m (8.2 ft) wide and extending up to 1 m (3.3 ft) below the surface (Figures 6-16 and 6-17). Exhibiting slumping sides and amorphous contours, Feature 1 was littered with discarded glass bottles, unidentifiable iron fragments, automotive parts, and a few historic ceramics. Probing the sides of the feature revealed no structural elements which, together with its overall shape and contents, indicated that it did not likely represent a cellar pit repurposed as a trash disposal site. A scatter of glass bottles extended outward approximately 1 meter (3.3 ft) from Feature 1. Pedestrian and subsurface investigations of the surrounding area revealed no additional archaeological features or deposits or any indication of a sustained historic occupation.

Feature 1 contained hundreds of glass bottles/vessel glass fragments, large pieces of metal (e.g., automotive parts), and other generic refuse. No architectural artifacts were found in the feature. Due to the overwhelming quantity of material, a sample of well preserved, diagnostic artifacts was collected for analysis (Figure 6-18). Preference was given to representative intact/mostly intact glass bottles and single examples of the observed ceramic ware types (Table 6-2).

Table 6-2. 18CR292 Artifact Summary

Group	Subgroup	Artifact	Date Range	Count
Foodways	General Foodways	Hazel Atlas Bottle, Likely Shoe Polish	1923-1982	1
		Hazel Atlas Medicinal/Cosmetic Bottle	1923-1982	1
	Service	Ironstone	1842-1930	1
		Milk Glass	Late 19th C.+	1
		Decalcomania Hotel Ware	1890+	1
	Storage	Hazel Atlas Mustard Jar	1923-1982	1
		Cap Seat Milk Bottle	1892+	1
		Coca-Cola Bottle, Westminster Plant	1920-1957	1
		Albany Slip Stoneware	1805-1920	1
		Albany/Bristol Slip Stoneware	1890-1920	1
Labor	Household	Clorox Bottle	1933-1936	1
Personal	Cosmetic	Dr. Ellis Waving Fluid Bottle	1920s-1940s	1
Total				**12**

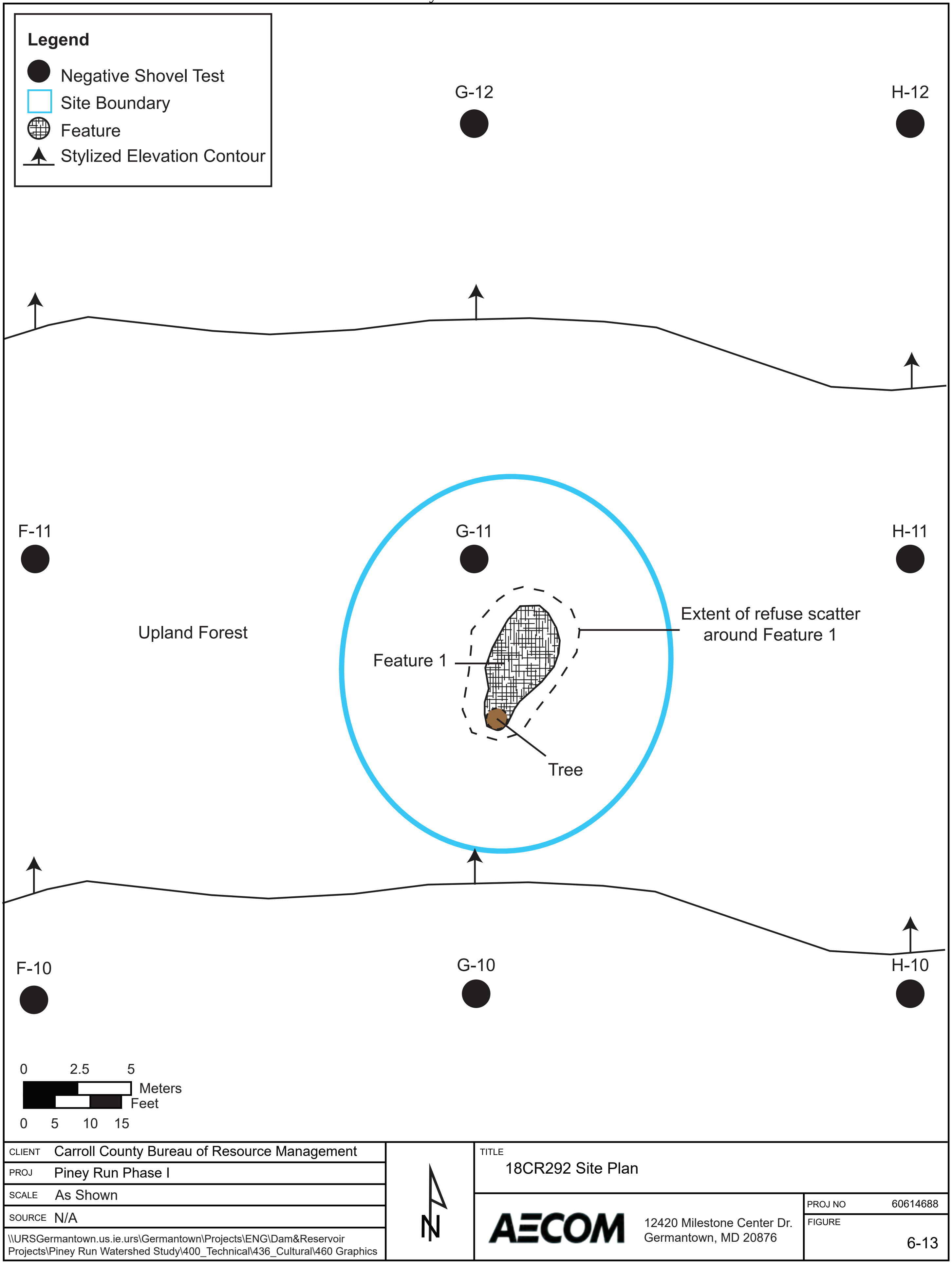

Legend
Negative Shovel Test
Site Boundary
Feature
Stylized Elevation Contour
G-12
H-12
F-11
G-11
H-11
Upland Forest
Feature 1
Extent of refuse scatter around Feature 1
Tree
F-10
G-10
H-10
0 2.5 5
Meters
Feet
0 5 10 15
CLIENT Carroll County Bureau of Resource Management
PROJ Piney Run Phase I
SCALE As Shown
SOURCE N/A
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics
N
TITLE 18CR292 Site Plan
AECOM
12420 Milestone Center Dr.
Germantown, MD 20876
PROJ NO 60614688
FIGURE 6-13

Figure 6-14. 18CR292 Terrain Overview, Facing West

Figure 6-15. Modern Surficial Refuse near 18CR292, Facing East

CLIENT Carroll County Bureau of Resource Management		TITLE Project Photographs	
PROJ Piney Run Phase I			
SCALE N/A		AECOM 12420 Milestone Center Dr. Germantown, MD 20876	PROJ NO 60614688
SOURCE N/A			FIGURES 6-14 and 6-15
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics			

Figure 6-16. 18CR292, Feature 1, Facing East

Figure 6-17. 18CR292, Feature 1, Facing South

CLIENT	Carroll County Bureau of Resource Management	TITLE	Project Photographs
PROJ	Piney Run Phase I		
SCALE	N/A	AECOM 12420 Milestone Center Dr. Germantown, MD 20876	PROJ NO 60614688
SOURCE	N/A		FIGURES 6-16 and 6-17
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics			

Top Row: Decalcomania Hotel Ware (1.01); Plain Ironstone (1.02); Albany/Bristol Slip Stoneware (1.04)
Bottom Row: Dr. Ellis Waving Fluid Bottle (1.07); Coca-Cola Bottle (1.06); Medicinal/Cosmetic Bottle (1.10)

CLIENT	Carroll County Bureau of Resource Management
PROJ	Piney Run Phase I
SCALE	As Shown
SOURCE	N/A
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics	

TITLE
18CR292 Representative Artifacts

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 6-18

The functional categories of the artifact sample are reflective of the majority of artifacts identified within Feature 1. While miscellaneous metal and glass objects were observed, most of the Feature 1 assemblage consisted of glass bottles/bottle fragments similar in function, age, and manufacturer to those shown in Table 6-2. Collected and uncollected artifacts from Feature 1 predominantly derive from domestic uses, with discarded storage, medicinal, cleaning, and cosmetic bottles the most common types. Service and storage ceramics were observed in starkly lesser quantities alongside a few car parts and unidentified metal fragments. The distribution of functional groups makes it clear that Feature 1 was predominantly used as a domestic refuse pit.

The manufacturing periods of the artifact sample shown in Table 6-2 are reflective of the uncollected diagnostic materials left in Feature 1. While these periods broadly span the early nineteenth century to the present, they strongly cluster in the first half of the twentieth century. Historic maps/aerial photographs presented in Section 3.3 shows that a small group of dwellings may have been built north of 18CR292 between 1911 and 1943 (Figures 3-6 and 3-7). Feature 1 almost certainly originated as a casual dumping site for one or more of the nonextant residences in this small rural community.

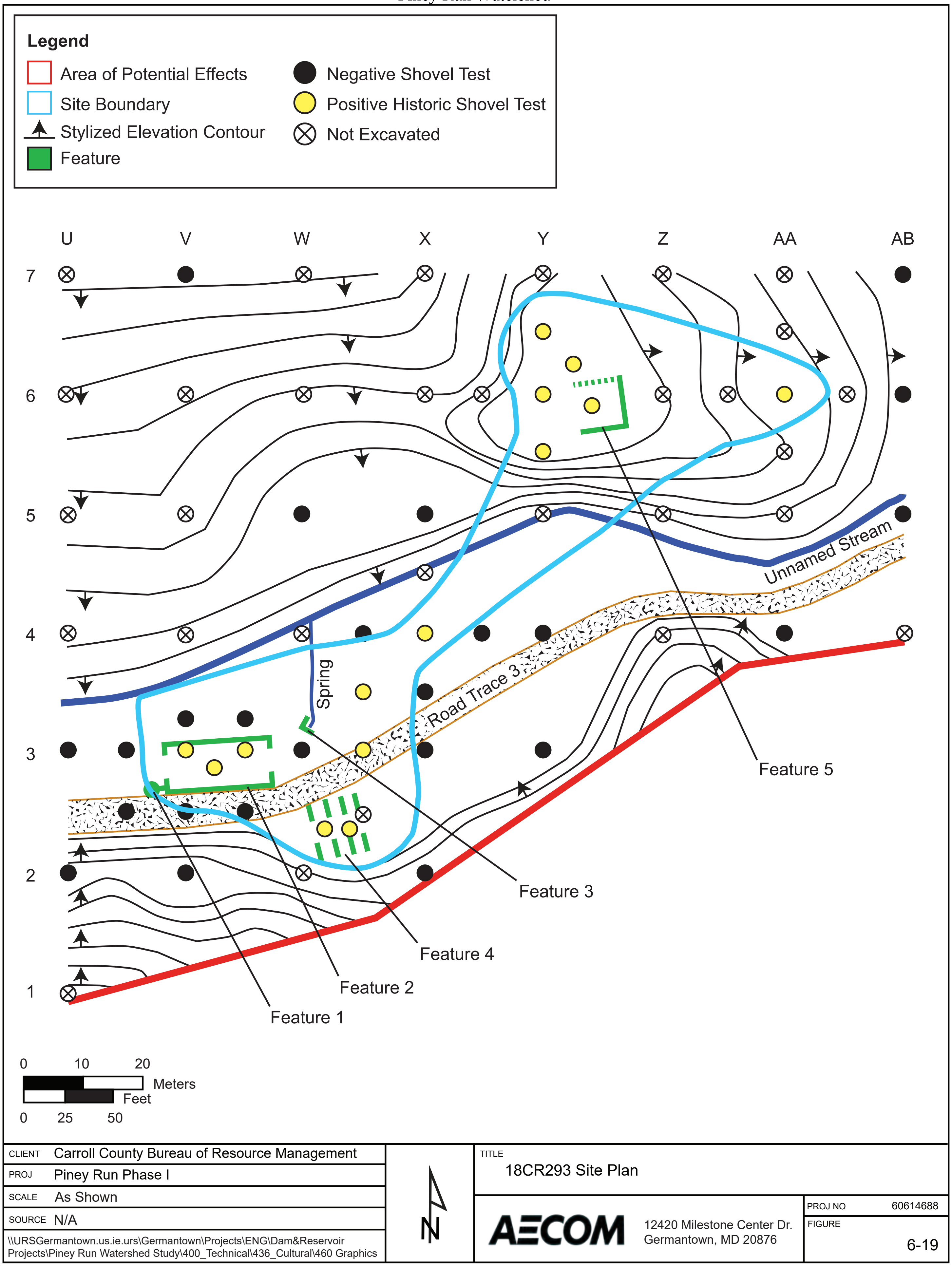
Site 18CR292 represents an early twentieth century refuse disposal pit in the vicinity of several farmsteads that were extant by at least 1943 according to aerial photography (Figure 3-7). Presumably, 18CR292 was sited at a distance from these occupations to consolidate refuse in a spatially segregated area; the large concentration of glass artifacts may reflect intentionally keeping this sharp, hazardous debris away from pedestrian and vehicular traffic. However, because the site is located so far from each of the farmstead's historically mapped dwellings, it is unclear if it was the disposal site for one or more of these occupations. Though the assemblage is reflective of some consumer habits attributable to a local community, the site cannot be more particularly associated with a given dwelling or family at this time. This limits the site's information potential and, given the sampling strategies used during the current survey, it is unlikely that additional excavation will yield potentially significant deposits.

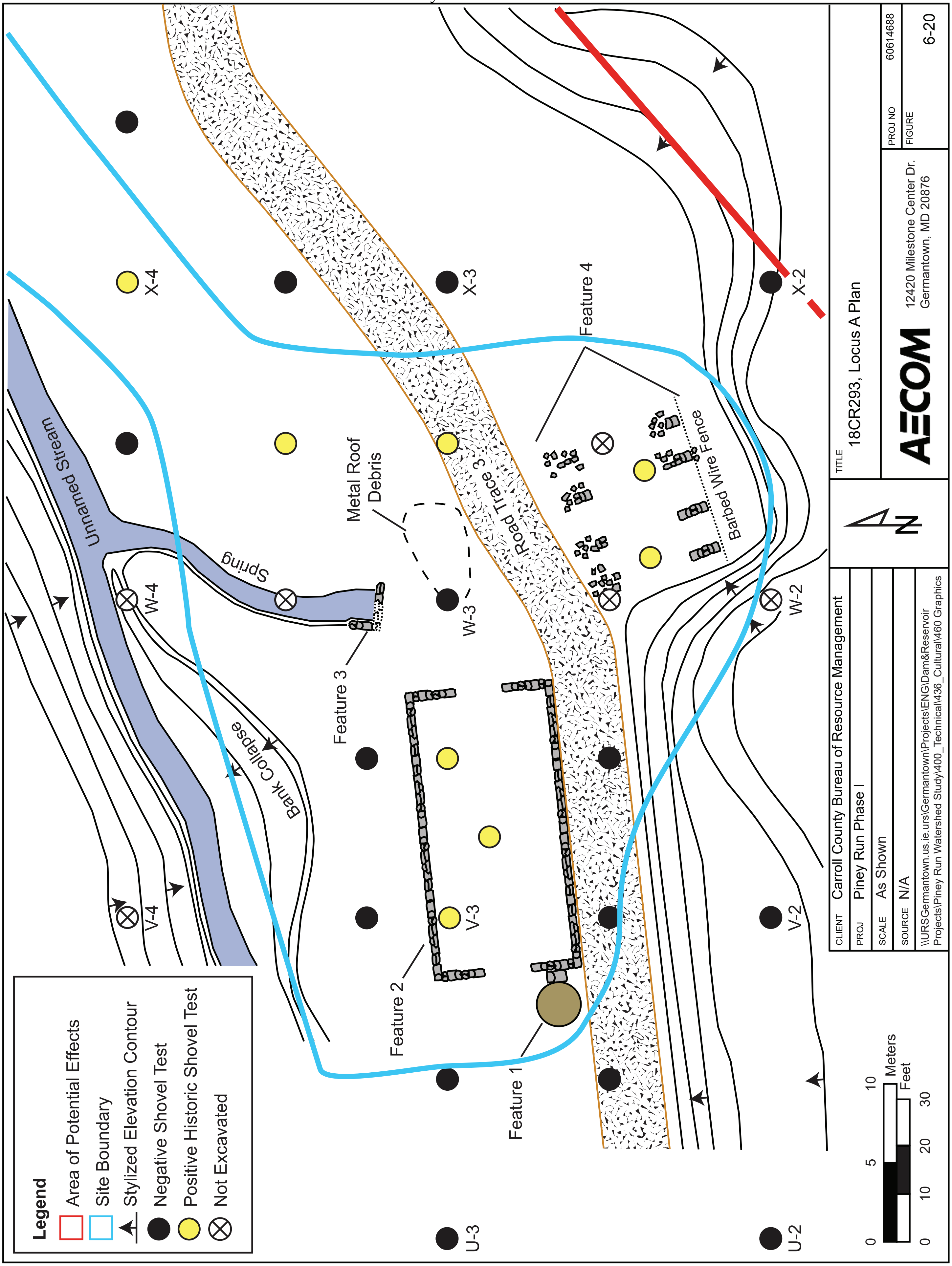
Given that the site cannot be definitively attributed to a given historic occupation, together with its limited potential to yield additional significant information, AECOM recommends 18CR292 not eligible for listing in the NRHP. It lacks the informational potential required to satisfy Criterion D and lacks the associative values necessary to satisfy Criteria A, B, and/or C. No additional work is recommended.

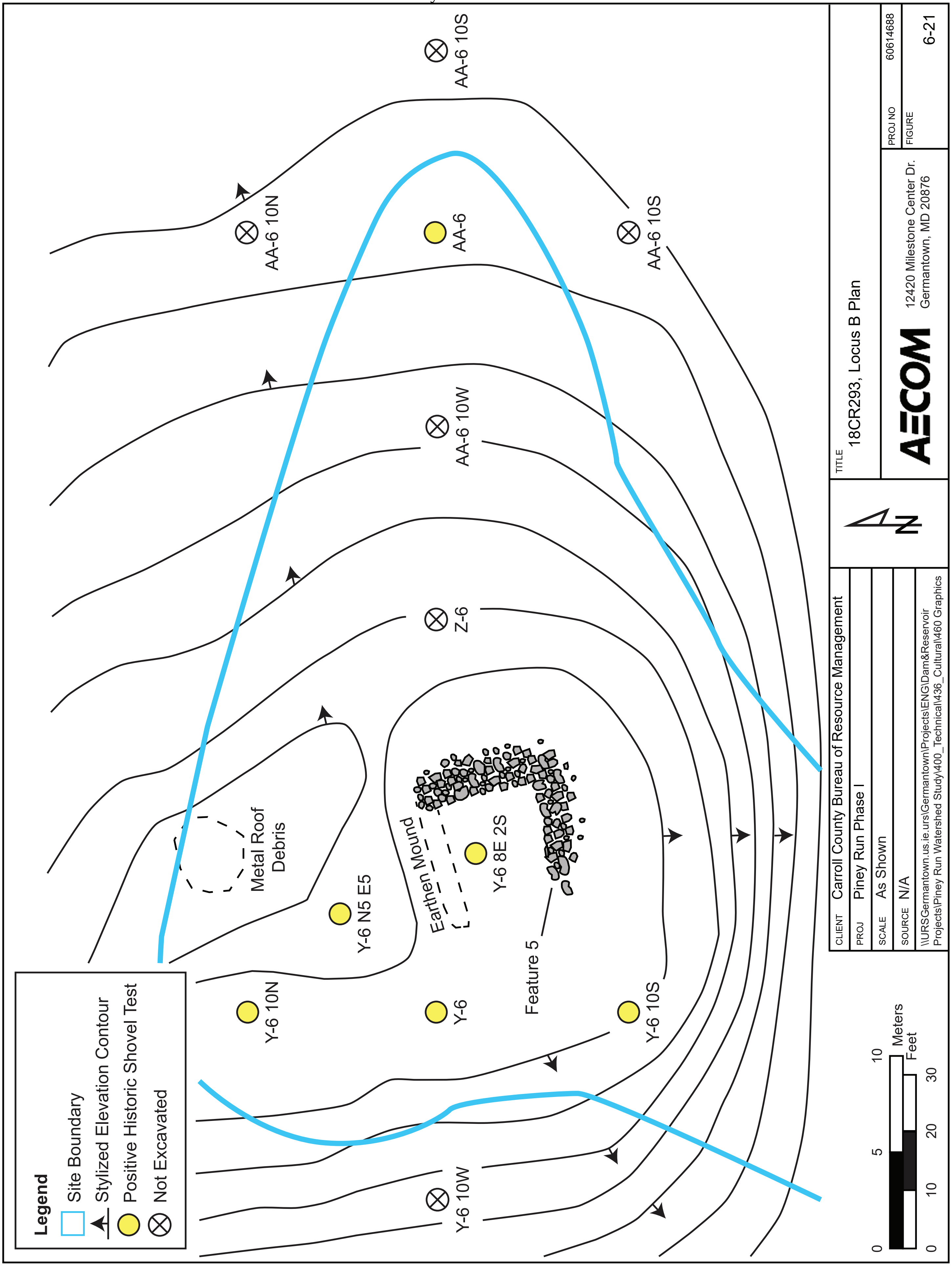
6.4.2 18CR293

Site 18CR293 is located in the south-central portion of the APE, southeast of the emergency spillway within the small, forested valley of an unnamed Piney Run tributary (Figures 6-1 and 6-19). The site corresponds to the historic farmstead shown in the southcentral part of the APE on historic maps and aerial photographs presented in section 3.3. The site is organized into two discrete loci on adjacent but distinct landforms (Figures 6-20 and 6-21). Locus A is located on the south side of the unnamed tributary, partially within its floodplain and partially cut into a terrace on the toeslopes rising to the south. Locus B is located on the north side of the unnamed tributary, midway up the hillslopes rising northwest toward the emergency spillway. Road Trace 3 bisects Locus A along the floodplain's southern margin. The site encompasses 0.33 ha (0.83 ac).

The site is defined by five features and a scatter of 224 historic artifacts recovered from 14 STPs. Features 1 through 4, representing an agricultural complex, are located in Locus A, while Feature 5, the remnants of a farmstead dwelling, is located in Locus B. Upon site discovery, the shovel


Legend
Area of Potential Effects
Site Boundary
Stylized Elevation Contour
Feature
Negative Shovel Test
Positive Historic Shovel Test
Not Excavated
U
V
W
X
Y
Z
AA
AB
7
6
5
4
3
2
1
Unnamed Stream
Spring
Road Trace 3
Feature 1
Feature 2
Feature 3
Feature 4
Feature 5
0 10 20
Meters
Feet
0 25 50
CLIENT Carroll County Bureau of Resource Management
PROJ Piney Run Phase I
SCALE As Shown
SOURCE N/A
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics
N
TITLE
18CR293 Site Plan
AECOM
12420 Milestone Center Dr.
Germantown, MD 20876
PROJ NO 60614688
FIGURE
6-19


Legend
Area of Potential Effects
Site Boundary
Stylized Elevation Contour
Negative Shovel Test
Positive Historic Shovel Test
Not Excavated
Unnamed Stream
Spring
Bank Collapse
Metal Roof Debris
Road Trace 3
Barbed Wire Fence
Feature 1
Feature 2
Feature 3
Feature 4
U-3
U-2
V-4
V-3
V-2
W-4
W-3
W-2
X-4
X-3
X-2
0
5
10
Meters
0
10
20
30
Feet
CLIENT Carroll County Bureau of Resource Management
PROJ Piney Run Phase I
SCALE As Shown
SOURCE N/A
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics
TITLE 18CR293, Locus A Plan
12420 Milestone Center Dr.
Germantown, MD 20876
PROJ NO 60614688
FIGURE 6-20


Legend
Site Boundary
Stylized Elevation Contour
Positive Historic Shovel Test
Not Excavated
AA-6 10S
AA-6 10N
AA-6
AA-6 10S
AA-6 10W
Z-6
Metal Roof Debris
Earthen Mound
Y-6 8E 2S
Y-6 N5 E5
Feature 5
Y-6 10N
Y-6
Y-6 10S
Y-6 10W
0 5 10 Meters
0 10 20 30 Feet
N
CLIENT Carroll County Bureau of Resource Management
PROJ Piney Run Phase I
SCALE As Shown
SOURCE N/A
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics
TITLE 18CR293, Locus B Plan
AECOM
12420 Milestone Center Dr.
Germantown, MD 20876
PROJ NO 60614688
FIGURE 6-21

testing interval was reduced to 10 m (32.8 ft) (as possible) within the vicinity of four features identified in Locus A to define site boundaries and refine artifact distributions. Additional STPs were excavated in judgmental locations to test the interior of particular features and in those locations where landform restrictions precluded excavation at the 10-m (32.8-ft) interval. The topography within Locus B is considerably more restrictive due to excessive slope, allowing only limited 10-m (32.8-ft) interval and judgmental testing within the immediate vicinity of Feature 5.

Site stratigraphy exterior to the features was fairly consistent across both site loci. STPs typically revealed two strata, representing the surface mineral horizon/plowzone (A/Ap horizon) atop the culturally sterile subsoil (B horizon). In several instances, an organic layer (O horizon) overlay the A/Ap horizon. STPs W-3 and Y-6 10S serve as representative examples from Loci A and B, respectively (Figure 6-22). STPs placed within the two continuous foundations, Features 2 and 5, revealed two or more strata of historic fill overlying the B horizon/prepared dirt floors. STPs V-3 5E 2.5S and Y6 8E 2S represent the interiors of Features 2 and 5, respectively (Figure 6-22).

As noted, 18CR293 is visually recognizable as a collection of five structural features organized into geographically and functionally discrete loci. These features are summarized in Table 6-3 and described in greater detail below.

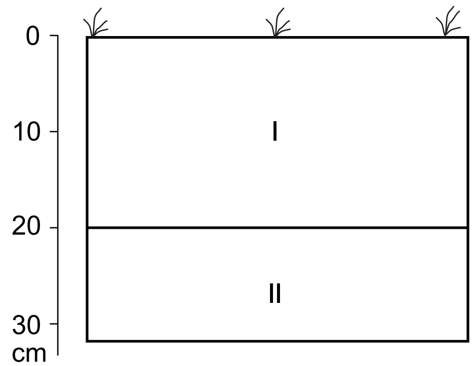
Table 6-3. 18CR293 Feature Summary

Locus	Feature No.	Feature Type	Date
A	1	Possible Capped Well	Unknown
	2	Barn Foundation	19th C.
	3	Spring Box	Likely 19th C.
	4	Outbuilding Foundation	Unknown
B	5	Dwelling Foundation	19th C.

Feature 1 is an intact concrete cylinder built at the edge of the unnamed tributary’s floodplain where it abuts Road Trace 3 (Figures 6-23 and 6-24). The feature is short, rising less than 1 m (3.3 ft) above the floodplain to an elevation nearly level with the grade of Road Trace 3. Measuring approximately 2.5 m (8.2 ft) in diameter, the feature’s upper surface is shallowly dished, forming a broad bowl shape less than 0.15 m (0.5 ft) deep and filled with leaf litter. While the concrete itself is not diagnostic, it features small rounded pebbles in a medium-hard cement matrix which is likely of more recent construction (perhaps early twentieth century) than the stone-built features nearby. The side and upper surfaces are smooth-finished and exhibit no indications that the feature supported a larger structure (e.g., a silo) or mounted machinery. A small concrete-over-stone pad adjoins Feature 1 to the southwest corner of Feature 2, a large barn foundation described below. While Dent and Jirikowic (1994) described this feature as a silo foundation, its uncharacteristically narrow width and the lack of evidence for any kind of superstructure makes this interpretation unlikely. Furthermore, no excessive amounts of brick, tile, concrete, or other materials typically used in silo construction were observed nearby. The 1972 Piney Run Dam and Reservoir site plan (Figure 3-13), the earliest documentation of this feature, identified it as a well, which is more consistent with the feature’s size and form. If this is correct, Feature 1 represents a capped well.

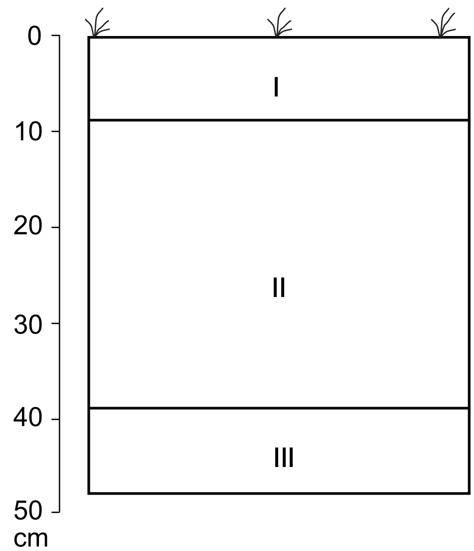
Feature 2 is a large, rectilinear stone foundation representing the predominant building in Locus A (Figures 6-25 and 6-26). Measuring 18.25 m (60 ft) east-west by 9.3 m (30.5 ft) north-south, Feature 2 exhibits mirrored 3-m (10-ft) wide openings on its east and west walls and directly abuts

STP W-3



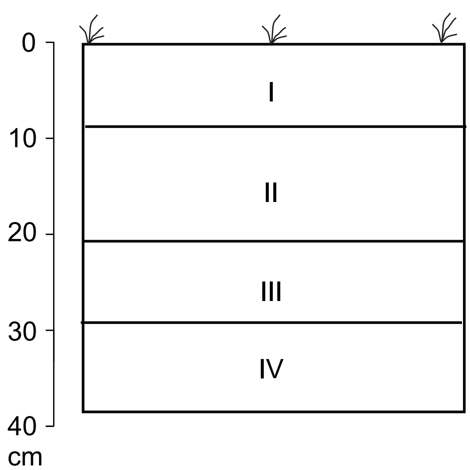
I = Brown (10YR 4/3) silt loam A/Ap horizon
II = Light olive brown (2.5Y 5/6) gravelly silty clay loam B horizon

STP Y-6 10S



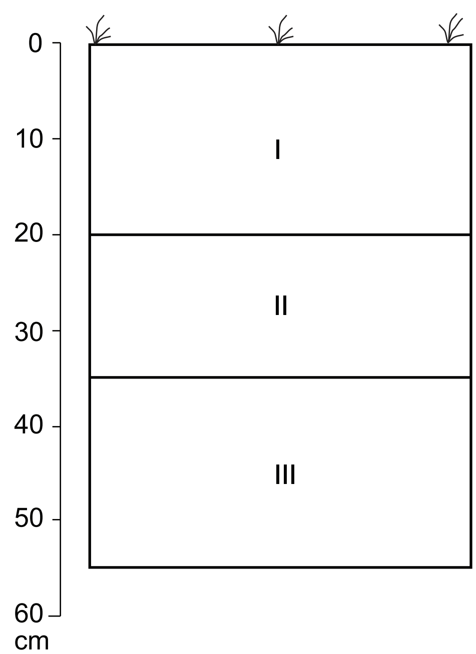
I = Black (10YR 2/1) silt loam O horizon
II = Brown (7.5YR 4/4) silty clay loam A/Ap horizon
III = Yellowish red (5YR 5/6) clay loam B horizon

STP V-3 5E 2.5S



I = Very dark grayish brown (10YR 3/2) loam fill
II = Strong brown (7.5YR 4/6) silty clay loam fill
III = Dark yellowish brown (10YR 4/4) loamy sand fill
IV = Light yellowish brown (2.5Y 6/3) silt loam B horizon or prepared surface

STP Y-6 10S



I = Black (10YR 2/1) silt loam and charcoal fill
II = Light reddish brown (5YR 6-3) silt loam and charcoal fill
III = Light yellowish brown (2.5Y 6/4) silt loam B horizon or prepared surface

CLIENT	Carroll County Bureau of Resource Management	TITLE	18CR293 Representative STP Profiles
PROJ	Piney Run Phase I	PROJ NO	60614688
SCALE	As Shown		
SOURCE	N/A	FIGURE	6-22
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics		AECOM 12420 Milestone Center Dr. Germantown, MD 20876	

Figure 6-23. 18CR293, Feature 1, Facing South

Figure 6-24. 18CR293, Feature 1, Facing North

CLIENT Carroll County Bureau of Resource Management		TITLE Project Photographs	
PROJ Piney Run Phase I			
SCALE N/A		AECOM 12420 Milestone Center Dr. Germantown, MD 20876	PROJ NO 60614688
SOURCE N/A			FIGURES 6-23 and 6-24
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics			

Figure 6-25. 18CR293, Feature 2, Facing West

Figure 6-26. 18CR293, Feature 2, Facing Southeast

CLIENT Carroll County Bureau of Resource Management	TITLE Project Photographs		
PROJ Piney Run Phase I			
SCALE N/A	AECOM	12420 Milestone Center Dr. Germantown, MD 20876	PROJ NO 60614688
SOURCE N/A			FIGURES 6-25 and 6-26
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics			

Road Trace 3 along its south wall. The foundation is composed of randomly coursed phyllite and/or schist rubble with several of the individual stones measuring more than 1 m (3.28 ft) in length. Small pockets of lime/sand mortar are still evident in the stonework, though much of it has disintegrated. While the wall fabric generally exhibits few modified stones, each of the exterior corners exhibit massive cut quoins (Figure 6-27). Large remnants of sawn lumber studded in cut nails (manufactured 1790-1910), representing beams or rafters, are strewn about Feature 2. In some locations, the remains of a timber sill plate survive intact on the uppermost course of stonework, featuring cut nails driven into the exterior surface (Figure 6-28). This detail indicates that the feature's superstructure was of frame construction and possibly sheathed in timber siding (e.g., board and batten, lapboard). A large, nearby pile of standing-seam metal panels represents the building's roofing. The feature's size, dimensions, and wide parallel openings indicate that it almost certainly served as a barn, likely built in the style of a small transverse crib/frame barn (Mroszczyk 2007). Along with its shape and dimensions, Feature 2's interpretation as a barn is supported by the 1953 USGS map, which shows it as a Class 2 building (Figure 3-9).

Three STPs were placed within Feature 2, revealing two to three layers of fill atop a sharply distinguished subsoil and/or possible dirt floor. Twenty-nine artifacts were recovered from the interior of Feature 2 (Table 6-4). Most of the artifacts (n=17) are foodways glass fragments, followed by structural (n=10) and unidentified (n=2) artifacts. Given the context of discovery, and the lack of other domestic artifacts, the dominance of foodways glass is not interpreted as representative of domestic activities within Feature 2. The contents of this container glass may have simply been consumed/utilized onsite in the performance of farming duties. Diagnostic artifacts (n=7) are limited to cut and wire nails, suggesting a nineteenth century structure with twentieth century repairs/modifications. As noted above, uncollected cut nails were seen driven into several of the barn's surviving framing members. A review of historic mapping could not corroborate the feature's construction period, as it was not depicted on any available maps/aerial photographs until the mid-twentieth century despite obviously earlier origins.

Table 6-4. 18CR293, Feature 2 Interior Artifact Summary

Group	Subgroup	Artifact	Date Range	Count
Foodways	General Foodways	Bottle Glass		13
		Indeterminate Hollow Glass		4
Household/Structural	Architectural / Construction	Cut Nail	1790-1910	4
		Indeterminate Nail		2
		Wire Nail	1890+	3
		Window Glass		1
Miscellaneous	Unknown	Indeterminate Flat Glass		1
		Iron Wire		1
Total				**29**

Feature 3 is located approximately 5 m (16.4 ft) northeast of the northeast corner of Feature 2 and represents an ell-shaped rubble stone and concrete spring box (Figures 6-29 and 6-30). The west side of the ell consists of a 1.3-m (4.25-ft) long, 0.4-m (1.3-ft) wide stone retaining wall built to prevent the surrounding floodplain from slumping into the head of the spring channel. The south side of the ell consists of the 1.1-by-0.75-m (3.6-by-2.5-ft) closed-top spring box flanked by small stone retaining walls. The stonework consists of randomly coursed phyllite and/or schist rubble

Figure 6-27. 18CR293, Feature 2 Quoins, Facing Southwest

Figure 6-28. 18CR293, Feature 2 Stonework and Timber Sill Plate Detail, Facing South

CLIENT Carroll County Bureau of Resource Management	TITLE Project Photographs		
PROJ Piney Run Phase I			
SCALE N/A	AECOM	PROJ NO	60614688
SOURCE N/A	12420 Milestone Center Dr. Germantown, MD 20876	FIGURES	6-27 and 6-28
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics			

Figure 6-29. 18CR293, Feature 3, Facing Southwest

Figure 6-30. 18CR293, Feature 3 Detail, Facing South

CLIENT	Carroll County Bureau of Resource Management	TITLE	Project Photographs
PROJ	Piney Run Phase I		
SCALE	N/A	PROJ NO	60614688
SOURCE	N/A	AECOM 12420 Milestone Center Dr. Germantown, MD 20876	FIGURES 6-29 and 6-30

\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics that appears to have been set in highly degraded lime/sand mortar. The stone spring box has been resurfaced with the same kind of concrete used to build Feature 1. No artifacts were found in association with Feature 3, though stone construction similarities shared with Feature 2 suggest a nineteenth century origin. The concrete surfacing presumably indicates twentieth century maintenance. No historic or modern mapping depicts Feature 3.

Feature 4 represents the second building identified in Locus A (Figures 6-31 and 6-32). Built onto a modified terrace above the unnamed tributary's floodplain, Feature 4 is located approximately 10 m (33 ft) southeast of Feature 2 on a slightly different orientation that fronts the southern edge of Road Trace 3. Parallel rows of four stone piers each define the building's footprint. The piers survive in varying states of completeness, with the intact ones each measuring 2.1 m (6.9 ft) north-south by 0.6 m (2 ft) east-west. The pier columns are spaced slightly more than 2 m (6.5 ft) apart and the rows are 4.8 m (15.75 ft) apart, producing a nearly square footprint measuring approximately 9.2 m (30.2 ft) east-west by 9 m (29.5 ft) north-south. Each pier is less than 0.5 m (1.6 ft) tall, built predominantly of phyllite and/or schist fieldstone that was once set in a lime/sand mortar that has heavily decayed.

Two judgmental STPs were placed within Feature 4. One terminated atop a rock impasse, while the other revealed an Ap horizon overlying natural eluvial and subsoil strata (E and B horizons). Four artifacts were recovered from the Ap horizon, including one wire nail (1890+), one window glass fragment, and two thick flat glass fragments that may be associated with an automobile/machinery. These few artifacts alone do not provide much commentary on construction period and function, though the proximity to Feature 2 and the absence of domestic material suggests Feature 4 represents an agricultural outbuilding such as a tobacco drying house or other produce storage area. This is suggested by the building's elevated location on a terrace above the floodplain and the use of stone piers, which may have aided in protection from surface water runoff while promoting air circulation. Feature 4's period of construction is unclear, as the use of stone piers could easily date to the nineteenth or early twentieth century. The only map to depict this feature is the 1972 site plan (Figure 3-13), though it is evident on the earliest available aerial photography from 1943 (Figure 3-7).

Feature 5 is a largely collapsed stone foundation for a dwelling situated in Locus B approximately 70 m (230 ft) northeast of Feature 4 (Figures 6-33 and 6-34). The building was sited on a highly constrained, artificially leveled terrace approximately midway up a moderately inclined hillslope rising north above the unnamed tributary. Remnants of the building's foundation were only visible along its east and west sides, with each wall measuring approximately 7.5 m (24.6 ft) long and consisting of disarticulated phyllite/schist rubble. No evidence of the building's west foundation wall was observed, while the north side of the foundation appears to have partially banked into the hillslope. No clearly defined stone structure was visible on the north side, but a linear earthen berm suggests where the north foundation may have been. Approximately midway along this berm, a small concentration of disarticulated bricks may signify the location of a hearth/chimney. A contorted pile of standing seam metal roofing is located 10 m (33 ft) to the north.

One judgmental STP (Y-6 8E 2S) was excavated within Feature 5, revealing two layers of burned fill atop the culturally sterile B horizon (Figure 6-22). The transition between the burned fill and the B horizon is sharp and distinct, a possible indication that the surface of the B horizon served as the dirt floor of a cellar or crawlspace. The extensive quantities of charcoal in the two fill strata suggest the building was destroyed in a fire. Both fill strata also contained significant quantities of finished plaster, suggesting the structure exhibited interior finishing on its walls. Seventy-four

Figure 6-31. 18CR293, Feature 4, Facing Northwest

Figure 6-32. 18CR293, Feature 4 Stone Pier Detail, Facing Southwest

CLIENT Carroll County Bureau of Resource Management	TITLE Project Photographs		
PROJ Piney Run Phase I			
SCALE N/A	AECOM	12420 Milestone Center Dr. Germantown, MD 20876	PROJ NO 60614688
SOURCE N/A			FIGURES 6-31 and 6-32
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics			

Figure 6-33. 18CR293, Feature 5, Facing North

Figure 6-34. 18CR293, Feature 5 South Wall, Facing East

CLIENT	Carroll County Bureau of Resource Management	TITLE	Project Photographs
PROJ	Piney Run Phase I		
SCALE	N/A	AECOM 12420 Milestone Center Dr. Germantown, MD 20876	PROJ NO 60614688
SOURCE	N/A		FIGURES 6-33 and 6-34
\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics			

artifacts were recovered from the interior of Feature 5 (Table 6-5). The proportion of foodways artifacts suggests the building was residential, corroborating historic USGS maps that depicted it as a dwelling. A domestic use is also suggested by the large quantities of finished plaster identified in STP Y-6 8E 2S, as this kind of wall/ceiling surface treatment most likely would appear in a residential context. Diagnostic artifacts, dominated by cut nails, suggest it was built in the nineteenth century but occupied into the twentieth century. Its twentieth century occupancy was clearly documented on USGS maps beginning in 1906, but it does not appear on any available nineteenth century maps. Its omission is likely a product of map scaling and/or cartographic oversight due to the dwelling's isolation. Aerial photographs presented in section 3.3 suggest mid-twentieth century abandonment.

Table 6-5. 18CR293, Feature 5 Interior Artifact Summary

Group	Subgroup	Artifact	Date Range	Count
Foodways	General Foodways	Bottle Glass		12
		Machined Bottle Glass	1893+	2
	Storage	Canning Jar		2
		Redware		1
		Machined Bottle Glass	1893+	1
		Milkglass Lid Liner	1869+	5
Household/Structural	Architectural/Construction	Window Glass		7
		Cut Nail	1790-1910	20
		Wire Nail	1890+	5
		Mortar		1
		Mortar and Plaster		2
Miscellaneous	Automotive	Spark Plug	1908-1974	1
	Unknown	Glass		13
		Iron		2
Total				**74**

In total, 224 historic artifacts were recovered from 18CR293 (Table 6-6). Just over 54 percent (n=121) were recovered from the A/Ap Horizon, with the remainder recovered from fill deposits interior to Feature 2 (n=29) and Feature 5 (n=74) as described above. Almost 80 percent of the artifacts (n=179) were found in Locus B, while just over 20 percent (n=45) originated in Locus A. This discussion will first present the assemblage as a whole before examining the distributions between Loci A and B.

Table 6-6. 18CR293 Artifact Summary

Group	Count	Percent
Foodways	64	28.57
Household/Structural	69	30.80
Labor	1	0.45
Miscellaneous	89	39.73
Personal	1	0.45
Total	**224**	**100.00**

Miscellaneous artifacts are the most common and represent almost 40 percent (n=89) of the site assemblage. These artifacts lack functionally diagnostic traits and include unidentifiable fragments of glass (n=73), iron (n=13), and leather (n=3).

Household/structural artifacts represent just over 30 percent (n=69) of the assemblage and include cut (n=25), wire (n=11), and indeterminate nails (n=9), window glass (n=20), mortar and plaster (n=2), a piece of mortar, and a nut/bolt.

Foodways artifacts account for 28.5 percent of the assemblage (n=64) and consist of glass (n=45), ceramic (n=17), and metal (n=2) artifacts. Foodways glass includes botte glass (n=34), indeterminate hollow glass (n=6), and milkglass lid liners (n=5). While most of the bottle glass was unidentifiable, individual fragments of a beer/soda bottle, a beer/alcohol/wine bottle, a cosmetic/medicinal bottle, and a possible poison bottle were recovered. Foodways ceramics include creamware (n=6), pearlware (n=4), redware (n=3), and single examples of Astbury, ironstone, North American stoneware, and hard paste porcelain. Nine foodways ceramics exhibited decoration, including overglaze painted creamware in a feather motif (n=4), painted pearlware (n=2), slip decorated pearlware in a checkerboard pattern (n=2), and a piece of molded (paneled) porcelain. Ceramic service wares (n=13) were more common than storage wares (n=4), though specific ceramic objects could only be identified in a few cases (one saucer and four coffee/tea cup fragments). Lastly, the foodways metal artifacts are represented by two aluminum canning jar lids.

The remainder of the 18CR293 assemblage consists of single examples of labor and personal artifacts. The sole labor artifact is a fragment of barbed wire, while the personal artifact is a white ball clay tobacco pipe bowl fragment.

Sixty temporally diagnostic artifacts were recovered from 18CR293, including metal (n=38), ceramic (n=12), and glass (n=10) artifacts (Table 6-7). Diagnostic metal artifacts include cut (n=25) and wire (n=11) nails alongside single examples of barbed wire and an Albert Champion spark plug. Diagnostic ceramics include creamware (n=6), pearlware (n=4), and single examples of ironstone and Astbury. Diagnostic glass artifacts include milkglass (n=5), machine-made glass (n=4), and solarized glass (n=1) and machine-made glass. The single Astbury fragment is the only artifact definitively produced in the early to mid-eighteenth century. As a very early outlier, this artifact is probably indicative of a family heirloom or otherwise curated object, rather than a contemporaneous historic occupation. The prevalence of cut nails indicates that much of the onsite building activities likely occurred during the nineteenth century. The prevalence of late eighteenth to early nineteenth century ceramics indicates that the site's domestic component originated around this time. Later artifacts suggest that the site was occupied into at least the early twentieth century, but it is currently unclear when the site was abandoned. It is clear from the historic record that occupation ceased by at least the early 1970s when Piney Run Dam was constructed, but the lack of diagnostic artifacts definitively produced from the mid-twentieth century onward suggests an earlier period of abandonment.

Table 6-7. 18CR293 Diagnostic Artifacts

Artifact	Date Range	Count
Astbury	1720-1750	1
Creamware	1762-1820	2
Creamware, Overglaze Painted	1765-1815	4
Pearlware, Painted, China Glaze	1775-1810	1

Artifact	Date Range	Count
Pearlware	1775-1840	3
Cut Nail	1790-1910	25
Ironstone	1842-1930	1
Milkglass Lid Liner	1869+	5
Solarized Glass	1880-1920	1
Barbed Wire	1887+	1
Wire Nail	1890+	11
Machine-Made Glass	1893+	4
Albert Champion Spark Plug	1908-1974	1
Total		**60**

The artifacts' horizontal distribution signifies the way in which 18CR293 was utilized as a farmstead, reflecting a clear division of domestic and agricultural/utilitarian spaces. The artifact signature from Locus A is much more consistent with utilitarian spaces which, as Features 2 and 4 suggest, likely embodied an agricultural character. Within Locus B, the artifacts are more clearly associated with sustained residential uses. The greatest quantity and variety of artifacts were recovered from Locus B, with substantially fewer and less diverse artifacts originating in Locus A (Table 6-8; Figures 6-35 and 6-36).

Table 6-8. 18CR293 Artifact Summary by Locus

Locus	Group	Count	Percent
A	Foodways	19	42.22
	Household/Structural	17	37.78
	Labor	1	2.22
	Miscellaneous	8	17.78
A Total		***45***	***100.00***
B	Foodways	45	25.14
	Household/Structural	52	29.05
	Miscellaneous	81	45.25
	Personal	1	0.56
B Total		***179***	***100.00***
Total		**224**	**100.00**

Forty-five artifacts were recovered from eight STPs in Locus A (Table 6-9). Foodways artifacts account for just over 42 percent (n=19) of the Locus A assemblage and include bottle (n=14) and indeterminate hollow (n=5) glass. Household/structural artifacts represent nearly 38 percent of the Locus A assemblage (n=17) and include window glass (n=2) along with cut (n=4), wire (n=6), and indeterminate (n=5) nails. Miscellaneous artifacts account for almost 18 percent (n=8) of the assemblage and consist of indeterminate iron (n=5) and glass (n=3) fragments. A single labor artifact accounts for the remainder of the Locus A assemblage and consists of a barbed wire fragment.

Figure 6-35. 18CR293, Locus A Representative Artifacts
Top Row: Barbed Wire (10.20); Cut Nail (16.01); Wire Nail (8.02)
Bottom Row: Possible Poison Bottle Glass (9.01); Cosmetic/Medicinal Bottle Glass (9.02); Square Bottle Glass (9.08); Possible Automotive Glass (17.01)

Figure 6-36. 18CR293, Locus B Representative Artifacts
Top Row: Cut Nail (11.18); Wire Nail (11.25); Spark Plug (11.28)
Middle Row: Soda Bottle Glass (11.01); Lid Liner (11.03); Solarized Glass (13.03); Olive Green Glass (15.13)
Bottom Row: Creamware (15.02); Astbury (15.08); Pearlware (15.14); Ironstone (15.07); Tobacco Pipe Bowl (15.12)

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SCALE	As Shown
SOURCE	N/A
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FIGURES 6-35 and 6-36

Table 6-9. 18CR293, Locus A Artifact Summary

Group	Subgroup	Artifact	Date Range	Count
Foodways	General Foodways	Bottle Glass		14
		Indeterminate Hollow Glass		5
Household / Structural	Architectural / Construction	Window Glass		2
		Cut Nail	1790-1910	4
		Indeterminate Nail		5
		Wire Nail	1890+	6
Labor	Agricultural	Barbed Wire	1887+	1
Miscellaneous	Unknown	Glass		3
		Iron		5
Total				**45**

The foodways artifacts show very little diversification, with all artifacts representing bottle or unidentified hollow glass fragments. This is not suggestive of a domestic functional component, where ceramic and personal artifacts may be expected, and instead may be a product of casual disposal and/or use/consumption during the performance of nondomestic activities. Furthermore, the very limited quantities and functional diversity of the remainder of the Locus A assemblage are consistent with expectations for a cluster of outbuildings. While the artifacts do not directly suggest an agricultural function (excepting perhaps the barbed wire), Features 2 and 4 were almost certainly built as barns/sheds on the basis of their structural traits and the identification of Feature 2 as a Class 2 building on the 1953 USGS map.

Eleven diagnostic artifacts were recovered from Locus A, including six wire nails (1890+), four cut nails (1790-1910), and one piece of barbed wire (1887+). These are in addition to the numerous, uncollected cut nails identified in the surviving timbers within and adjacent to Feature 2. The diagnostic artifact assemblage within Locus A indicates that it likely originated in the nineteenth century, with repairs/modifications extending into the twentieth century.

One hundred seventy-nine historic artifacts were recovered from six STPs in Locus B (Table 6-10). Miscellaneous artifacts are most common (n=81), followed by household/structural (n=52), foodways (n=45), and personal (n=1) artifacts.

Table 6-10. 18CR293, Locus B Artifact Summary

Group	Subgroup	Artifact	Count
Foodways	General Foodways	Unidentified Bottle Glass	18
		Indeterminate Hollow Glass	1
	Service	Porcelain	1
		Creamware	6
		Astbury	1
		Ironstone	1
		Pearlware	4
	Storage	Canning Jar Lid	2
		Redware	3
		Stoneware	1

Group	Subgroup	Artifact	Count
Foodways	Storage	Bottle Glass	2
		Milkglass Lid Liner	5
Household/Structural	Architectural/Construction	Window Glass	18
		Cut Nail	21
		Wire Nail	5
		Indeterminate Nail	4
		Mortar	1
		Mortar and Plaster	2
	Hardware	Bolt/Nut	1
Miscellaneous	Automotive	Spark Plug	1
	Unknown	Glass	70
		Iron	7
		Leather Strap	3
Personal	Recreational	Ball Clay Tobacco Pipe Bowl	1
Total			**179**

Miscellaneous artifacts account for over 45 percent of the Locus B assemblage (n=81) and include unidentifiable glass (n=70) and iron (n=7) objects, along with three pieces of a leather strap and a single spark plug. Household/structural artifacts represent just over 29 percent (n=52) of the assemblage and include cut (n=21), wire (n=5), and indeterminate (n=4) nails, window glass (n=18), mortar and plaster (n=2), mortar (n=1), and a bolt/nut (n=1).

Foodways artifacts represent just over 25 percent (n=45) of the assemblage and include glass (n=26), ceramic (n=17), and metal (n=2) artifacts. Foodways glass includes bottle (n=20) and indeterminate hollow (n=1) glass alongside milkglass lid liners (n=5). Foodways ceramics include creamware (n=6), pearlware (n=4), redware (n=3), and single examples of Astbury, ironstone, North American stoneware, and hard paste porcelain. Nine foodways ceramics exhibited decoration, including overglaze painted creamware in a feather motif (n=4), painted pearlware (n=2), slip decorated pearlware in a checkerboard pattern (n=2), and a piece of molded (paneled) porcelain. Ceramic service wares (n=13) were more common than storage wares (n=4), though specific ceramic objects could only be identified in a few cases (one saucer and four coffee/tea cup fragments). The foodways metal artifacts are represented by two aluminum canning jar lids.

Lastly, the sole personal artifact is a white ball clay tobacco pipe bowl fragment. This artifact is undecorated and too fragmented to determine pipe bore diameter.

The Locus B assemblage is consistent with expectation for a domestic occupation. The foodways artifacts are relatively robust given the limited amount of excavation and speak to food storage and service activities. The relatively higher amount of window glass is also suggestive of a residence, as is the extensive amount of plaster discarded from judgmental STP Y-6 8E 2S. These plaster fragments exhibited finished surfaces, suggesting wall or ceiling applications far more typical of a dwelling than any other farmstead building. The pipe bowl fragment adds a narrow but important recreational dimension to the assemblage, creating a fuller image of the occupants' cultural behaviors.

Forty-nine diagnostic artifacts were recovered from Locus B, including metal (n=27), ceramic (n=12), and glass (n=10) artifacts (Table 6-11). Diagnostic metal includes cut (n=21) and wire (n=5) nails as well as a single Albert Champion spark plug. Diagnostic ceramics include creamware (n=6), pearlware (n=4), and single examples of ironstone and Astbury. Diagnostic glass includes milkglass (n=5), machine-made (n=4), and solarized (n=1) fragments.

Table 6-11. 18CR293, Locus B Diagnostic Artifacts

Artifact	Date Range	Count
Astbury	1720-1750	1
Creamware	1762-1820	2
Creamware, Overglaze Painted	1765-1815	4
Pearlware, Painted, China Glaze	1775-1810	1
Pearlware	1775-1840	3
Cut Nail	1790-1910	21
Ironstone	1842-1930	1
Milkglass Lid Liner	1869+	5
Solarized Glass	1880-1920	1
Wire Nail	1890+	5
Machine-Made Glass	1893+	4
Albert Champion Spark Plug	1908-1974	1
Total		**49**

The single piece of Astbury is the only object definitively produced during the early to mid-eighteenth century. As a very early outlier, it is unlikely that this artifact represents a contemporaneous historic occupation within Locus B. Rather, it was probably curated by the site's early occupants, perhaps as a family heirloom or otherwise valued keepsake. Cut nails represent the most common diagnostic artifact from Locus B, all of which were presumably used in the construction of the dwelling (Feature 5). The prevalence of these nails, and the absence of earlier wrought nails, suggests a nineteenth century construction period. This period can be further refined using the Locus B ceramics, most of which were produced in the late eighteenth to early nineteenth century. The cut nails and early ceramics, therefore, collectively suggest Locus B was occupied by the early nineteenth century. Later diagnostics suggest the site was occupied throughout the nineteenth century and into the early twentieth. Only one artifact was definitively produced after 1900, though several have manufacturing periods that extend into the twentieth century. Additional research is needed to resolve Locus B's occupational period, but based on the data available, it appears to have spanned at least the early nineteenth to the early twentieth century.

Site 18CR293 represents an early nineteenth to early twentieth century farmstead with well-defined domestic and agricultural/utilitarian use areas. Locus A represents the focal point of agricultural actives, centered on a large barn (Feature 2) and smaller outbuilding (Feature 4), while Locus B exhibits remnants of the farmstead's dwelling (Feature 5) and its domestic epicenter. The site was omitted from nineteenth century maps, possibly due to issues of map scale and/or the farmstead's isolation, but the diagnostic artifacts strongly suggest it originated in the early nineteenth century. While only one artifact definitively produced during the twentieth century was recovered, numerous others have manufacturing endpoints extending well into the twentieth century. The lack of definitively mid-twentieth century artifacts may be an indication that 18CR293 was no longer occupied by this time, as 1958 and later aerial photography suggests (Figures 3-10 through 12). While it is unclear when the farmstead was abandoned, it may have occurred as the result of a fire, as significant amounts of charcoal were identified in an STP interior to Feature 5.

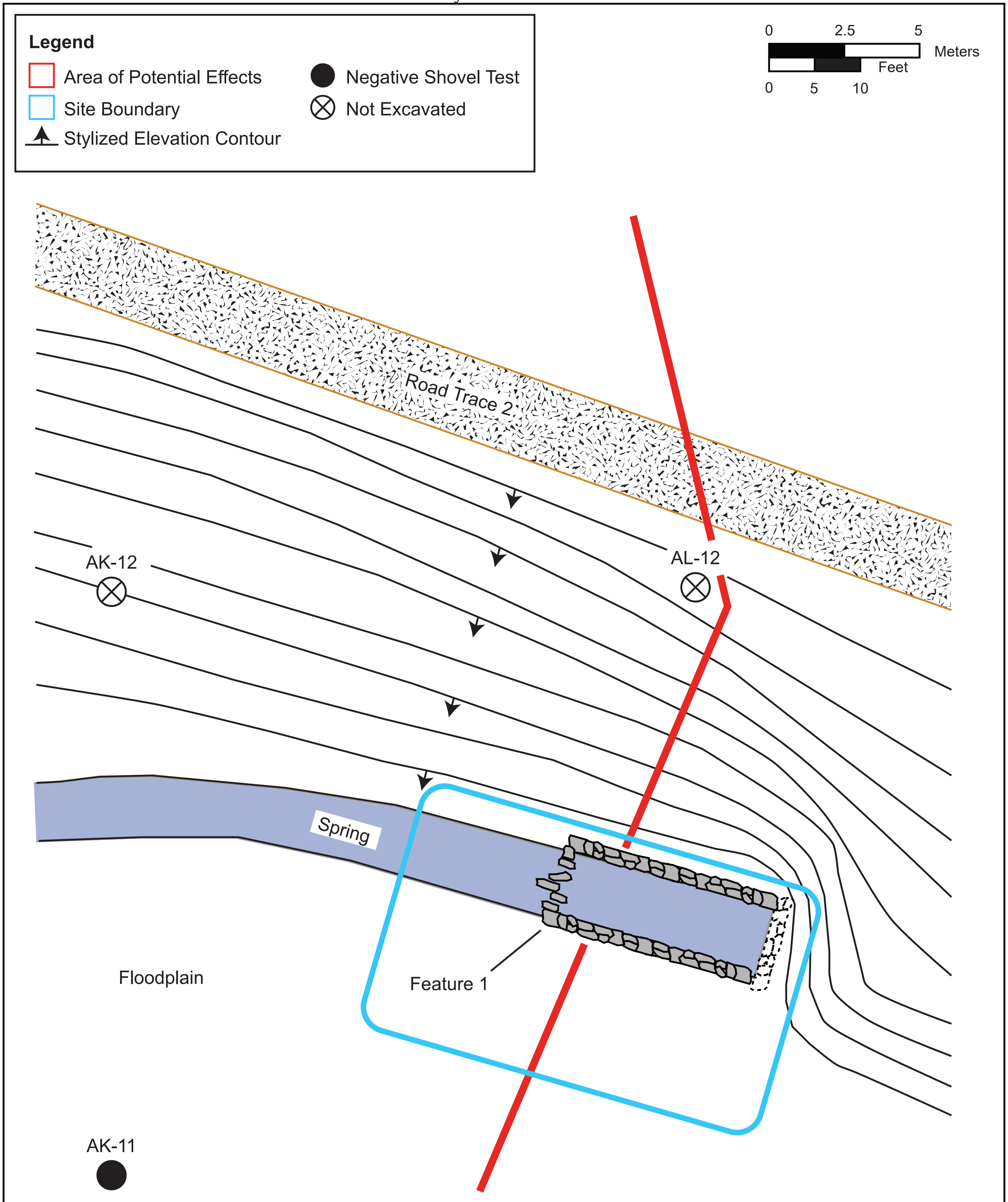
The site exhibits discrete horizontal artifact patterning reflective of the distribution of its agricultural and domestic features. It likewise possesses good archaeological integrity in terms of both its intact features and artifact deposits. These considerations contribute to the site's research value, as does its broader historical/archaeological context. While nineteenth century farmsteads are a very common site type in Carroll County, relatively few have been documented within the immediate vicinity. A review of the MHT's site files and MEDUSA GIS database revealed that no historic farmsteads have been formally excavated within the Piney Run valley, though several are known to have existed. This suggests that 18CR293 may be able to contribute significant information to local history, not only in terms of rural settlement generally but settlement within the Piney Run valley specifically. Throughout the nineteenth century, historic mapping suggests 18CR293 was isolated from the principal thoroughfares and the larger clusters of farmsteads to the northwest and industries/institutions to the southeast. The aspect of its setting may have driven the site's occupants to adopt particular adaptations to life in a relatively remote location, which could be evident in farming practices, consumer choice, recreational activities, and other behaviors that can leave archaeological traces.

Given the site's integrity, diverse features, meaningful artifact patterning, and research value, AECOM recommends 18CR293 potentially eligible for listing in the NRHP under Criterion D. It is recommended that potential ground disturbances associated with this undertaking avoid the site. If avoidance is not possible, a Phase II evaluation is recommended to formally determine its NRHP eligibility in advance of potential impacts arising from the undertaking.

6.4.3 18CR294

Site 18CR294 is located at the far eastern edge of the APE, immediately southwest of STP AL-12 and partially extending east of the APE (Figures 6-1 and 6-37). The site is centered atop a springhead on the Piney Run floodplain, abutting the steep toeslope of the forested ridges rising to the northeast. Road Trace 2 passes above 18CR294 along an alignment cut into the slopes; there is no trace of any passage leading from the road down to the floodplain to have provided access to the site. The site encompasses 0.01 ha (0.03 ac)

The site is defined by Feature 1, a large, open-top stone spring box constructed around a springhead that emerges on the floodplain at the base of the slopes (Figures 6-38 and 6-39). Measuring 7.5 m (24.6 ft) long and 3.3 m (10.8 ft) wide, the north and east walls of Feature 1 rise up to 1 m (3.3 ft) to meet the grade of the slopes while the south wall rises up to 0.5 m (1.6 ft) to meet the grade of the surrounding floodplain. While these three walls remain intact, the west wall has partially collapsed, allowing the spring to flow through its rubble. The entirety of Feature 1 is constructed of randomly coursed phyllite rubble with some large cut blocks. The stonework appears to have been dry set, though it is possible that it could have been bonded in a lime/sand mortar that has since deteriorated. Feature 1 may have possessed a roof at one time to protect the spring head from leaf litter accumulation, but no evidence for such was observed. The feature's construction materials tentatively suggest a nineteenth century or earlier construction date.



CLIENT	Carroll County Bureau of Resource Management
PROJ	Piney Run Phase I
SCALE	As Shown
SOURCE	N/A

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FIGURE 6-37

Figure 6-38. 18CR294, Feature 1, Facing East

Figure 6-39. 18CR294, Feature 1, Facing Southeast

CLIENT	Carroll County Bureau of Resource Management	TITLE	Project Photographs
PROJ	Piney Run Phase I		
SCALE	N/A	PROJ NO	60614688
SOURCE	N/A	FIGURES	6-38 and 6-39

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No artifacts were found at 18CR294, though ground conditions precluded excavation within the vicinity. STPs could not be placed south or west of Feature 1 due to surface water on the floodplain, nor could they be placed north due to excessive slope or east due to the APE boundary. The ground surface was closely inspected for artifacts and cultural features, but no additional resources were identified. This may be expected, as spring boxes were not always sited in the immediate proximity of historic occupations. Rather, these ancillary features had to be constructed wherever clean groundwater emerged, often in sloped or flooded areas unsuitable for sustained habitation.

Historic maps/aerial photography revealed no evidence for any buildings within the vicinity of the site, though this does not necessarily mean it was unoccupied. This portion of the Piney Run valley appears to have been relatively isolated during the nineteenth and early twentieth centuries, so it is possible that contemporaneous map makers simply chose not to travel into the area to survey it. Historically documented occupations in the broader area include farmsteads, mines, and mills, and this site could have served as a water supply to such occupations. The spring box's relatively large size could be an indication that it provided drinking water to more than one occupation.

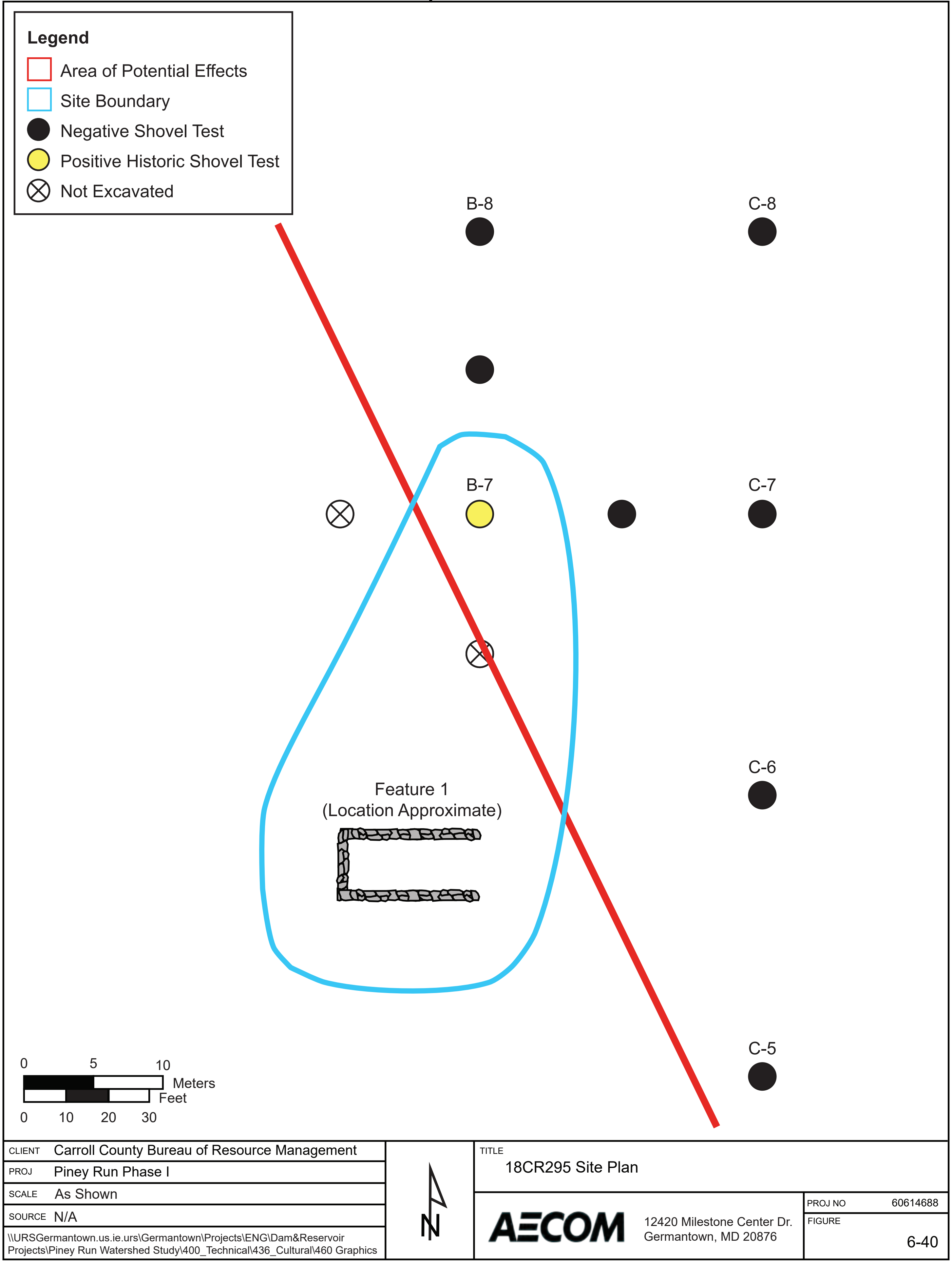
Site 18CR294 represents a stone spring box constructed along the east edge of the APE, on the Piney Run floodplain at the base of a hillslope and below Road Trace 2. No artifacts were found in association with this site, which may be isolated from any nearby historic occupations. It was not possible to search the area east of the site, so it is possible that associated archaeological deposits are present outside of the APE.

While the site includes a relatively intact structural feature indicative of a discrete activity area dedicated to water extraction, it possesses no artifacts or clear associations with any observed or historically documented occupations. Lacking a more fully defined context, the site possesses limited interpretational value beyond what has already been discerned. Given these considerations, AECOM recommends 18CR294 not eligible for listing in the NRHP as it lacks the informational potential required to satisfy Criterion D and lacks the associative values necessary to satisfy Criteria A, B, and/or C. No additional work is recommended.

6.4.4 18CR295

Site 18CR295 is located on the western edge of the APE and is inclusive of STP B-7 as well as a nearby stone foundation located south and west of the APE (Figures 6-1 and 6-40). The site is located on a forested hill summit that gently slopes down to the northwest to the Piney Run Reservoir. Historic mapping/aerial photography presented in section 3.3 show a farmstead once existed in this area, centered just beyond the western boundary of the APE, from at least 1943 to the 1970s. The site encompasses 0.06 ha (0.16 ac).

The site is defined by positive STP B-7 as well as Feature 1, a nearby and heavily overgrown stone foundation located beyond the APE boundaries (Figure 6-41). Feature 1 was photographed, but was not measured, drawn, or subjected to any pedestrian/subsurface investigation since it was not located within the APE. The rectilinear foundation is oriented roughly east-west along its long axis and appears to measure approximately 5 by 10 m (16.4 by 33 ft). Its west, north, and south walls were clearly visible, extending up to approximately 1 m (3.3 ft) above the forest floor. The west wall appears to include a doorway, but this could not be confirmed. No evidence for an east wall was observed, though it could be obscured by vegetation. The walls appear to be constructed of randomly coursed phyllite rubble with one entry piercing the west wall. Disarticulated sheet and piped metal objects could be seen within the foundation, but they could not be identified without closer inspection. The historically rural character of the local area suggests this may be



CLIENT	Carroll County Bureau of Resource Management
PROJ	Piney Run Phase I
SCALE	As Shown
SOURCE	N/A

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18CR295 Site Plan

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PROJ NO 60614688
FIGURE 6-40

CLIENT	Carroll County Bureau of Resource Management	TITLE	18CR295, Feature 1, Facing West
PROJ	Piney Run Phase I		
SCALE	N/A		PROJ NO 60614688
SOURCE	N/A	AECOM 12420 Milestone Center Dr. Germantown, MD 20876	FIGURE 6-41
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the foundation of a dwelling, barn, or other agricultural outbuilding. If the opening in the west wall represents a cellar access door, Feature 1 may represent a dwelling foundation

The only positive STP within 18CR295, B-7, was located approximately 25 m (82 ft) north of Feature 1 and revealed two strata. Stratum I was a 26-cm (0.85-ft) thick brown (7.5YR 4/3) silt loam Ap horizon overlying a strong brown (7.5YR 5/6) silty clay loam B horizon extending to the base of excavation. Four historic artifacts were collected from the A/Ap horizon, including one piece of machine-made bottle glass (1893+) and three wire nails (1890+). The artifacts' limited quantity and variety does not provide significant information into the use and occupation of 18CR295, though they do indicate that the site was occupied around the turn of the twentieth century or later.

According to the historic aerial photography presented in Section 3.3, a building was present within the vicinity of 18CR295 by at least 1943 (Figure 3-7). The 1953 USGS map showed the 1943 structure as a Class 1 building which, given the local context of rural settlement, almost certainly indicates a farmstead dwelling (Figure 3-9). It is not known if this historically mapped dwelling corresponds to Feature 1, or if Feature 1 served as the foundation for an associated outbuilding. Regardless, the use of a stone foundation strongly suggests the occupation predates 1943 by a considerable margin. The reason for the site's omission from earlier historic maps is unclear, but as noted elsewhere in this report, the general area's isolation and accessibility via unimproved tertiary roads may have discouraged cartographic survey.

Only the periphery of 18CR295 is located within the APE. The site core, which presumably lies in the direction of Feature 1, could not be investigated during the current study. The site's nature, age, and overall integrity therefore remain unknown at this time. Given that the site could not be more thoroughly investigated, AECOM cannot make a recommendation of potential NRHP eligibility. It is recommended that potential future ground disturbances avoid the site. Additional work is recommended to determine potential eligibility in the event ground disturbance is anticipated.

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7.0 SUMMARY AND RECOMMENDATIONS

AECOM conducted a Phase I archaeological survey as part of the Piney Run Watershed Study at the Piney Run Dam in Carroll County, Maryland. This study was undertaken in support of a concurrent Environmental Assessment and in advance of potential ground disturbing activities associated with the mitigation of design deficiencies identified at the dam. The APE for the archaeological survey is coterminous with the project area and encompasses approximately 20.47 ha (50.58 ac).

The archaeological survey consisted of visual surface inspection for above-ground evidence of archaeological sites and the excavation of 217 shovel test pits (STPs). Primary STPs were excavated on a 20-m (65.6-ft) interval grid oriented to true north, radial STPs were excavated around positive primary STPs at 10-m (32.8-ft) intervals, and judgmental STPs were placed in opportunistic locations to test specific landforms and/or archaeological deposits as needed.

This survey resulted in the recovery of one prehistoric artifact and 242 historic artifacts and the identification of four historic archaeological sites (18CR292 through 18CR295). The prehistoric artifact and one of the historic artifacts occurred as isolated finds, while the remaining 241 historic artifacts are attributed to three of the four newly recorded sites.

Site 18CR292 represents an isolated refuse pit dating to the early twentieth century but lacks any clear affiliation with a particular historic occupation. Though several early twentieth century dwellings were once located in the vicinity, it is unclear which, if any, are associated with 18CR292. Furthermore, the terrain surrounding this site has been used as a casual refuse disposal area in late historic and modern times, with tires, plastic, alcohol bottles, and metal scattered throughout the area. Site 18CR292 could therefore represent the refuse of a single household, or several. While the site may contribute generic insights into basic consumer preferences from the first half of the twentieth century, it cannot be definitively tied to a particular occupation and thus lacks the context necessary for a more meaningful interpretation. Given these considerations, AECOM recommends 18CR292 not eligible for listing in the NRHP as it lacks the informational potential required to satisfy Criterion D and lacks the associative values necessary to satisfy Criteria A, B, and/or C. No additional work is recommended.

Site 18CR293 represents an early nineteenth to at least early twentieth century farmstead located in a small, unnamed stream valley near the southern edge of the APE. The site includes five features and 224 historic artifacts representing two functionally discrete site loci. Locus A served as the farmstead’s agricultural core as indicated by the foundations of a large barn and secondary outbuilding, along with a low-density scatter of artifacts with very limited functional diversity. Locus B served as the farmstead’s domestic epicenter, as indicated by a dwelling foundation and higher quantities of more functionally diverse artifacts, including service and storage wares. The distribution of artifacts and features reflects the division of space the site occupants imposed on the landscape.

While farmsteads have been a mainstay of Carroll County’s cultural landscape for centuries, no farmstead within the Piney Run valley appears to have been archaeologically investigated. In particular, 18CR293 is located in what was likely a very isolated part of the valley throughout the nineteenth century, a setting which might have forced site occupants to adapt to life in a more remote location. Some adaptations could have left evidence in the form of general site use, consumer preferences and choice, recreational activities, farming and resource procurement practices, and other archaeologically visible aspects of the occupants' behavior, strategies, and agency.

Given the presence of numerous features, discrete activity areas, and intact archaeological deposits, together with the paucity of comparable site types in the Piney Run valley and the unique qualities of the site's historically remote setting, 18CR293 has the potential to yield important information to local historical knowledge of farmstead use, design, and occupation within the valley during the nineteenth and early twentieth centuries. For these reasons, AECOM recommends 18CR293 potentially eligible for listing in the NRHP under Criterion D. It is recommended that potential future ground disturbances avoid the site. If the site cannot be avoided, a Phase II evaluation is recommended to formally determine its NRHP eligibility.

Site 18CR294 represents an isolated stone spring box located on the eastern edge of the Piney Run floodplain. While the feature survives mostly intact and serves as a good example of a large-scale masonry spring box, it is not clearly affiliated with any historic occupation identified in the documentary record or in the field. Its location at the edge of the APE, surrounded by steep slopes and saturated soil, prevented STP excavation in the immediate vicinity. However, given the local soil and topographic conditions, together with the feature's apparent isolation, it is unlikely that significant archaeological deposits are present. While 18CR294 is indicative of an ancillary activity area used for historic resource procurement, its lack of a more robust historic association limits its research potential. Given these considerations, AECOM recommends 18CR294 not eligible for listing in the NRHP as it lacks the informational potential required to satisfy Criterion D and lacks the associative values necessary to satisfy Criteria A, B, and/or C. No additional work is recommended.

Site 18CR295 is an unidentified historic occupation represented by a positive STP within the APE and a nearby stone foundation west of the APE. The STP contained four diagnostic artifacts manufactured sometime since the 1890s, while the foundation's rubble stone construction fabric suggests a possible nineteenth century construction date. Since the foundation could not be archaeologically investigated, its function remains unclear; however, the historically agricultural nature of the local area suggests the foundation likely supported a dwelling, barn, or other farmstead outbuilding. The site core presumably is located within the vicinity of the foundation, while artifacts within the APE represent peripheral deposits. The site's nature, age, and overall integrity therefore remain unknown at this time. Given that the site could not be more thoroughly investigated, AECOM cannot make a recommendation of potential NRHP eligibility. It is recommended that potential future ground disturbances avoid the site. Additional work is recommended to determine potential eligibility in the event ground disturbance is anticipated.

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Appendix A:
Qualifications of Investigators

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Scott Seibel, MSc, has over 21 years of professional experience in archeological excavations, research and compliance studies and exceeds the *Secretary of the Interior's Professional Qualification Standards* (36CFR Part 61) for archeology and history. A Registered Professional Archeologist, Mr. Seibel has extensive cultural resource management experience for a wide range of private and governmental clients, having served as Principal Investigator or Field Director for tens of thousands of acres of Phase I archeological survey, dozens of Phase II evaluations and a dozen Phase III data recovery excavations across the United States. He received his Bachelor's Degree in Archeological Studies at the University of Texas at Austin in 1996 and his Master's Degree in Archeomaterials at the University of Sheffield in England in 1997.

Peter Regan, MA, is a Registered Professional Archaeologist (RPA) with over 12 years of experience in cultural resources management and exceeds the Secretary of the Interior's professional qualifications for archaeology and history. He specializes in historic site analyses, biological archaeology, historic research, and developing public outreach platforms for archaeological sites and other places of cultural interest. Mr. Regan has worked throughout the United States for numerous federal, state, municipal, and private clients on a wide variety of sites under all phases of excavation. In addition to extensive compliance-driven experience, Mr. Regan has served as a research consultant for archaeology and cultural outreach projects and is Vice Chairman of Frederick, Maryland's Historic Preservation Commission. As a Senior Archaeologist and Senior Historian with AECOM, he directs field projects, generates high quality technical documents, and contributes to numerous aspects of project execution, data analysis, and interagency coordination.

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Appendix B:
Artifact Catalog

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Piney Run Ph I

Site Number **Locus:** **STP:** H-9 **Feature** **Strat:** II **Depth:** 9 to 22 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0002.000	1	Prehistoric, Prehistoric	Lithic, Quartz	Flake, Tertiary, Complete			---	Size G-4

Site Number **Locus:** **STP:** D-5 **Feature** **Strat:** I **Depth:** 0 to 25 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0004.000	1	Historic, Foodways	Ceramic, Refined Earthenware	Plate, Base Sherd		Ironstone/Stone China/White Granite	---	

Site Number 18CR292 **Locus:** **STP:** - **Feature** 1 **Strat:** Surface **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.000	1	Historic, Foodways	Ceramic, Porcelain	Plate, Base/Body/Rim Sherd		Hotel Ware/Industrial Ware	Decal Overglaze--Brown-Classical	Decoration = Main decoration is acanthus leaf with a floral band behind it and a geometric band just below the rim

Site Number 18CR292 **Locus:** **STP:** - **Feature** 1 **Strat:** Surface **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.000	1	Historic, Foodways	Ceramic, Refined Earthenware	Cup, Coffee/Tea, Body/Rim Sherd		Ironstone/Stone China/White Granite	---	

Site Number 18CR292 **Locus:** **STP:** - **Feature** 1 **Strat:** Surface **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments

0001.000	1	Historic, Foodways	Ceramic, Stoneware	Vessel, Hollowware, Body/Rim Sherd		North American, Slip Glazed	Albany-Type Slip---	Albany slip on interior and exterior; Either a large bowl or wide-mouthed jar

Site Number 18CR292 **Locus:** **STP:** - **Feature** 1 **Strat:** Surface **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.000	1	Historic, Foodways	Ceramic, Stoneware	Vessel, Hollowware, Body Sherd		North American, Slip Glazed	Albany & Bristol Slips---	Albany slip on interior, bristol slip on exterior

Site Number 18CR292 **Locus:** **STP:** - **Feature** 1 **Strat:** Surface **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.000	1	Historic, Labor	Glass, Common Glass	Bottle, Cleaning Product, Complete	Amber	Machined	Embossed--- Lettering	Lettering = "CLOROX" embossed on neck and shoulder and around the base, "16 oz" fill line around the shoulder, "REG. U.S./PAT OFF." and "CLOROX" in a diamond on the base of the bottle

Site Number 18CR292 **Locus:** **STP:** - **Feature** 1 **Strat:** Surface **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Soda, Complete	Aqua Green	Machined	Embossed-Ribbed-- Lettering	Lettering = "COCA-COLA/TRADE MARK REGISTERED/BOTTLE PAT'D DEC 25, 1923/ MIN CONTENTS 6-FL 0ZS." on body, "WESTMINSTER/MD" on base; Bottling at Westminster likely began in 1920 (Baltimore Sun)

Site Number 18CR292 **Locus:** **STP:** - **Feature** 1 **Strat:** Surface **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.000	1	Historic, Personal	Glass, Common Glass	Bottle, Cosmetic, Complete	Colorless	Machined	Embossed---Lettering	Raised wavy pattern on surface of bottle; Lettering = "DR. ELLIS/SPECIAL QUICK DRY WAVING FLUID/WAVE SET" on one face, "DIP THE/COMB IN/THE BOTTLE" on opposing face, "MADE IN USA" on base

Site Number 18CR292 **Locus:** **STP:** - **Feature** 1 **Strat:** Surface **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Condiment, Complete		Machined	Ribbing-Embossed--Lettering	Lettering = "HA" on base - Hazel Atlas bottling company; Mustard jar with standard barrel shape; Fragments of metal screw cap remain

Site Number 18CR292 **Locus:** **STP:** - **Feature** 1 **Strat:** Surface **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Complete	Colorless	Machined	Embossed---Lettering	Lettering = "2 1/2 OZ" on neck "HA" on base - Hazel Atlas bottling company; likely a shoe polish bottle

Site Number 18CR292 **Locus:** **STP:** - **Feature** 1 **Strat:** Surface **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.001	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Complete	Colorless	Machined	Embossed---Lettering	Lettering = "HA" on base - Hazel Atlas bottling company; likely a medicine or cosmetic bottle

Site Number 18CR292 **Locus:** **STP:** - **Feature** 1 **Strat:** Surface **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.001	1	Historic, Foodways	Glass, Common Glass	Bottle, Milk, Shoulder/Neck	Colorless	Machined, Press and Blow	Embossed---Lettering	Lettering = "(HEA?)LTH DEPT/(1?)924

Site Number 18CR292 **Locus:** **STP:** - **Feature** 1 **Strat:** Surface **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.001	1	Historic, Foodways	Glass, Milk Glass	Cup, Coffee/Tea, Almost Complete	White	Machined	---	

Site Number 18CR292 **Locus:** **STP:** - **Feature** 1 **Strat:** Surface **Depth:** to

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0001.001	1	Historic, Foodways	Metal, Iron	Cup, Coffee, Complete		Indeterminate	Enamel--White-	Likely cast

Site Number 18CR293 **Locus:** A **STP:** W-3 E10 **Feature** **Strat:** II **Depth:** 5 to 27 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0005.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Body Sherd	Aqua	Indeterminate	---	

Site Number 18CR293 **Locus:** A **STP:** W-3 E10 **Feature** **Strat:** II **Depth:** 5 to 27 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0005.000	1	Historic, Foodways	Glass, Common Glass	Indeterminate Hollow, Fragment	Colorless	Indeterminate	---	

Site Number 18CR293 **Locus:** A **STP:** X-4 **Feature** **Strat:** I **Depth:** 0 to 27 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0006.000	1	Historic, Household/Structural	Metal, Iron	Nail, Complete		Wire Wound	---	

Site Number 18CR293 **Locus:** A **STP:** X-4 **Feature** **Strat:** I **Depth:** 0 to 27 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0006.000	1	Historic, Household/Structural	Metal, Iron	Nail, Head, Shaft		Wire Wound	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 **Feature** **Strat:** I **Depth:** 0 to 15 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0007.000	1	Historic, Foodways	Glass, Common Glass	Indeterminate Hollow, Fragment	Colorless	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 **Feature** **Strat:** I **Depth:** 0 to 15 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0007.000	1	Historic, Household/Structural	Metal, Iron	Nail, Head, Shaft		Indeterminate	---	

Site Number 18CR293 **Locus:** A **STP:** V-3 E10 **Feature** **Strat:** II **Depth:** 12 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0008.000	1	Historic, Household/Structural	Glass, Common Glass	Window Glass, Fragment	Colorless		---	

Site Number 18CR293 **Locus:** A **STP:** V-3 E10 **Feature** **Strat:** II **Depth:** 12 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0008.000	1	Historic, Household/Structural	Metal, Iron	Nail, Complete		Wire Wound	---	Clinched; very little oxidation

Site Number 18CR293 **Locus:** A **STP:** V-3 E10 **Feature** **Strat:** II **Depth:** 12 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0008.000	1	Historic, Miscellaneous	Metal, Iron	Wire, Fragment		Indeterminate	---	

Site Number 18CR293 **Locus:** A **STP:** V-3 **Feature** **Strat:** II **Depth:** 10 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Other, Body Sherd	Cobalt	Mold Blown, Indeterminate	Ridged---	Ridging on exterior surface, possible poison bottle

Site Number 18CR293 **Locus:** A **STP:** V-3 **Feature** **Strat:** II **Depth:** 10 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Other, Body Sherd	Aqua	Mold Blown, Indeterminate	Embossed---Lettering	Lettering = "DR (?)" - either a cosmetic or medicinal bottle

Site Number 18CR293 **Locus:** A **STP:** V-3 **Feature** **Strat:** II **Depth:** 10 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Shoulder	Aqua	Mold Blown, Indeterminate	---	Seam present

Site Number 18CR293 **Locus:** A **STP:** V-3 **Feature** **Strat:** II **Depth:** 10 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.000	4	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Body Sherd	Aqua	Indeterminate	---	

Site Number 18CR293 **Locus:** A **STP:** V-3 **Feature** **Strat:** II **Depth:** 10 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.000	2	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Body Sherd	Aqua/Colorless	Mold Blown, Indeterminate	---	Seam present

Site Number 18CR293 **Locus:** A **STP:** V-3 **Feature** **Strat:** II **Depth:** 10 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.000	2	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Body Sherd	Colorless	Mold Blown, Indeterminate	---	Seam present

Site Number 18CR293 **Locus:** A **STP:** V-3 **Feature** **Strat:** II **Depth:** 10 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.000	4	Historic, Foodways	Glass, Common Glass	Indeterminate Hollow, Fragment	Colorless	Indeterminate	---	

Site Number 18CR293 **Locus:** A **STP:** V-3 **Feature** **Strat:** II **Depth:** 10 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.000	2	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Fragment	Colorless	Mold Blown, Indeterminate	---	Possible square/rectangular bottle; Angled shoulders; Seam present

Site Number 18CR293 **Locus:** A **STP:** V-3 **Feature** **Strat:** II **Depth:** 10 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.000	1	Historic, Miscellaneous	Glass, Common Glass	Indeterminate Flat, Fragment	Colorless	Indeterminate	---	

Site Number 18CR293 **Locus:** A **STP:** V-3 **Feature** **Strat:** II **Depth:** 10 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.001	2	Historic, Household/Structural	Metal, Iron	Nail, Head, Shaft		Cut	---	

Site Number 18CR293 **Locus:** A **STP:** V-3 **Feature** **Strat:** II **Depth:** 10 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments

0009.001	1	Historic, Household/Structural	Metal, Iron	Nail, Tip, Shaft		Cut	---	

Site Number 18CR293 **Locus:** A **STP:** V-3 **Feature** **Strat:** II **Depth:** 10 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.001	2	Historic, Household/Structural	Metal, Iron	Nail, Complete		Wire Wound	---	

Site Number 18CR293 **Locus:** A **STP:** V-3 **Feature** **Strat:** II **Depth:** 10 to 24 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0009.001	1	Historic, Household/Structural	Metal, Iron	Nail, Head, Shaft		Indeterminate	---	

Site Number 18CR293 **Locus:** A **STP:** W-3 E10 N1 **Feature** **Strat:** II **Depth:** 5 to 29 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0010.000	3	Historic, Household/Structural	Metal, Iron	Nail, Head, Shaft		Indeterminate	---	

Site Number 18CR293 **Locus:** A **STP:** W-3 E10 N1 **Feature** **Strat:** II **Depth:** 5 to 29 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0010.000	1	Historic, Labor	Metal, Iron	Barbed Wire, Fragment		Indeterminate	---	

Site Number 18CR293 **Locus:** A **STP:** W-3 E10 N1 **Feature** **Strat:** II **Depth:** 5 to 29 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0010.000	4	Historic, Miscellaneous	Metal, Iron	Indeterminate, Fragment		Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments

0011.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Beer/Soda, Finish	Green	Machined	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.000	6	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Body Sherd	Amber	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.000	3	Historic, Foodways	Glass, Milk Glass	Lid Liner, Fragment	White	Machined	Embossed---Lettering	Lettering = "BOYD'S GENUINE PORCE(LAIN CAP)"; Fragments mend

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.000	1	Historic, Foodways	Glass, Milk Glass	Lid Liner, Fragment	White	Machined	Embossed---Lettering	Lettering = "7"

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.000	1	Historic, Foodways	Glass, Common Glass	Lid Liner, Fragment	White	Machined	Embossed---Lettering	Lettering = "(?)RS *diamond*"

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Fragment	Aqua	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Finish	Colorless	Machined	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Base Sherd	Colorless	Machined	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Body Sherd	Colorless	Mold Blown, Indeterminate	Embossed---Lettering	Lettering = "OR RE(SALE?)/THIS" - Likely "this bottle not for reuse or resale"

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.001	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Body Sherd	Colorless	Mold Blown, Indeterminate	Embossed---Lettering	Lettering = "(?)CO(?)"

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.001	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Body Sherd	Colorless	Mold Blown, Indeterminate	Embossed---Other	Other = possible depiction of an arrow

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments

0011.001	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Shoulder	Colorless	Mold Blown, Indeterminate	---	Possible flask

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.001	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Body Sherd	Colorless	Mold Blown, Indeterminate	---	Seam present

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.001	12	Historic, Miscellaneous	Glass, Common Glass	Indeterminate Hollow, Fragment	Colorless	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.001	1	Historic, Miscellaneous	Glass, Common Glass	Indeterminate Hollow, Fragment	Colorless	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.001	2	Historic, Household/Structural	Glass, Common Glass	Window Glass, Fragment	Aqua	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.001	5	Historic, Household/Structural	Glass, Common Glass	Window Glass, Fragment	Aqua	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.001	2	Historic, Household/Structural	Metal, Iron	Nail, Complete		Cut	---	Possibly burned

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.001	3	Historic, Household/Structural	Metal, Iron	Nail, Complete		Cut	---	Possibly burned

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.002	1	Historic, Household/Structural	Metal, Iron	Nail, Complete		Cut	---	Possibly burned

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.002	3	Historic, Household/Structural	Metal, Iron	Nail, Complete		Cut	---	Possibly burned

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.002	7	Historic, Household/Structural	Metal, Iron	Nail, Complete		Cut	---	Possibly burned

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.002	3	Historic, Household/Structural	Metal, Iron	Nail, Head, Shaft		Cut	---	Possibly burned

AECOM

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.002	1	Historic, Household/Structural	Metal, Iron	Nail, Shaft		Cut	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.002	1	Historic, Household/Structural	Metal, Iron	Nail, Complete		Wire Wound	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.002	3	Historic, Household/Structural	Metal, Iron	Nail, Head, Shaft		Wire Wound	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.002	1	Historic, Household/Structural	Metal, Iron	Nail, Tip, Shaft		Wire Wound	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.002	1	Historic, Miscellaneous	Metal, Iron	Spark Plug, Complete		Machined	Stamped--Green-Lettering	Lettering = "AC/G12" on the porcelain portion of the spark plug. AC = Albert Champion (AC Delco today)

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments

0011.002	1	Historic, Foodways	Ceramic, Coarse Earthenware	Vessel, Hollowware, Base Sherd		Redware, Black Glazed	Unglazed-Wash-Orange-	Orange wash on exterior, black glaze interior; Small portion of base likely overfired

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.003	1	Historic, Household/Structural	Other, Mortar	Mortar, Fragment			---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.003	2	Historic, Household/Structural	Other, Mortar	Mortar and Plaster, Fragment			---	Small mortar fragments with plaster on one surface

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.003	2	Historic, Miscellaneous	Metal, Iron	Other, Fragment		Indeterminate	---	Possible thread cap; fragments mend

Site Number 18CR293 **Locus:** B **STP:** Y-6 E8 S2 **Feature** **Strat:** II **Depth:** 20 to 35 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0011.003	2	Historic, Foodways	Metal, Aluminum	Jar, Canning, Lid		Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** AA-6 **Feature** **Strat:** I **Depth:** 0 to 60 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0012.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Body Sherd	Cobalt	Mold Blown, Indeterminate	Embossed---Lettering	Lettering = "(?)N/(?)O/(?)M(?)"

Site Number 18CR293 **Locus:** B **STP:** AA-6 **Feature** **Strat:** I **Depth:** 0 to 60 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0012.000	49	Historic, Miscellaneous	Glass, Common Glass	Other, Fragment	Colorless	Indeterminate	---	Thin bodied glass, possibly part of kerosene/chimney lamp

Site Number 18CR293 **Locus:** B **STP:** AA-6 **Feature** **Strat:** I **Depth:** 0 to 60 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0012.000	1	Historic, Household/Structural	Glass, Common Glass	Window Glass, Fragment	Aqua	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 N5 E5 **Feature** **Strat:** I **Depth:** 0 to 18 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0013.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Finish	Cobalt	Machined	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 N5 E5 **Feature** **Strat:** I **Depth:** 0 to 18 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0013.000	2	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Body Sherd	Amber	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 N5 E5 **Feature** **Strat:** I **Depth:** 0 to 18 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0013.000	1	Historic, Miscellaneous	Glass, Common Glass	Indeterminate Hollow, Fragment	Colorless, Solarized	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 N5 E5 **Feature** **Strat:** I **Depth:** 0 to 18 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments

0013.000	5	Historic, Miscellaneous	Glass, Common Glass	Indeterminate Hollow, Fragment	Colorless	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 N5 E5 **Feature** **Strat:** I **Depth:** 0 to 18 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0013.000	6	Historic, Household/Structural	Glass, Common Glass	Window Glass, Fragment	Aqua	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 N5 E5 **Feature** **Strat:** I **Depth:** 0 to 18 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0013.000	1	Historic, Household/Structural	Metal, Iron	Nail, Head, Shaft		Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 N5 E5 **Feature** **Strat:** I **Depth:** 0 to 18 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0013.000	3	Historic, Miscellaneous	Fauna, Leather	Strap, Fragment			---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 N10 **Feature** **Strat:** II **Depth:** 10 to 20 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0014.000	2	Historic, Miscellaneous	Glass, Common Glass	Indeterminate Hollow, Fragment	Colorless	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 N10 **Feature** **Strat:** II **Depth:** 10 to 20 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0014.000	1	Historic, Household/Structural	Glass, Common Glass	Window Glass, Fragment	Colorless	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 N10 **Feature** **Strat:** II **Depth:** 10 to 20 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0014.000	1	Historic, Household/Structural	Metal, Iron	Nail, Head, Shaft		Cut	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 N10 **Feature** **Strat:** II **Depth:** 10 to 20 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0014.000	1	Historic, Household/Structural	Metal, Iron	Bolt/Nut, Fragment		Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.000	1	Historic, Foodways	Ceramic, Porcelain	Saucer, Rim Sherd		Porcelain, Hard Paste	Molded---Paneled	Paneled molding below the rim

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.000	4	Historic, Foodways	Ceramic, Refined Earthenware	Cup, Coffee/Tea, Body/Rim Sherd		Creamware	Painted, Overglaze--Red-Feather	Painted feather in red enamel overglaze; Three of four sherds mend, but fourth sherd likely part of vessel

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.000	2	Historic, Foodways	Ceramic, Refined Earthenware	Tableware/Toiletware, Unid., Fragment		Creamware	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments

0015.000	1	Historic, Foodways	Ceramic, Refined Earthenware	Vessel, Hollowware, Body Sherd		Pearlware	Painted--Blue-China Glaze	

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.000	1	Historic, Foodways	Ceramic, Refined Earthenware	Tableware/Toiletware, Unid., Body Sherd		Pearlware	Painted--Olive Green-Indeterminate	

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.000	2	Historic, Foodways	Ceramic, Refined Earthenware	Vessel, Hollowware, Rim Sherd		Pearlware	Slip Decorated-Engine Turned-Brown; Blue; Black-Checkerboard	Sherds mend

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.000	1	Historic, Foodways	Ceramic, Refined Earthenware	Tableware/Toiletware, Unid., Fragment		Ironstone/Stone China/White Granite	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.000	1	Historic, Foodways	Ceramic, Refined Earthenware	Tableware/Toiletware, Unid., Fragment		Astbury	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.000	1	Historic, Foodways	Ceramic, Coarse Earthenware	Indeterminate, Fragment		Redware, Brown Glazed	---	Thin bodied, glazed on both surfaces

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.001	1	Historic, Foodways	Ceramic, Coarse Earthenware	Indeterminate, Fragment		Redware, Black Glazed	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.001	1	Historic, Foodways	Ceramic, Stoneware	Vessel, Hollowware, Body Sherd		North American, Salt Glazed, Gray/Buff Bodied	Unglazed---	Unglazed interior; buff bodied

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.001	1	Historic, Personal	Ceramic, Clay	Tobacco Pipe, Bowl		White Ball Clay	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.001	1	Historic, Foodways	Glass, Common Glass	Bottle, Beer/Wine/Liquor, Body Sherd	Olive Green	Mold Blown, Indeterminate	---	Possible case bottle

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.001	1	Historic, Household/Structural	Glass, Common Glass	Window Glass, Fragment	Aqua	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.001	2	Historic, Household/Structural	Glass, Common Glass	Window Glass, Fragment	Aqua	Indeterminate	---	

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.001	2	Historic, Household/Structural	Metal, Iron	Nail, Fragment		Indeterminate	---	Heavy oxidation

Site Number 18CR293 **Locus:** B **STP:** Y-6 S10 **Feature** **Strat:** II **Depth:** 8 to 39 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0015.001	5	Historic, Miscellaneous	Metal, Iron	Indeterminate, Fragment		Indeterminate	---	

Site Number 18CR293 **Locus:** A **STP:** V-3 E5 S2.5 **Feature** **Strat:** IV **Depth:** 29 to 37 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0016.000	1	Historic, Household/Structural	Metal, Iron	Nail, Head, Shaft		Cut	---	Possibly burnt

Site Number 18CR293 **Locus:** A **STP:** V-3 E5 S2.5 **Feature** **Strat:** IV **Depth:** 29 to 37 cmb

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0016.000	1	Historic, Household/Structural	Metal, Iron	Nail, Head, Shaft		Indeterminate	---	

Site Number 18CR293 **Locus:** A **STP:** W-3 W7.5 S1 **Feature** **Strat:** I **Depth:** 0 to 19 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0017.000	2	Historic, Miscellaneous	Glass, Common Glass	Other, Fragment	Aqua Green	Indeterminate	---	Thick bodied flat glass; likely for automobile or machinery

Site Number 18CR293 **Locus:** A **STP:** W-3 W7.5 S1 **Feature** **Strat:** I **Depth:** 0 to 19 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0017.000	1	Historic, Household/Structural	Glass, Common Glass	Window Glass, Fragment	Aqua	Indeterminate	---	

Site Number 18CR293 **Locus:** A **STP:** W-3 E2.5 S1 **Feature** **Strat:** I **Depth:** 0 to 22 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0018.000	1	Historic, Household/Structural	Metal, Iron	Nail, Complete		Wire Wound	---	Clinched

Site Number 18CR295 **Locus:** **STP:** B-7 **Feature** **Strat:** I **Depth:** 0 to 26 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0003.000	1	Historic, Foodways	Glass, Common Glass	Bottle, Unid., Neck	Colorless	Machined	---	Seam present

Site Number 18CR295 **Locus:** **STP:** B-7 **Feature** **Strat:** I **Depth:** 0 to 26 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0003.000	1	Historic, Household/Structural	Metal, Steel	Nail, Complete		Wire Wound	---	Clinched; very little oxidation

Site Number 18CR295 **Locus:** **STP:** B-7 **Feature** **Strat:** I **Depth:** 0 to 26 cmbs

Catalog	Qty	Group/Subgroup	Material	Object/Segment	Color	Type	Decoratio	Comments
0003.000	2	Historic, Household/Structural	Metal, Steel	Nail, Complete		Wire Wound	---	One nail has significant amount more of oxidation than the other

***Artifact Total:* 243**

Note: Additional attribute data recorded in electronic database

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Appendix C:
Archaeological Site Forms

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MARYLAND INVENTORY OF HISTORIC PROPERTIES

ARCHEOLOGICAL SITE SURVEY: BASIC DATA FORM

Date Filed: 01/08/2020

Check if update: ☐

Maryland Department of Planning
Maryland Historical Trust
Division of Historical and Cultural Programs
100 Community Place
Crownsville, Maryland 21032

Site Number: 18CR292	
County: Carroll	

A. DESIGNATION

1. Site Name: Piney Run 1

2. Alternate Site Name/Numbers: ______

3. Site Type (describe site chronology and function; see instructions):
Early twentieth century, isolated refuse disposal pit. Primary refuse is glass bottles (beverage, cosmetic/ Medicinal) and jars, with minor amounts of metal debris (automotive, fencing) and some foodways ceramics.

4. Prehistoric ______ Historic X Unknown ______

5. Terrestrial X Submerged/Underwater ______ Both ______

B. LOCATION

6. USGS 7.5' Quadrangle(s): Finksburg | (For underwater sites) NOAA Chart No.:

(Photocopy section of quad or chart on page 4 and mark site location)

Latitude in decimal degrees 39.387203 Longitude in decimal degrees -76.979622

7. Maryland Archeological Research Unit Number: 14

8. Physiographic Province (check one):
   - ______ Allegany Plateau
   - ______ Ridge and Valley
   - ______ Great Valley
   - ______ Blue Ridge
   - ______ Lancaster/Frederick Lowland
   - X Eastern Piedmont
   - ______ Western Shore Coastal Plain
   - ______ Eastern Shore Coastal Plain

9. Major Watershed/Underwater Zone (see instructions for map and list): Patapsco River

C. ENVIRONMENTAL DATA

10. Nearest Water Source: Piney Run Reservoir Stream Order: 2

11. Closest Surface Water Type (check all applicable):
   - ______ Ocean
   - ______ Estuarine Bay/Tidal River
   - ______ Tidal or Marsh
   - X Freshwater Stream/River
   - ______ Freshwater Swamp
   - ______ Lake or Pond
   - ______ Spring

12. Distance from closest surface water: 140 meters (or 450 feet)

C. ENVIRONMENTAL DATA [CONTINUED]

13. Current water speed: ______ knots 14. Water Depth: ______ meters

15. Water visibility: ________________

16. SCS Soils Typology and/or Sediment Type: GdB (Glenelg Loam)

17. Topographic Settings (check all applicable):

_______ Floodplain
_______ Interior Flat
_______ Terrace
_______ Low Terrace
_______ High Terrace
_______ Hillslope
___X___ Hilltop/Bluff
_______ Upland Flat
_______ Ridgetop
_______ Rockshelter/Cave
_______ Unknown
_______ Other: ______________

18. Slope: 2%

19. Elevation: 177 meters (or 580 feet) above sea level

20. Land use at site when last field checked (check all applicable):

_______ Plowed/Tilled
_______ No-Till
____X__ Wooded/Forested
_______ Logging/Logged
_______ Underbrush/Overgrown
_______ Pasture
_______ Cemetery
_______ Commercial
_______ Educational
_______ Extractive
_______ Military
_______ Recreational
_______ Residential
_______ Ruin
_______ Standing Structure
_______ Transportation
_______ Unknown
_______ Other: ______________

21. Condition of site:

_______ Disturbed
____X__ Undisturbed
_______ Unknown

22. Cause of disturbance/destruction (check all applicable):

_______ Plowed
_______ Eroded/Eroding
_______ Graded/Contoured
_______ Collected
_______ Vandalized/Looted
_______ Dredged
_______ Heavy Marine Traffic
_______ Other: ______________

23. Extent of disturbance:

_______ Minor (0-10%)
_______ Moderate (10-60%)
_______ Major (60-99%)
_______ Total (100%)
_______ % unknown

C. ENVIRONMENTAL DATA [CONTINUED]

24. Describe site setting with respect to local natural and cultural landmarks (topography, hydrology, fences, structures, roads). Use continuation sheet if needed.

    The surrounding landform consists of a series of forested hill summits gradually descending north toward what is now a submerged hollow along the Piney Run stream valley. The area around the site contains a widely dispersed scatter of discarded metal, glass, plastic, and rubber materials, most of which appear to date to the second half of the twentieth century. The site is situated approximately 40 m (131 ft) east of a historic road, which itself exhibits casual refuse disposal areas along its edges. This road is a now disused extension of Hollenberry Road and once provided access to four historic occupations first evidenced on a 1944 USGS map. The site could be associated with one or several of these occupations.

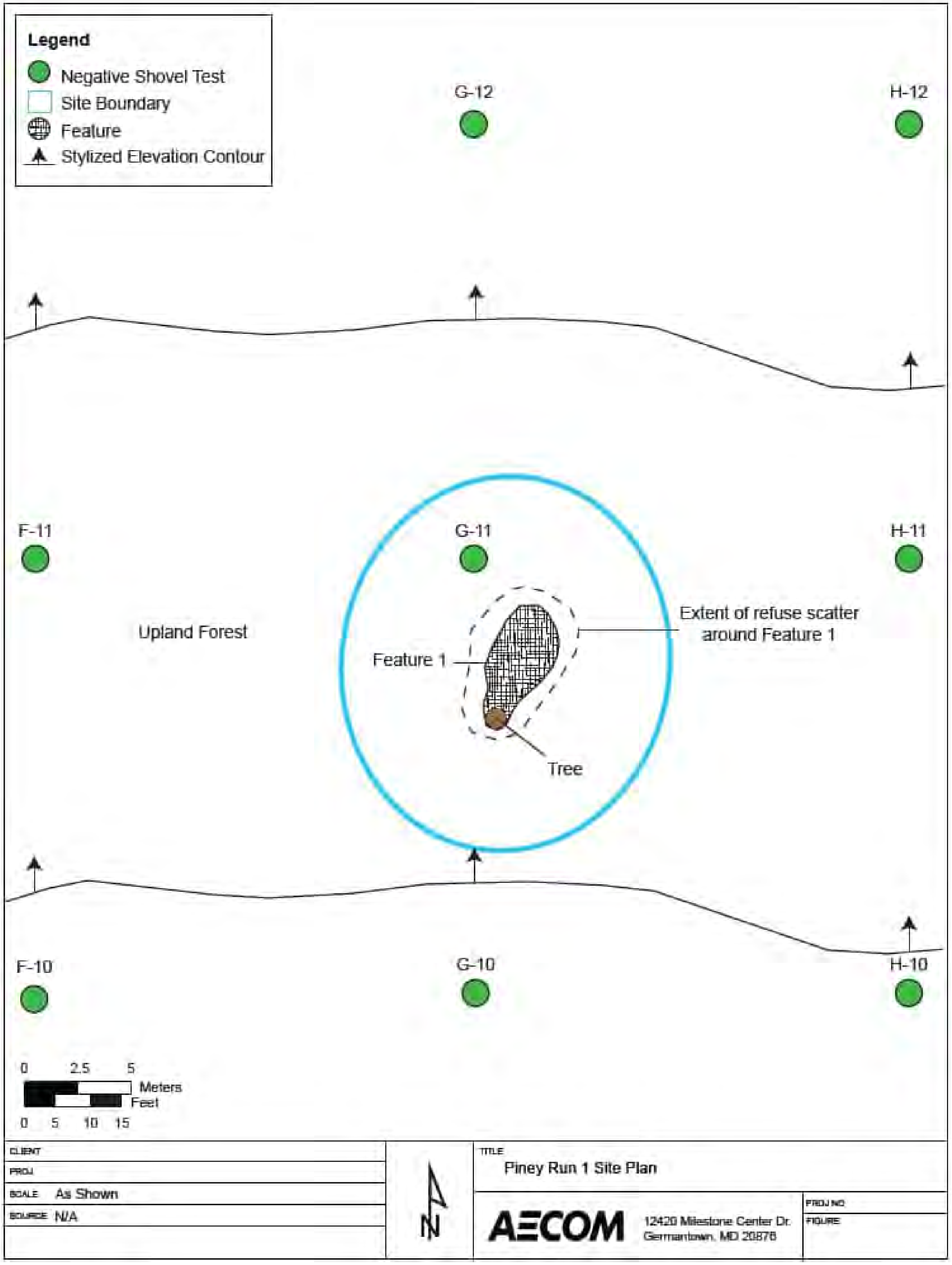
25. Characterize site stratigraphy. Include a representative profile on separate sheet, if applicable. Address plowzone (presence/absence), subplowzone features and levels, if any, and how stratigraphy affects site integrity. Use continuation sheet if needed.

    The site is limited to a single refuse pit feature, all surrounding grid STPs were negative for cultural material. These generally revealed an A/Ap horizon overlying the B horizon and showed no signs of significant recent disturbance.

26. Site size: 16.25 meters by 15 meters (or 53.3 feet by 49.2 feet)

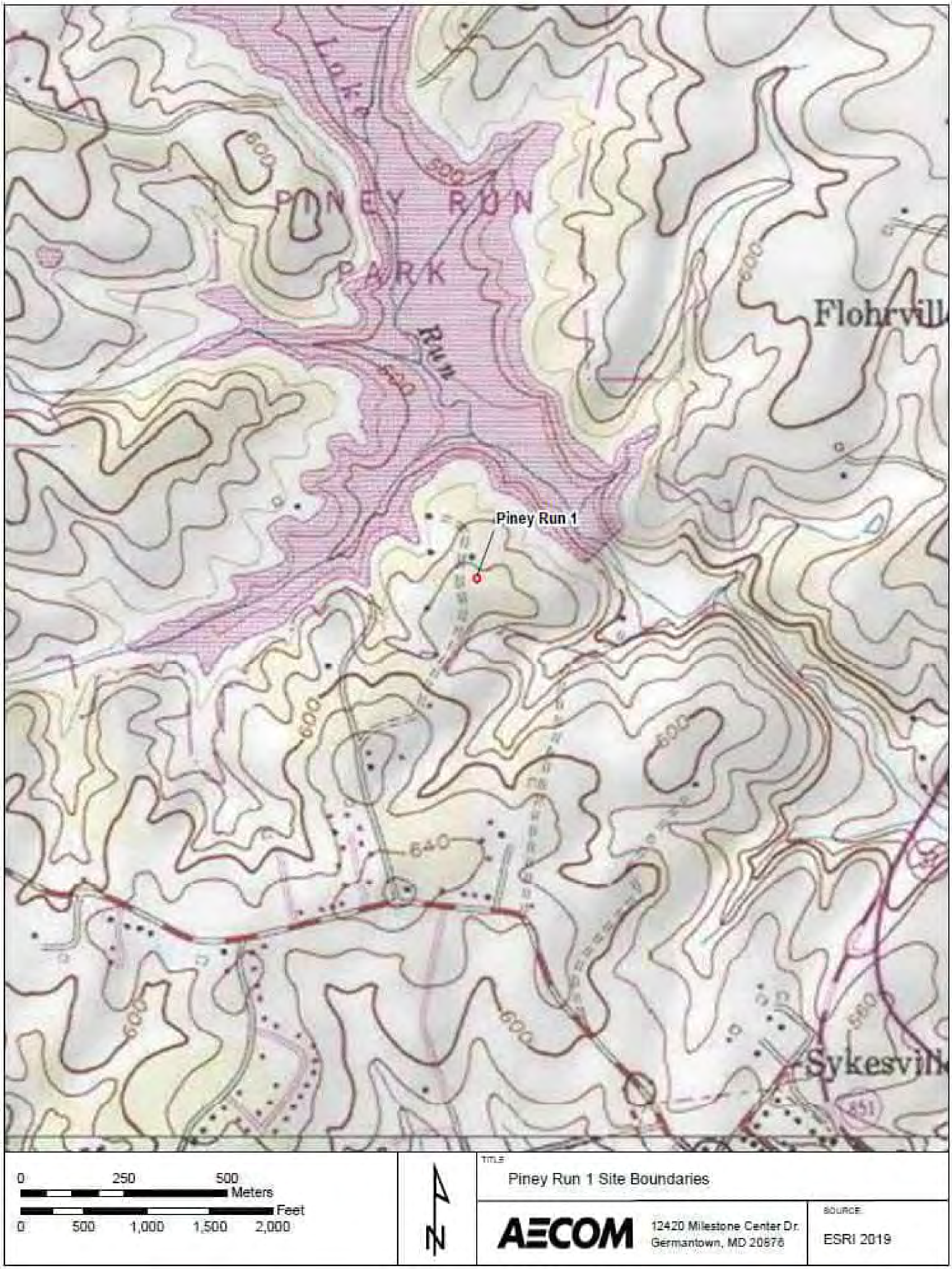
Site Number: 18CR292

27. Draw a sketch map of the site and immediate environs, here or on separate sheet:



Scale: North arrow:

Photocopy section of quadrangle map(s) and mark site location with heavy dot or circle and arrow pointing to it.



D. CONTEXT

28. Cultural Affiliation (check all applicable):

PREHISTORIC
_______ Unknown
_______ Paleoindian
_______ Archaic
_______ Early Archaic
_______ Middle Archaic
_______ Late Archaic
_______ Terminal Archaic
_______ Woodland
_______ Adena
_______ Early Woodland
_______ Middle Woodland
_______ Late Woodland

_______ CONTACT

HISTORIC:
_______ Unknown
17th century
_______ 1630-1675
_______ 1676-1720
18th century
_______ 1721-1780
_______ 1781-1820
19th century
_______ 1821-1860
_______ 1861-1900
20th century
__X__ 1901-1930
__X__ post-1930

____ UNKNOWN

E. INVESTIGATIVE DATA

29. Type of investigation:
__X__ Phase I
_______ Phase II/Site Testing
_______ Phase III/Excavation
_______ Archival Investigation
_______ Monitoring
_______ Field Visit
_______ Collection/Artifact Inventory
_______ Report From Informant
_______ Other: _______________

30. Purpose of investigation:
__X__ Compliance
_______ Research
_______ Avocational
_______ Regional Survey
_______ Site Inventory
_______ MHT Grant Project
_______ Other: _______________

31. Method of sampling (check all applicable):
_______ Non-systematic surface search
__X__ Systematic surface collection
_______ Non-systematic shovel test pits
_______ Systematic shovel test pits
_______ Excavation units
_______ Mechanical excavation
_______ Remote sensing
_______ Other: _______________

32. Extent/nature of excavation: _______________

F. SUPPORT DATA

33. Accompanying Data Form(s):
_______ Prehistoric
__X__ Historic
_______ Shipwreck

34. Ownership: _______ Private _______ Federal _______ State __X__ Local/County _______ Unknown

35. Owner(s): County Commissioners of Carroll County
Address: 225 North Center Street, Westminster, MD 21157
Phone: ______
Email: ______

36. Tenant and/or Local Contact: ______
Address: ______
Phone: ______
Email: ______

37. Other Known Investigations: ______

38. Primary report reference or citation: Regan, Pete (2020) *Phase I Archaeological Investigation for the Piney Run Watershed Study, Piney Run Dam, Carroll County, Maryland.* (AECOM)

39. Other Records (e.g. slides, photos, original field maps/notes, sonar, magnetic record)?

___ Slides	X Field record	___ Other: ___
X Photos	___ Sonar	
X Field maps	___ Magnetic record	

40. If yes, location of records: AECOM, Germantown

41. Collections at Maryland Archeological Conservation (MAC) Lab or to be deposited at MAC Lab?
X Yes
___ No
___ Unknown

42. If NO or UNKNOWN, give owner: ______
location: ______
and brief description of collection: ______

43. Informant: ______
Address: ______
Phone: ______
Email: ______

44. Site visited by Pete Regan
Company/Group name: AECOM
Address: 12420 Milestone Center Drive, Germantown, MD 20876
Phone: 301-944-2554
Email: peter.regan@aecom.com Date: 12/06/2019

45. Form filled out by: Pete Regan
Company/Group name: AECOM
Address: 12420 Milestone Center Drive, Germantown, MD 20876
Phone: 301-944-2554
Email: peter.regan@aecom.com Date: 01/08/2020

46. Site Summary/Additional Comments (append additional pages if needed):

The site is located among a series of forested hill summits gradually descending north toward what is now a submerged hollow along the Piney Run stream valley. The vicinity contains a widely dispersed scatter of discarded metal, glass, plastic, and rubber materials, most of which appear to date to the second half of the twentieth century. The site is situated approximately 40 m (131 ft) east of a historic road trace, which itself exhibits casual refuse disposal areas along its edges. This road trace is a now disused section of Hollenberry Road, which provided access to a few historic occupations first apparent on a 1944 USGS map.

This site is defined by Feature 1, a lobe-shaped pit measuring up to 5.5 m (18 ft) long by 2.5 m (8.2 ft) wide and extending up to 1 m (3.3 ft) below the surface. Exhibiting slumping sides and amorphous contours, Feature 1 was littered with discarded glass bottles, unidentifiable iron fragments, automotive parts, and a few historic ceramics. Probing the sides of the feature revealed no structural elements which, together with its overall shape and contents, indicated that it was specifically excavated for refuse disposal as opposed to having been a repurposed cellar pit. A scatter of glass bottles extended outward from Feature 1 approximately 1 meter (3.3 ft). Pedestrian and subsurface investigations of the surrounding area revealed no additional archaeological features or deposits or any indication of a sustained historic occupation.

Feature 1 contained hundreds of glass bottles/vessel glass fragments, large pieces of metal (e.g., automotive parts), and other generic refuse. No architectural artifacts were found in the feature. Due to the overwhelming quantity of material, a sample of well preserved, diagnostic artifacts was collected for analysis. Preference was given to representative intact/mostly intact glass bottles and single examples of the observed ceramic ware types. Most of the glass bottles were attributable to early to mid-twentieth century manufactures and represent alcohol, soda, condiment, cleaning product, and cosmetic/medicinal bottles. A few ironstone and hotel ware fragments were observed as well. Uncollected artifacts consist of similar/identical bottles, glass jars, some automotive pieces, and miscellaneous iron fragments.

This site represents an early twentieth century refuse disposal pit associated with a small cluster of dwellings possible built to the north of the APE sometime between 1911 and 1945 according to historic mapping. Presumably, the site was placed at a distance from these residences to consolidate refuse in a spatially segregated area; the large concentration of glass artifacts may be a reflection of intentionally keeping these sharp, possibly hazardous materials away from pedestrian and vehicular traffic. However, because the site is located so far from each of the dwellings, it is not possible to determine if it was the disposal site for one or more of these occupations. Though the assemblage is reflective of some consumer habits attributable to a local community, the site cannot be more particularly associated with a given dwelling or family at this time. This limits the site’s information potential and, given the sampling strategies used during the current survey, it is unlikely that additional excavation will yield potentially significant deposits.

Given that the site cannot be definitively attributed to a given historic occupation, together with its limited potential to yield additional significant information, AECOM recommends this site not eligible for listing in the NRHP. It lacks the informational potential required to satisfy Criterion D and lacks the associative values necessary to satisfy Criteria A, B, and/or C. No additional work is recommended.

MARYLAND ARCHEOLOGICAL SITE SURVEY: HISTORIC DATA FORM

Site Number 18CR292

1. Site class (check all applicable, check at least one from each group):

a.
______ domestic
______ industrial
______ transportation
______ military
______ sepulchre
______ religious
______ commercial
______ educational
______ non-domestic agricultural
______ unknown
__X__ other: refuse disposal

b.
______ urban
__X__ rural
______ unknown

c. standing structure:
______ yes
__X__ no
______ unknown

d. above-grade/visible ruin:
______ yes
__X__ no
______ unknown

2. Site Type (check all applicable):

______ artifact concentration
______ possible structure
______ post-in-ground structure
______ frame structure
______ masonry structure
______ log structure
______ farmstead
______ plantation
______ townsite
______ road/railroad
______ wharf/landing
______ bridge
______ ford
______ mill (specify: ______)
______ raceway
______ quarry
______ furnace/forge
______ other industrial (specify): ______
______ battlefield
______ military fortification
______ military encampment
______ cemetery
______ unknown
__X__ other: refuse pit

3. Ethnic Association:

______ Native American
______ African American
______ Angloamerican
______ Hispanic American
______ Asian American
______ other Euroamerican (specify): ______
__X__ unknown
______ other: ______

4. Categories of material remains present (check all applicable):

__X__ ceramics
__X__ bottle/table glass
__X__ other kitchen artifacts
______ architecture
______ furniture
______ arms
______ clothing
______ personal items
______ tobacco pipes
______ activity items
______ human skeletal remains
______ faunal remains
______ floral remains
______ organic remains
______ unknown
__X__ other: automotive

5. Diagnostics (choose from manual and give number recorded or observed):

3 Hazel Atlas bottles/jars
1 ironstone
1 milk glass
1 decalcomania hotel ware
1 cap seat milk bottle
1 Westminster Coca-Cola bottle
1 Albany slip stoneware
1 Albany/Bristol stoneware
1 Clorox bottle
1 Dr. Ellis waving fluid bottle

6. Features present:
- __X__ yes
- ______ no
- ______ unknown

7. Types of features present:
- ______ construction feature
- ______ foundation
- ______ cellar hole/storage cellar
- ______ hearth/chimney base
- ______ posthole/postmold
- ______ paling ditch/fence
- ______ privy
- ______ well/cistern
- __X__ trash pit/dump
- ______ sheet midden
- ______ planting feature
- ______ road/drive/walkway
- ______ depression/mound
- ______ burial
- ______ railroad bed
- ______ earthworks
- ______ raceway
- ______ wheel pit
- ______ unknown
- ______ other: ____________________

8. Flotation samples collected:
- ______ yes
- __X__ no
- ______ unknown

analyzed:
- ______ yes, by ______________
- ______ no
- ______ unknown

9. Soil samples collected:
- ______ yes
- __X__ no
- ______ unknown

analyzed:
- ______ yes, by ______________
- ______ no
- ______ unknown

10. Other analyses (specify): ________________________

11. Additional comments:

12. Form filled out by: Pete Regan
Address/Company: AECOM
Date: 01/08/2020

MARYLAND INVENTORY OF HISTORIC PROPERTIES

ARCHEOLOGICAL SITE SURVEY: BASIC DATA FORM

Date Filed: 01/08/2020

Check if update: ☐

Maryland Department of Planning
Maryland Historical Trust
Division of Historical and Cultural Programs
100 Community Place
Crownsville, Maryland 21032

Site Number: 18CR293	
County: Carroll	

A. DESIGNATION

1. Site Name: Piney Run 2

2. Alternate Site Name/Numbers: ______

3. Site Type (describe site chronology and function; see instructions):
Early nineteenth to at least early twentieth century farmstead

4. Prehistoric ______ Historic X Unknown ______

5. Terrestrial X Submerged/Underwater ______ Both ______

B. LOCATION

6. USGS 7.5' Quadrangle(s): Finksburg | (For underwater sites) NOAA Chart No.:

(Photocopy section of quad or chart on page 4 and mark site location)

Latitude in decimal degrees 39.386053 Longitude in decimal degrees -76.975603

7. Maryland Archeological Research Unit Number: 14

8. Physiographic Province (check one):

______	Allegany Plateau	______	Lancaster/Frederick Lowland
______	Ridge and Valley	X	Eastern Piedmont
______	Great Valley	______	Western Shore Coastal Plain
______	Blue Ridge	______	Eastern Shore Coastal Plain

9. Major Watershed/Underwater Zone (see instructions for map and list): Patapsco River

C. ENVIRONMENTAL DATA

10. Nearest Water Source: Tributary to Piney Run Stream Order: 1

11. Closest Surface Water Type (check all applicable):

______	Ocean	X	Freshwater Stream/River
______	Estuarine Bay/Tidal River	______	Freshwater Swamp
______	Tidal or Marsh	______	Lake or Pond
		______	Spring

12. Distance from closest surface water: 0 meters (or 0 feet)

C. ENVIRONMENTAL DATA [CONTINUED]

13. Current water speed: ______ knots 14. Water Depth: ______ meters

15. Water visibility: ________________

16. SCS Soils Typology and/or Sediment Type: GhB (Glenelg Silt Loam)

17. Topographic Settings (check all applicable):

_______ Floodplain
_______ Interior Flat
___X___ Terrace
_______ Low Terrace
_______ High Terrace
_______ Hillslope
_______ Hilltop/Bluff
_______ Upland Flat
_______ Ridgetop
_______ Rockshelter/Cave
_______ Unknown
_______ Other: ______________

18. Slope: 2-25%

19. Elevation: 149 meters (or 490 feet) above sea level

20. Land use at site when last field checked (check all applicable):

_______ Plowed/Tilled
_______ No-Till
___X___ Wooded/Forested
_______ Logging/Logged
_______ Underbrush/Overgrown
_______ Pasture
_______ Cemetery
_______ Commercial
_______ Educational
_______ Extractive
_______ Military
_______ Recreational
_______ Residential
_______ Ruin
_______ Standing Structure
_______ Transportation
_______ Unknown
_______ Other: ______________

21. Condition of site:

_______ Disturbed
___X___ Undisturbed
_______ Unknown

22. Cause of disturbance/destruction (check all applicable):

_______ Plowed
_______ Eroded/Eroding
_______ Graded/Contoured
_______ Collected
_______ Vandalized/Looted
_______ Dredged
_______ Heavy Marine Traffic
_______ Other: ______________

23. Extent of disturbance:

_______ Minor (0-10%)
_______ Moderate (10-60%)
_______ Major (60-99%)
_______ Total (100%)
_______ % unknown

C. ENVIRONMENTAL DATA [CONTINUED]

24. Describe site setting with respect to local natural and cultural landmarks (topography, hydrology, fences, structures, roads). Use continuation sheet if needed.

The site is located southeast of the Piney Run Dam and Reservoir emergency spillway within a small, forested valley of an unnamed tributary to Piney Run. The site is organized into two discrete loci occurring on adjacent but distinct landforms. Locus A is located on the south side of the unnamed tributary, partially within its small floodplain and partially cut into a terrace on the toeslopes of the ridges rising to the south. This portion of the farmstead corresponds to its agricultural/utilitarian use area. Locus B is located on the north side of the unnamed tributary, midway up the hillslopes rising northwest toward the emergency spillway. This portion of the farmstead corresponds to its domestic use area. A historic road trace bisects Locus A along the floodplain's southern margin. This road trace once linked the site to what is now Obrecht Road to the south and continues toward Piney Run, then follows it downstream (southeast) an unknown distance toward what is now Maryland Route 32.

Five surface features were documented. In Locus A, these include a likely capped well, a spring box, the stone foundation of a transverse frame barn, and a series of eight stone piers that likely supported an agricultural outbuilding (shed, barn, &c.). The first three are located on the floodplain adjacent to the unnamed Piney Run tributary, while the fourth was built into an adjacent terrace. The fifth feature was documented in Locus B and represents the remnants of the farmstead dwelling's stone foundation. This is located on the opposite side of the tributary from the other features and was built onto an artificially leveled area midway up the slopes rising northwest toward the Piney Run Dam emergency spillway.

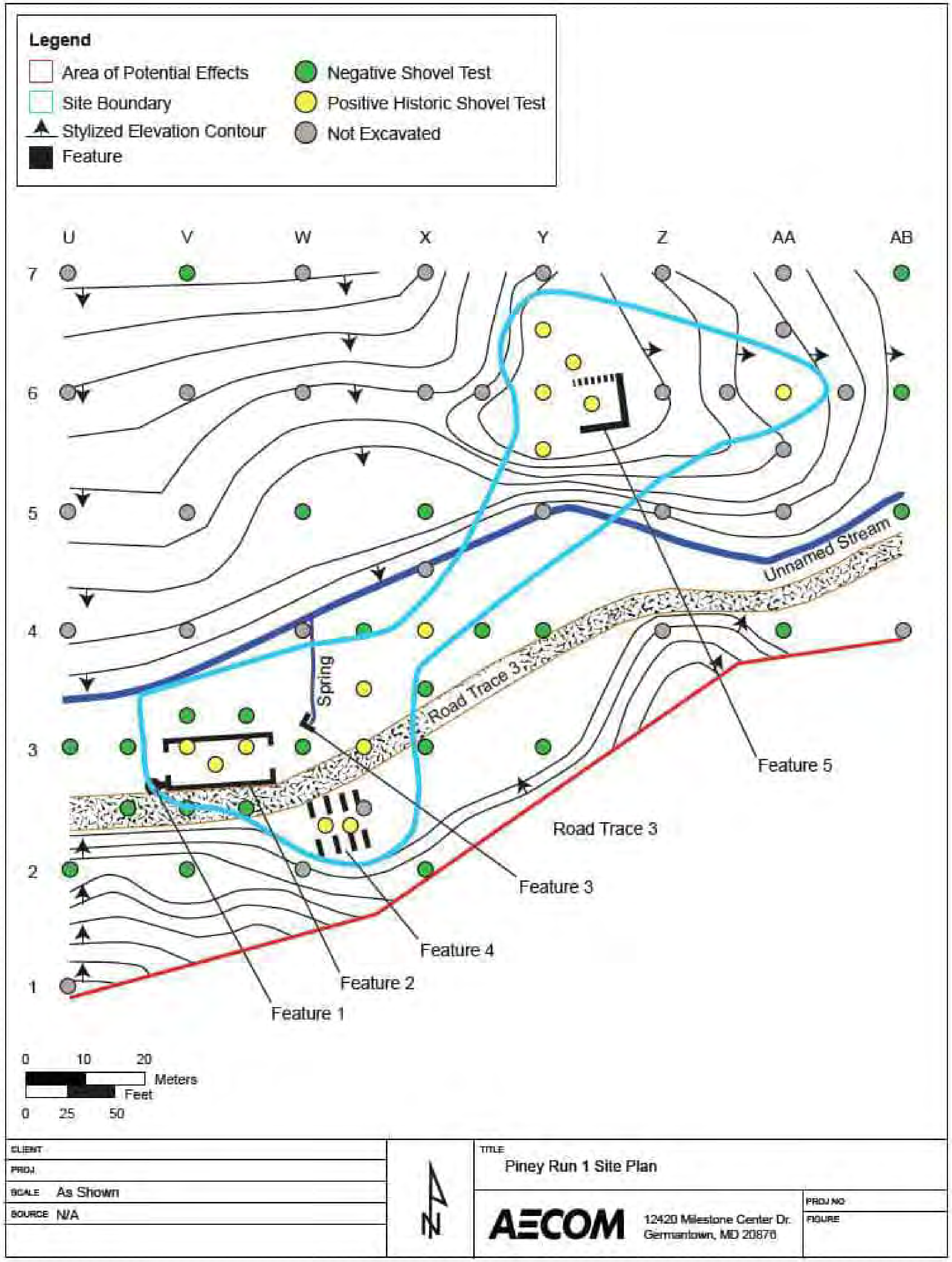
25. Characterize site stratigraphy. Include a representative profile on separate sheet, if applicable. Address plowzone (presence/absence), subplowzone features and levels, if any, and how stratigraphy affects site integrity. Use continuation sheet if needed.

Site stratigraphy exterior to the features was fairly consistent across both site loci. STPs typically revealed two strata, representing the surface mineral horizon/plowzone (A/Ap horizon) atop the culturally sterile subsoil (B horizon). In several instances, an organic layer (Ao horizon) overlay the A/Ap horizon. STPs placed within the foundation footprint of the transverse frame barn and the dwelling revealed two or more strata of historic fill overlying the B Horizon or prepared dirt floors. See attached representative profiles.

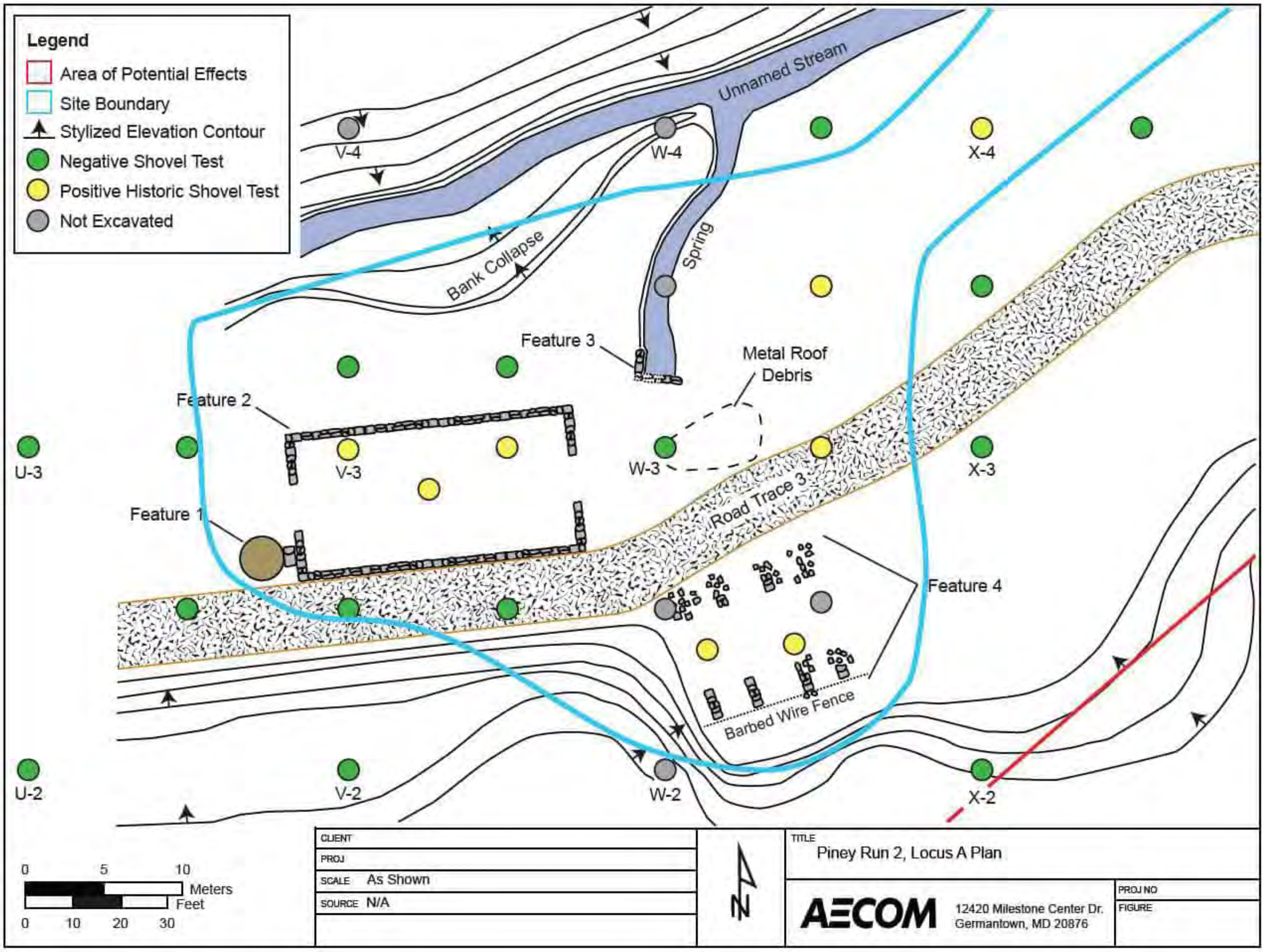
26. Site size: 120 meters by 40 meters (or 394 feet by 131 feet)

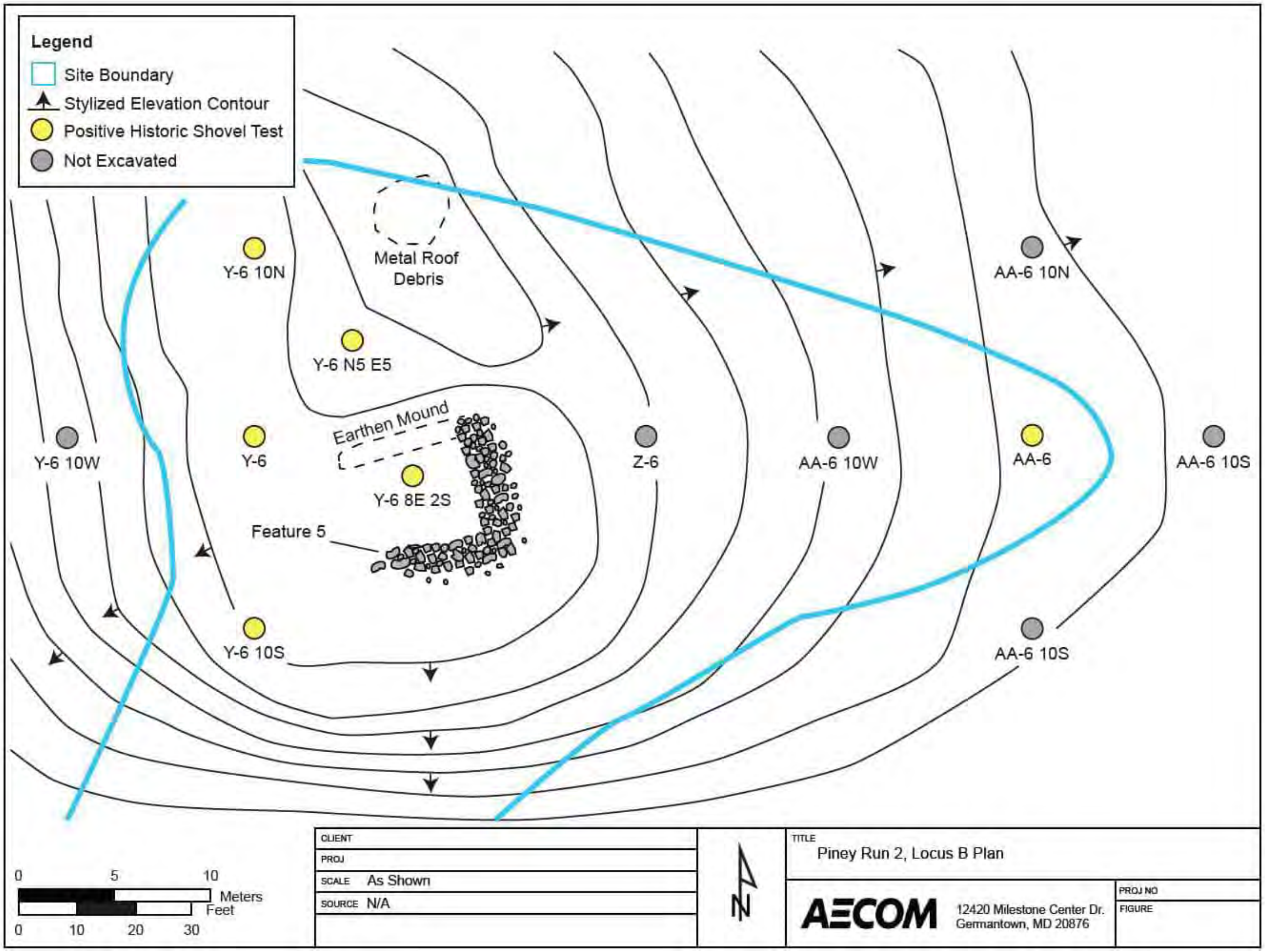
Site Number: 18CR293 **Page 3a**
BASIC DATA FORM

27. Draw a sketch map of the site and immediate environs, here or on separate sheet:

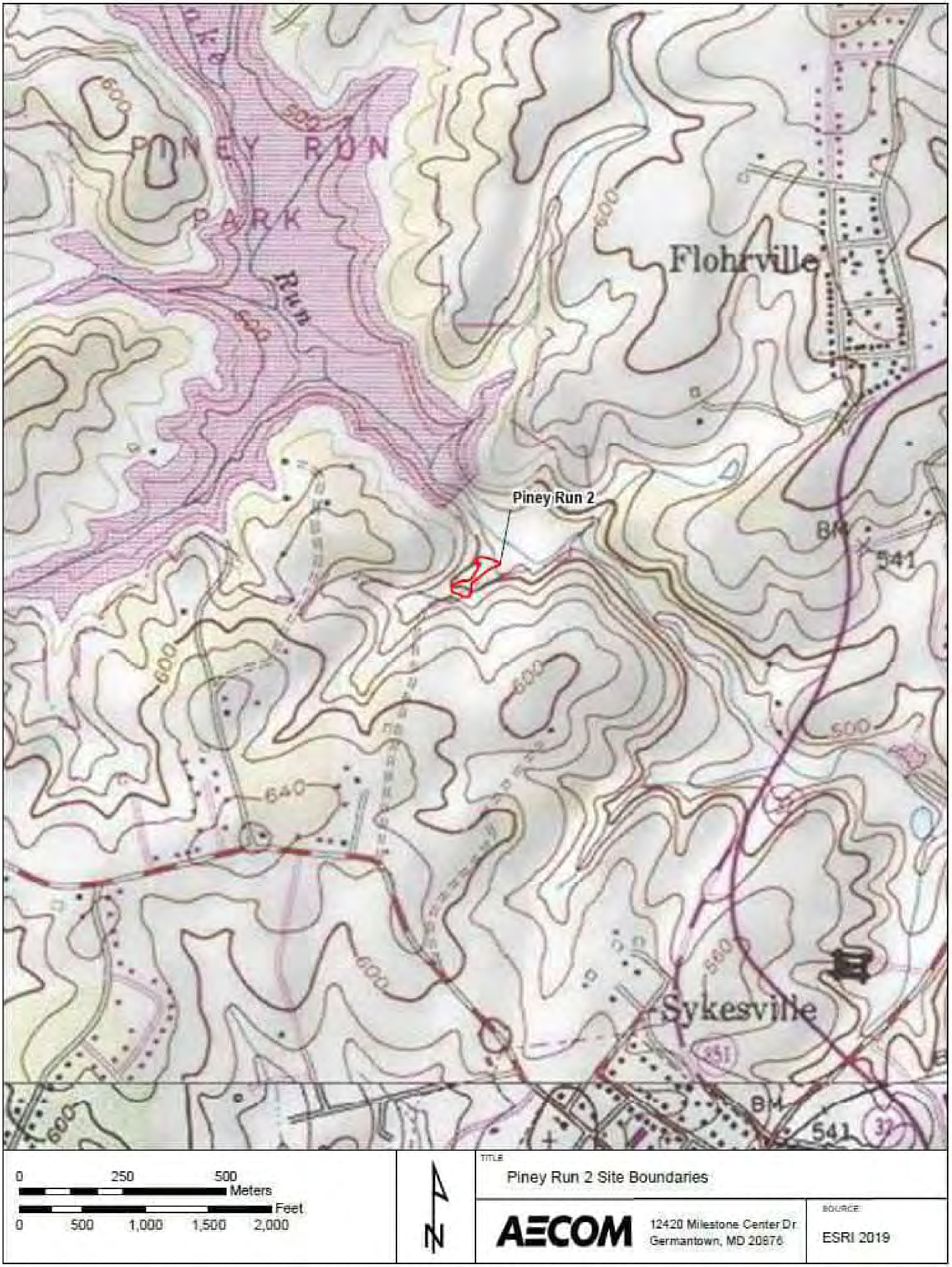


Scale: North arrow:


Legend
Area of Potential Effects
Site Boundary
Stylized Elevation Contour
Negative Shovel Test
Positive Historic Shovel Test
Not Excavated
Unnamed Stream
Bank Collapse
Spring
Feature 3
Metal Roof Debris
Feature 2
Feature 1
Feature 4
Road Trace 3
Barbed Wire Fence
U-3
V-3
W-3
X-3
U-2
V-2
W-2
X-2
V-4
W-4
X-4
0 5 10 Meters
Feet
0 10 20 30
CLIENT
PROJ
SCALE As Shown
SOURCE N/A
N
TITLE
Piney Run 2, Locus A Plan
AECOM
12420 Milestone Center Dr.
Germantown, MD 20876
PROJ NO
FIGURE


Legend
Site Boundary
Stylized Elevation Contour
Positive Historic Shovel Test
Not Excavated
Metal Roof Debris
Y-6 10N
Y-6 N5 E5
Earthen Mound
Y-6 10W
Y-6
Y-6 8E 2S
Feature 5
Y-6 10S
Z-6
AA-6 10W
AA-6 10N
AA-6
AA-6 10S
0 5 10 Meters
0 10 20 30 Feet
CLIENT
PROJ
SCALE As Shown
SOURCE N/A
N
TITLE
Piney Run 2, Locus B Plan
AECOM
12420 Milestone Center Dr.
Germantown, MD 20876
PROJ NO
FIGURE

Photocopy section of quadrangle map(s) and mark site location with heavy dot or circle and arrow pointing to it.



D. CONTEXT

28. Cultural Affiliation (check all applicable):

PREHISTORIC
_______ Unknown
_______ Paleoindian
_______ Archaic
_______ Early Archaic
_______ Middle Archaic
_______ Late Archaic
_______ Terminal Archaic
_______ Woodland
_______ Adena
_______ Early Woodland
_______ Middle Woodland
_______ Late Woodland

_______ CONTACT

HISTORIC:
_______ Unknown
17th century
_______ 1630-1675
_______ 1676-1720
18th century
_______ 1721-1780
___X___ 1781-1820
19th century
___X___ 1821-1860
___X___ 1861-1900
20th century
___X___ 1901-1930
_______ post-1930

____ UNKNOWN

E. INVESTIGATIVE DATA

29. Type of investigation:
____X__ Phase I
_______ Phase II/Site Testing
_______ Phase III/Excavation
_______ Archival Investigation
_______ Monitoring
_______ Field Visit
_______ Collection/Artifact Inventory
_______ Report From Informant
_______ Other:
____

30. Purpose of investigation:
____X__ Compliance
_______ Research
_______ Avocational
_______ Regional Survey
_______ Site Inventory
_______ MHT Grant Project
_______ Other:
____

31. Method of sampling (check all applicable):
_______ Non-systematic surface search
____X__ Systematic surface collection
_______ Non-systematic shovel test pits
____X__ Systematic shovel test pits
_______ Excavation units
_______ Mechanical excavation
_______ Remote sensing
_______ Other:
____

32. Extent/nature of excavation: Primary STPs excavated on 20-meter grid oriented to true north. Upon site discovery, the interval was reduced to 10 meters, with judgmental STPs excavated as necessary to aid in delineation and feature investigation. Twenty-eight STPs were excavated to delineate/investigate the site, of which 14 were positive for historic artifacts. STPs measured 40 centimeters in diameter and were excavated 10 centimeters into sterile subsoil.

F. SUPPORT DATA

33. Accompanying Data Form(s):
_________ Prehistoric
_____X__ Historic
_________ Shipwreck

34. Ownership: _______ Private ________ Federal ________ State ___X____ Local/County
_______ Unknown

35. Owner(s): County Commissioners of Carroll County
Address: 225 North Center Street, Westminster, MD 21157
Phone: __________
Email: __________

36. Tenant and/or Local Contact: __________
Address: __________
Phone: __________
Email: __________

37. Other Known Investigations: Richard Dent and Christine A. Jirikowic mentioned the barn foundation and what they described as a silo foundation (much more likely to be a capped well) in their 1994 report, *Preliminary Archaeological Reconnaissance of the Proposed Site of Piney Run Lake Water Treatment Facility, Carroll County, Maryland* (MHT report CR 20). They did not register the ruins as a site, however, and no archaeological investigation was conducted.

38. Primary report reference or citation: Regan, Pete (2020) *Phase I Archaeological Investigation for the Piney Run Watershed Study, Piney Run Dam, Carroll County, Maryland.* (AECOM)

39. Other Records (e.g. slides, photos, original field maps/notes, sonar, magnetic record)?

____ Slides	X Field record	____ Other: ____
X Photos	____ Sonar	
X Field maps	____ Magnetic record	

40. If yes, location of records: AECOM, Germantown

41. Collections at Maryland Archeological Conservation (MAC) Lab or to be deposited at MAC Lab?
X Yes
____ No
____ Unknown

42. If NO or UNKNOWN, give owner: __________
location: __________
and brief description of collection: __________

43. Informant: __________
Address: __________
Phone: __________
Email: __________

44. Site visited by Pete Regan
Company/Group name: AECOM
Address: 12420 Milestone Center Drive, Germantown, MD 20876
Phone: 301-944-2554
Email: peter.regan@aecom.com Date: 12/06/2019

45. Form filled out by: Pete Regan
Company/Group name: AECOM
Address: 12420 Milestone Center Drive, Germantown, MD 20876
Phone: 301-944-2554
Email: peter.regan@aecom.com Date: 01/08/2020

46. Site Summary/Additional Comments (append additional pages if needed):

The site is located southeast of the Piney Run Dam and Reservoir emergency spillway within a small, forested valley of an unnamed tributary to Piney Run. The site is organized into two discrete loci occurring on adjacent but distinct landforms. Locus A is located on the south side of the unnamed tributary, partially within its small floodplain and partially cut into a terrace on the toeslopes of the ridges rising to the south. This portion of the farmstead corresponds to its agricultural/utilitarian use area. Locus B is located on the north side of the unnamed tributary, midway up the hillslopes rising northwest toward the emergency spillway. This portion of the farmstead corresponds to its domestic use area. A historic road trace bisects Locus A along the floodplain's southern margin. This road trace once linked the site to what is now Obrecht Road to the south and continues toward Piney Run, then follows it downstream (southeast) an unknown distance toward what is now Maryland Route 32.

Five surface features were documented. In Locus A, these include a likely capped well, a spring box, the stone foundation of a transverse frame barn, and a series of eight stone piers that likely supported an agricultural outbuilding (shed, barn, &c.). The first three are located on the floodplain adjacent to the unnamed Piney Run tributary, while the fourth was built into an adjacent terrace. The fifth feature was documented in Locus B and represents the remnants of the farmstead dwelling's stone foundation. This is located on the opposite side of the tributary from the other features and was built onto an artificially leveled area midway up the slopes rising northwest toward the Piney Run Dam emergency spillway.

In total, 224 historic artifacts were recovered from Piney Run 2. Just over 54 percent (n=121) were recovered from the A/Ap Horizon, with the remainder recovered from fill deposits interior to the transverse barn (n=29) and dwelling (n=74). Almost 80 percent of the artifacts (n=179) were found in Locus B, while just over 20 percent (n=45) originated in Locus A.

Miscellaneous artifacts are the most common and represent almost 40 percent (n=89) of the site assemblage. These artifacts lack functionally diagnostic traits and include unidentifiable fragments of glass (n=73), iron (n=13), and leather (n=3). Household/structural artifacts represent just over 30 percent (n=69) of the assemblage and include cut (n=25), wire (n=11), and indeterminate nails (n=9), window glass (n=20), mortar and plaster (n=2), a piece of mortar, and a nut/bolt.

Foodways artifacts account for 28.5 percent of the assemblage (n=64) and consist of glass (n=45), ceramic (n=17), and metal (n=2) artifacts. Foodways glass includes botte glass (n=34), indeterminate hollow glass (n=6), and milkglass lid liners (n=5). While most of the bottle glass was unidentifiable, individual fragments of a beer/soda bottle, a beer/alcohol/wine bottle, a cosmetic/medicinal bottle, and a possible poison bottle were recovered. Foodways ceramics include creamware (n=6), pearlware (n=4), redware (n=3), and single examples of Astbury, ironstone, North American stoneware, and hard paste porcelain. Nine foodways ceramics exhibited decoration, including overglaze painted creamware in a feather motif (n=4), painted pearlware (n=2), slip decorated pearlware in a checkerboard pattern (n=2), and a piece of molded (paneled) porcelain. Ceramic service wares (n=13) were more common than storage wares (n=4), though specific ceramic objects could only be identified in a few cases (one saucer and four coffee/tea cup fragments). Lastly, the foodways metal artifacts are represented by two aluminum canning jar lids.

The remainder of the Piney Run 2 assemblage consists of single examples of labor and personal artifacts. The sole labor artifact is a fragment of barbed wire, while the personal artifact is a white ball clay tobacco pipe bowl fragment.

Sixty temporally diagnostic artifacts were recovered from Piney Run 2, including metal (n=38), ceramic (n=12), and glass (n=10) artifacts (Table 6-7). Diagnostic metal artifacts include cut (n=25) and wire (n=11) nails alongside single examples of barbed wire and an Albert Champion spark plug. Diagnostic ceramics include creamware (n=6), pearlware (n=4), and single examples of ironstone and Astbury. Diagnostic glass artifacts include milkglass (n=5), machine-made glass (n=4), and solarized glass (n=1) and machine-made glass. The single Astbury fragment is the only artifact definitively produced in the early to mid-eighteenth century. As a very early outlier, this artifact is probably indicative of a family heirloom or otherwise curated object, rather than a contemporaneous historic occupation. The prevalence of cut nails indicates that much of the onsite building activities likely occurred during the nineteenth century. The prevalence of late eighteenth to early nineteenth century ceramics indicates that the site's domestic component originated around this time. Later artifacts suggest that the site was occupied into at least the early twentieth century, but it is currently unclear when the site was abandoned. It is clear from the historic record that occupation ceased by at least the early 1970s when Piney Run Dam was constructed, but the lack of diagnostic artifacts definitively produced from the mid-twentieth century onward suggests an earlier period of abandonment.

The artifacts' horizontal distribution signifies the way in which Piney Run 2 was utilized as a farmstead, reflecting a clear division of domestic and agricultural/utilitarian spaces. The artifact signature from Locus A is much more consistent with utilitarian spaces which, as the outbuilding foundation suggest, likely embodied an agricultural character. Within Locus B, the artifacts a more clearly associated with sustained residential uses. The greatest quantity and variety of artifacts were recovered from Locus B, with substantially fewer and less diverse artifacts originating in Locus A.

In summary, this site represents an early nineteenth to early twentieth century farmstead with well-defined domestic and agricultural/utilitarian use areas. Locus A represents the focal point of agricultural actives, centered on a large barn and smaller outbuilding, while Locus B exhibits remnants of the farmstead's dwelling and its domestic epicenter. The site was omitted from nineteenth century maps, possibly due to issues of map scale and/or the farmstead's isolation, but the diagnostic artifacts strongly suggest it originated in the early nineteenth century. It is less clear when the site was abandoned. While only one artifact definitively produced during the twentieth century was recovered, numerous others have manufacturing endpoints extending well into the twentieth century. The lack of definitively mid-twentieth century artifacts may be an indication that the site was no longer occupied by this time, and it was certainly abandoned prior to the construction of Piney Run Dam in the early to mid-1970s. While it is unclear when the farmstead was abandoned, it may have occurred as the result of a fire. As noted, significant amounts of charcoal were identified in an STP within the building's interior.

The site exhibits discrete horizontal artifact patterning reflective of the distribution of its agricultural and domestic features. It likewise possesses good archaeological integrity in terms of both its intact features and artifact deposits. These considerations contribute to the site's research value, as does its broader historical/archaeological context. While nineteenth century farmsteads are a very common site type in Carroll County, relatively few have been documented within the immediate vicinity. A review of the MHT's site files and MEDUSA GIS database revealed that no historic farmsteads have been formally excavated within the Piney Run valley, though several are known to have existed. This suggests the site may be able to contribute significant information to local history, not only in terms of rural settlement generally but settlement within the Piney Run valley specifically. Throughout the nineteenth century, historic mapping indicates the site was isolated from the principal thoroughfares and the larger clusters of farmsteads to the northwest and industries/institutions to the southeast. The aspect of its setting may have driven the site's occupants to adopt particular adaptations to life in a relatively remote location, which could be evident in farming practices, consumer choice, recreational activities, and other behaviors that can leave archaeological traces.

Given the site's integrity, diverse features, meaningful artifact patterning, and research value, AECOM recommends it potentially eligible for listing in the NRHP under Criterion D. It is recommended that potential future ground disturbances avoid the site. If avoidance is not possible, a Phase II evaluation is recommended to formally determine its NRHP eligibility.

MARYLAND ARCHEOLOGICAL SITE SURVEY: HISTORIC DATA FORM

Site Number 18CR293

1. Site class (check all applicable, check at least one from each group):

a.
- X domestic
- ___ industrial
- ___ transportation
- ___ military
- ___ sepulchre
- ___ religious
- ___ commercial
- ___ educational
- X non-domestic agricultural
- ___ unknown
- ___ other: ______

b.
- ___ urban
- X rural
- ___ unknown

c. standing structure:
- ___ yes
- X no
- ___ unknown

d. above-grade/visible ruin:
- X yes
- ___ no
- ___ unknown

2. Site Type (check all applicable):
- ___ artifact concentration
- ___ possible structure
- ___ post-in-ground structure
- ___ frame structure
- ___ masonry structure
- ___ log structure
- X farmstead
- ___ plantation
- ___ townsite
- ___ road/railroad
- ___ wharf/landing
- ___ bridge
- ___ ford
- ___ mill (specify: ______)
- ___ raceway
- ___ quarry
- ___ furnace/forge
- ___ other industrial (specify): ______
- ___ battlefield
- ___ military fortification
- ___ military encampment
- ___ cemetery
- ___ unknown
- ___ other: ______

3. Ethnic Association:
- ___ Native American
- ___ African American
- ___ Angloamerican
- ___ Hispanic American
- ___ Asian American
- ___ other Euroamerican (specify): ______
- X unknown
- ___ other: ______

4. Categories of material remains present (check all applicable):
- X ceramics
- X bottle/table glass
- X other kitchen artifacts
- X architecture
- ___ furniture
- ___ arms
- ___ clothing
- X personal items
- X tobacco pipes
- ___ activity items
- ___ human skeletal remains
- ___ faunal remains
- ___ floral remains
- ___ organic remains
- ___ unknown
- ___ other: ______

5. Diagnostics (choose from manual and give number recorded or observed):

1 Astbury	11 wire nails
6 creamware	4 machine-made glass
4 pearlware	1 Albert Champion spark plug
25 cut nails	
1 ironstone	
5 milkglass lid liners	
1 solarized glass	
1 barbed wire	

Page 2 **Site Number: 18CR293**

HISTORIC DATA FORM

6. Features present:
   - __X__ yes
   - ______ no
   - ______ unknown

7. Types of features present:
   - ______ construction feature
   - __X__ foundation
   - ______ cellar hole/storage cellar
   - ______ hearth/chimney base
   - ______ posthole/postmold
   - ______ paling ditch/fence
   - ______ privy
   - __X__ well/cistern
   - ______ trash pit/dump
   - ______ sheet midden
   - ______ planting feature
   - ______ road/drive/walkway
   - ______ depression/mound
   - ______ burial
   - ______ railroad bed
   - ______ earthworks
   - ______ raceway
   - ______ wheel pit
   - ______ unknown
   - __X__ other: spring box

8. Flotation samples collected:
   - ______ yes
   - __X__ no
   - ______ unknown

   analyzed:
   - ______ yes, by ______________
   - ______ no
   - ______ unknown

9. Soil samples collected:
   - ______ yes
   - __X__ no
   - ______ unknown

   analyzed:
   - ______ yes, by ______________
   - ______ no
   - ______ unknown

10. Other analyses (specify): ______________________________

11. Additional comments:

12. Form filled out by: Pete Regan
    Address/Company: AECOM
    Date: 01/08/2020

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MARYLAND INVENTORY OF HISTORIC PROPERTIES

ARCHEOLOGICAL SITE SURVEY: BASIC DATA FORM

Date Filed: 01/08/2020

Check if update: ☐

Maryland Department of Planning
Maryland Historical Trust
Division of Historical and Cultural Programs
100 Community Place
Crownsville, Maryland 21032

Site Number: 18CR294	
County: Carroll	

A. DESIGNATION

1. Site Name: Piney Run 3

2. Alternate Site Name/Numbers: ______

3. Site Type (describe site chronology and function; see instructions):
Possible nineteenth century masonry spring box

4. Prehistoric ______ Historic X Unknown ______

5. Terrestrial X Submerged/Underwater ______ Both ______

B. LOCATION

6. USGS 7.5' Quadrangle(s): Finksburg | (For underwater sites) NOAA Chart No.:

(Photocopy section of quad or chart on page 4 and mark site location)

Latitude in decimal degrees 39.387311 Longitude in decimal degrees -76.972489

7. Maryland Archeological Research Unit Number: 14

8. Physiographic Province (check one):

______ Allegany Plateau	______ Lancaster/Frederick Lowland
______ Ridge and Valley	X Eastern Piedmont
______ Great Valley	______ Western Shore Coastal Plain
______ Blue Ridge	______ Eastern Shore Coastal Plain

9. Major Watershed/Underwater Zone (see instructions for map and list): Patapsco River

C. ENVIRONMENTAL DATA

10. Nearest Water Source: Spring feeding into Piney Run Stream Order: 1

11. Closest Surface Water Type (check all applicable):

______ Ocean	X Freshwater Stream/River
______ Estuarine Bay/Tidal River	______ Freshwater Swamp
______ Tidal or Marsh	______ Lake or Pond
	X Spring

12. Distance from closest surface water: 0 meters (or 0 feet)

C. ENVIRONMENTAL DATA [CONTINUED]

13. Current water speed: ______ knots

14. Water Depth: ______ meters

15. Water visibility: ________________

16. SCS Soils Typology and/or Sediment Type: CdA (Codorus Silt Loam)

17. Topographic Settings (check all applicable):

X Floodplain	___ Hilltop/Bluff
___ Interior Flat	___ Upland Flat
___ Terrace	___ Ridgetop
___ Low Terrace	___ Rockshelter/Cave
___ High Terrace	___ Unknown
___ Hillslope	___ Other: ______________

18. Slope: 0-3%

19. Elevation: 143 meters (or 470 feet) above sea level

20. Land use at site when last field checked (check all applicable):

___ Plowed/Tilled	___ Extractive
___ No-Till	___ Military
X Wooded/Forested	___ Recreational
___ Logging/Logged	___ Residential
___ Underbrush/Overgrown	___ Ruin
___ Pasture	___ Standing Structure
___ Cemetery	___ Transportation
___ Commercial	___ Unknown
___ Educational	___ Other: ______________

21. Condition of site:
___ Disturbed
X Undisturbed
___ Unknown

22. Cause of disturbance/destruction (check all applicable):

___ Plowed	___ Vandalized/Looted
___ Eroded/Eroding	___ Dredged
___ Graded/Contoured	___ Heavy Marine Traffic
___ Collected	___ Other: ______________

23. Extent of disturbance:
___ Minor (0-10%)
___ Moderate (10-60%)
___ Major (60-99%)
___ Total (100%)
___ % unknown

C. ENVIRONMENTAL DATA [CONTINUED]

24. Describe site setting with respect to local natural and cultural landmarks (topography, hydrology, fences, structures, roads). Use continuation sheet if needed.

    This site is centered atop a springhead on the Piney Run floodplain, abutting the steep toeslope of the forested ridges rising to the northeast. It is located on the northeast side of Piney Run, downstream from the Piney Run Dam impact basin and near to where Piney Run appears to flow in its historical channel (i.e., not the modified channel immediately below the dam). The site, which consists of a large, stone masonry spring box, was built into the floodplain where the spring emerges and exhibits no signs of any nearby occupation or dedicated access road/trail. A historic road trace is located on the slopes above the site, but it does not appear to have provided access historically. This road trace continues an unknown distance southeast as it follows Piney Run toward what is now Maryland Route 32. It tracks northwest but vanishes as it approaches areas heavily impacted by dam construction.

25. Characterize site stratigraphy. Include a representative profile on separate sheet, if applicable. Address plowzone (presence/absence), subplowzone features and levels, if any, and how stratigraphy affects site integrity. Use continuation sheet if needed.

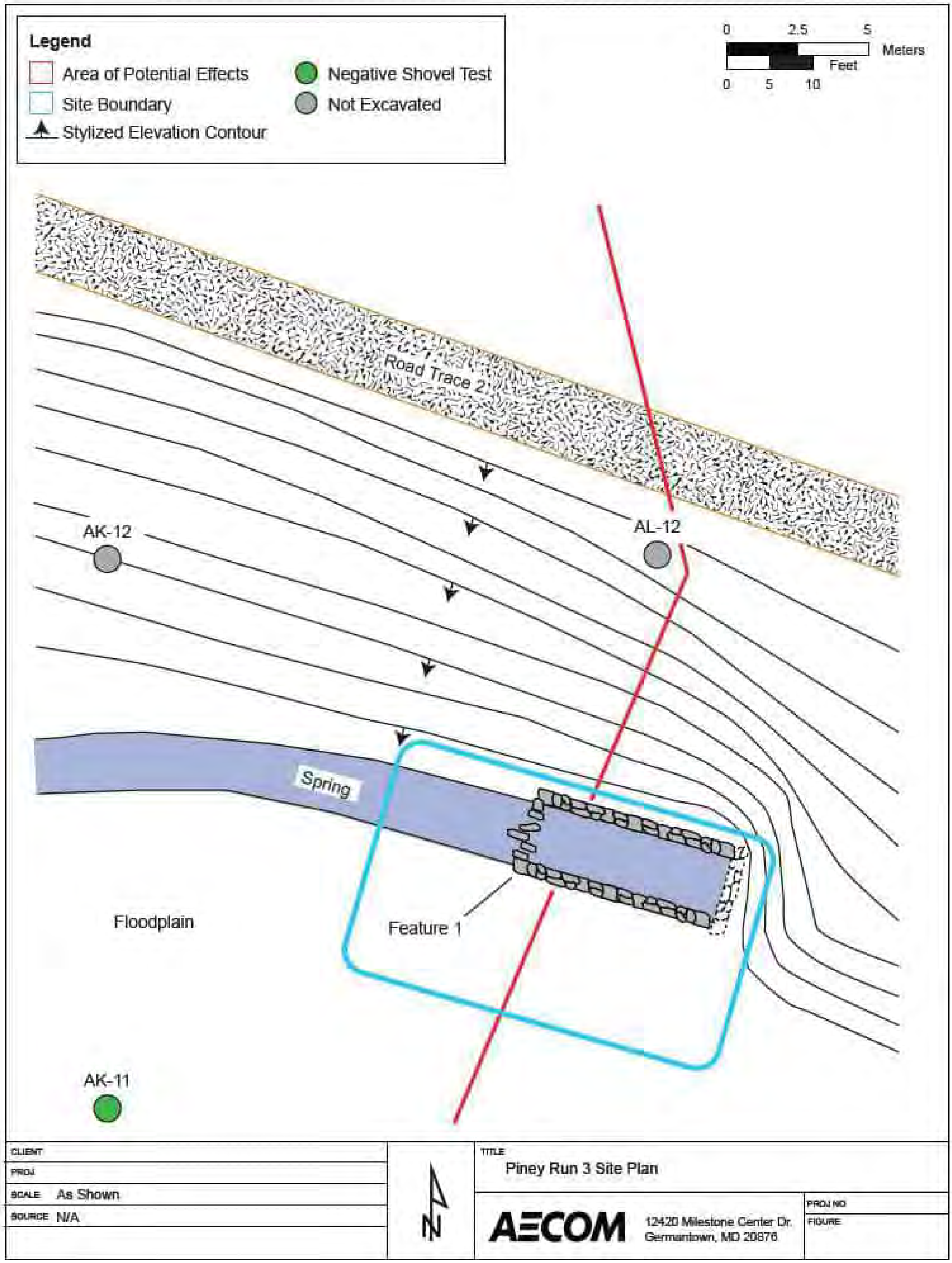
    Terrain and soil conditions precluded STP excavation, as it was surrounded by either excessive slopes or the saturated floodplain.

26. Site size: 14 meters by 9 meters (or 46 feet by 30 feet)

Site Number: 18CR294 **Page 3a**

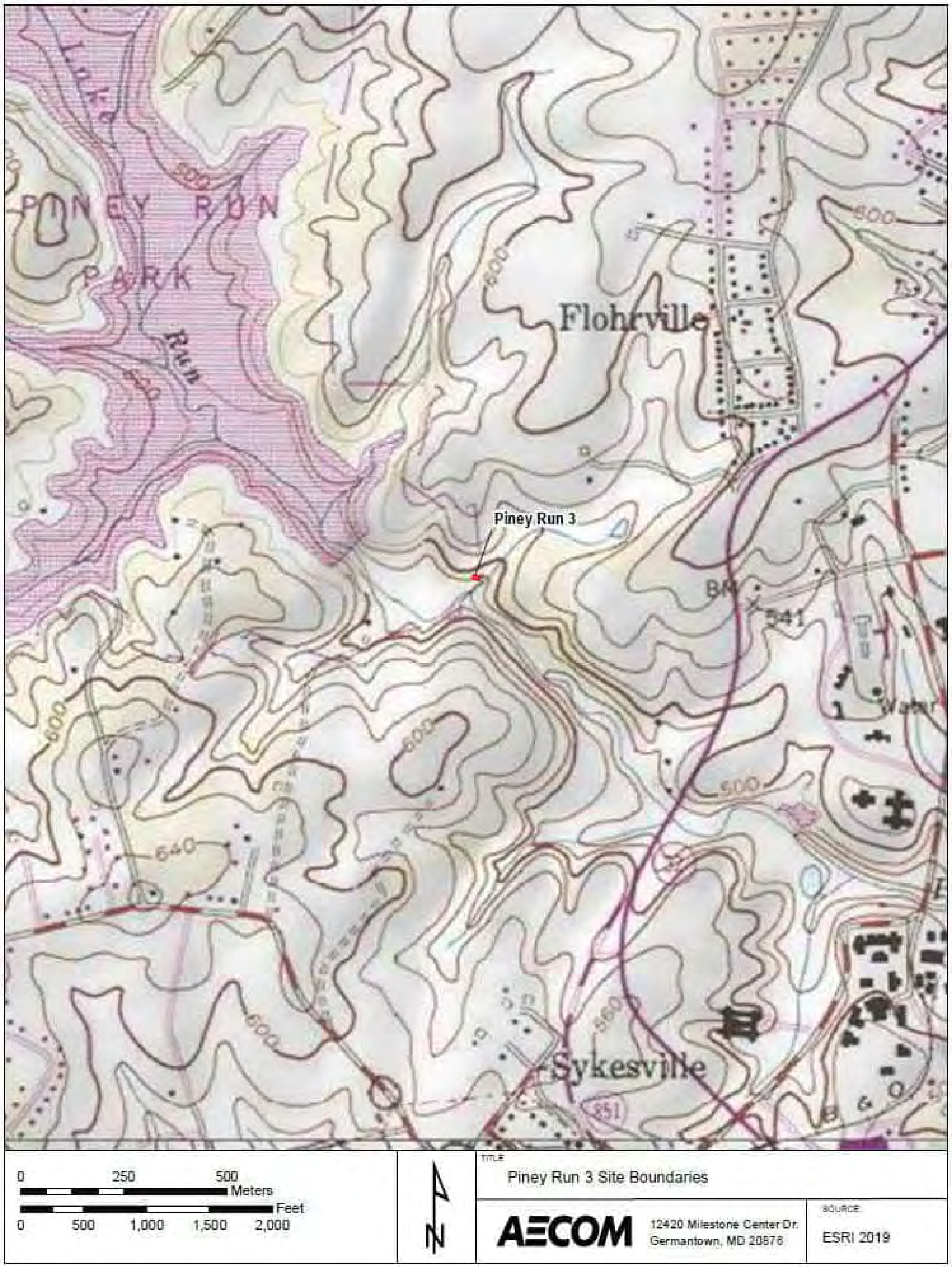
BASIC DATA FORM

27. Draw a sketch map of the site and immediate environs, here or on separate sheet:



Scale: North arrow:

Photocopy section of quadrangle map(s) and mark site location with heavy dot or circle and arrow pointing to it.



D. CONTEXT

28. Cultural Affiliation (check all applicable):

PREHISTORIC
_______ Unknown
_______ Paleoindian
_______ Archaic
_______ Early Archaic
_______ Middle Archaic
_______ Late Archaic
_______ Terminal Archaic
_______ Woodland
_______ Adena
_______ Early Woodland
_______ Middle Woodland
_______ Late Woodland

_______ CONTACT

HISTORIC:
__X__ Unknown
17th century
_______ 1630-1675
_______ 1676-1720
18th century
_______ 1721-1780
_______ 1781-1820
19th century
_______ 1821-1860
_______ 1861-1900
20th century
_______ 1901-1930
_______ post-1930

____ UNKNOWN

E. INVESTIGATIVE DATA

29. Type of investigation:
__X__ Phase I
_______ Phase II/Site Testing
_______ Phase III/Excavation
_______ Archival Investigation
_______ Monitoring
_______ Field Visit
_______ Collection/Artifact Inventory
_______ Report From Informant
_______ Other:
____

30. Purpose of investigation:
__X__ Compliance
_______ Research
_______ Avocational
_______ Regional Survey
_______ Site Inventory
_______ MHT Grant Project
_______ Other:
____

31. Method of sampling (check all applicable):
_______ Non-systematic surface search
__X__ Systematic surface collection
_______ Non-systematic shovel test pits
_______ Systematic shovel test pits
_______ Excavation units
_______ Mechanical excavation
_______ Remote sensing
_______ Other:
____

32. Extent/nature of excavation: Site could not be excavated due to surrounding adjacent excessive slopes and adjacent saturated floodplain. Site was subjected to pedestrian inspection and photographic/narrative/mapping documentation only.

F. SUPPORT DATA

33. Accompanying Data Form(s):
_______ Prehistoric
__X__ Historic
_______ Shipwreck

34. Ownership: _______ Private _______ Federal _______ State __X__ Local/County
_______ Unknown

35. Owner(s): County Commissioners of Carroll County
 Address: 225 North Center Street, Westminster, MD 21157
 Phone: ______
 Email: ______

36. Tenant and/or Local Contact: ______
 Address: ______
 Phone: ______
 Email: ______

37. Other Known Investigations: ______

38. Primary report reference or citation: Regan, Pete (2020) *Phase I Archaeological Investigation for the Piney Run Watershed Study, Piney Run Dam, Carroll County, Maryland.* (AECOM)

39. Other Records (e.g. slides, photos, original field maps/notes, sonar, magnetic record)?

___ Slides	X Field record	___ Other: ___
X Photos	___ Sonar	
X Field maps	___ Magnetic record	

40. If yes, location of records: AECOM, Germantown

41. Collections at Maryland Archeological Conservation (MAC) Lab or to be deposited at MAC Lab?
 X Yes
 ___ No
 ___ Unknown

42. If NO or UNKNOWN, give owner: ______
 location: ______
 and brief description of collection: ______

43. Informant: ______
 Address: ______
 Phone: ______
 Email: ______

44. Site visited by Pete Regan
 Company/Group name: AECOM
 Address: 12420 Milestone Center Drive, Germantown, MD 20876
 Phone: 301-944-2554
 Email: peter.regan@aecom.com Date: 12/06/2019

45. Form filled out by: Pete Regan
 Company/Group name: AECOM
 Address: 12420 Milestone Center Drive, Germantown, MD 20876
 Phone: 301-944-2554
 Email: peter.regan@aecom.com Date: 01/08/2020

46. Site Summary/Additional Comments (append additional pages if needed):

This site is centered atop a springhead on the Piney Run floodplain, abutting the steep toeslope of the forested ridges rising to the northeast. It is located on the northeast side of Piney Run, downstream from the Piney Run Dam impact basin and near to where Piney Run appears to flow in its historical channel (i.e., not the modified channel immediately below the dam). The site, which consists of a large, stone masonry spring box, was built into the floodplain where the spring emerges and exhibits no signs of any nearby occupation or dedicated access road/trail. A historic road trace is located on the slopes above the site, but it does not appear to have provided access historically. This road trace continues an unknown distance southeast as it follows Piney Run toward what is now Maryland Route 32. It tracks northwest but vanishes as it approaches areas heavily impacted by dam construction.

The site is defined by Feature 1, a large, open-top stone spring box constructed around a springhead that emerges on the floodplain at the base of the slopes. Measuring 7.5 m (24.6 ft) long and 3.3 m (10.8 ft), the north and east walls of Feature 1 rise up to 1 m (3.3 ft) to meet the grade of the slopes while the south wall rises up to 0.5 m (1.6 ft) to meet the grade of the surrounding floodplain. While these three walls remain intact, the west wall has partially collapsed, allowing the spring to flow through its rubble. The entirety of Feature 1 is constructed of randomly coursed phyllite rubble with some large cut blocks. The stonework appears to have been dry set, though it is possible that it could have been bonded in a lime/sand mortar that has since deteriorated. Feature 1 may have possessed a roof at one time to protect the spring head from leaf litter accumulation, but no evidence for such was observed. The feature’s construction materials tentatively suggest a nineteenth century or earlier construction date.

No artifacts were found at the site, though ground conditions precluded excavation within the vicinity of the site. STPs could not be placed south or west of Feature 1 due to surface water on the floodplain, nor could they be placed north due to excessive slope or east due to the APE boundary. The ground surface was closely inspected for artifacts and cultural features, but no additional resources were identified. This may be expected, as spring boxes were not necessarily sited in the immediate proximity of a historic occupation. Rather, these ancillary features had to be constructed wherever clean groundwater emerged, often in sloped or flooded areas unsuitable for sustained habitation.

Historic maps revealed no evidence for any buildings within the vicinity of the site, though this does not necessarily mean it was unoccupied. This portion of the Piney Run valley appears to have been relatively isolated during the nineteenth and early twentieth centuries, so it is possible that contemporaneous map makers simply chose not to travel into the area to survey it. Historically documented occupations in the broader area include farmsteads, mines, and mills, and it is possible that this site served as a water supply to a more local industrial and/or domestic occupation. The spring box’s relatively large size could be an indication that it provided drinking water to more than one occupation.

While the site includes a relatively intact structural feature indicative of a discrete activity area dedicated to water extraction, it possesses no artifacts or clear associations with any observed or historically documented occupations. Lacking a more fully defined context, the site possesses limited interpretational value beyond what has already been discerned. Given these considerations, AECOM recommends it not eligible for listing in the NRHP as it lacks the informational potential required to satisfy Criterion D and lacks the associative values necessary to satisfy Criteria A, B, and/or C. No additional work is recommended.

MARYLAND ARCHEOLOGICAL SITE SURVEY: HISTORIC DATA FORM

Site Number 18CR294

1. Site class (check all applicable, check at least one from each group):

a. ______ domestic
______ industrial
______ transportation
______ military
______ sepulchre
______ religious
______ commercial
______ educational
______ non-domestic agricultural
______ unknown
___X__ other:
water extraction (spring box)

b. ______urban
___X__ rural
______ unknown

c. standing structure:
______ yes
___X__ no
______ unknown

d. above-grade/visible ruin:
___X__ yes
______no
______ unknown

2. Site Type (check all applicable):

______ artifact concentration
______ possible structure
______ post-in-ground structure
______ frame structure
___X__ masonry structure
______ log structure
______ farmstead
______ plantation
______ townsite
______ road/railroad
______ wharf/landing
______ bridge
______ ford
______ mill (specify:____________________)
______ raceway
______ quarry
______ furnace/forge
______ other industrial (specify):
____
______ battlefield
______ military fortification
______ military encampment
______ cemetery
______ unknown
______ other:__________________________

3. Ethnic Association:

______Native American
______ African American
______ Angloamerican
______ Hispanic American
______ Asian American
______ other Euroamerican (specify):
____
___X__ unknown
______ other:
____

4. Categories of material remains present (check all applicable):

______ ceramics
______ bottle/table glass
______ other kitchen artifacts
______ architecture
______ furniture
______ arms
______ clothing
______ personal items
______ tobacco pipes
______ activity items
______ human skeletal remains
______ faunal remains
______ floral remains
______ organic remains
______ unknown
______ other:
____

5. Diagnostics (choose from manual and give number recorded or observed):

6. Features present:
 X yes
 ___ no
 ___ unknown

7. Types of features present:

___ construction feature
___ foundation
___ cellar hole/storage cellar
___ hearth/chimney base
___ posthole/postmold
___ paling ditch/fence
___ privy
___ well/cistern
___ trash pit/dump
___ sheet midden
___ planting feature
___ road/drive/walkway
___ depression/mound
___ burial
___ railroad bed
___ earthworks
___ raceway
___ wheel pit
___ unknown
 X other:
spring box

8. Flotation samples collected:
___ yes
 X no
___ unknown

analyzed:
___ yes, by ______
___ no
___ unknown

9. Soil samples collected:
___ yes
 X no
___ unknown

analyzed:
___ yes, by ______
___ no
___ unknown

10. Other analyses (specify): ______

11. Additional comments:

12. Form filled out by: Pete Regan
Address/Company: AECOM
Date: 01/08/2020

MARYLAND INVENTORY OF HISTORIC PROPERTIES

ARCHEOLOGICAL SITE SURVEY: BASIC DATA FORM

Date Filed: 01/08/2020

Check if update: ☐

Maryland Department of Planning
Maryland Historical Trust
Division of Historical and Cultural Programs
100 Community Place
Crownsville, Maryland 21032

Site Number: 18CR295	
County: Carroll	

A. DESIGNATION

1. Site Name: Piney Run 4

2. Alternate Site Name/Numbers: ______

3. Site Type (describe site chronology and function; see instructions):
Possible nineteenth to early/mid-twentieth century domestic occupation

4. Prehistoric ______ Historic X Unknown ______

5. Terrestrial X Submerged/Underwater ______ Both ______

B. LOCATION

6. USGS 7.5' Quadrangle(s): Finksburg | (For underwater sites) NOAA Chart No.:

(Photocopy section of quad or chart on page 4 and mark site location)

Latitude in decimal degrees 39.386403 Longitude in decimal degrees -76.980847

7. Maryland Archeological Research Unit Number: 14

8. Physiographic Province (check one):

______ Allegany Plateau
______ Ridge and Valley
______ Great Valley
______ Blue Ridge
______ Lancaster/Frederick Lowland
X Eastern Piedmont
______ Western Shore Coastal Plain
______ Eastern Shore Coastal Plain

9. Major Watershed/Underwater Zone (see instructions for map and list): Patapsco River

C. ENVIRONMENTAL DATA

10. Nearest Water Source: Piney Run Reservoir Stream Order: 2

11. Closest Surface Water Type (check all applicable):

______ Ocean
______ Estuarine Bay/Tidal River
______ Tidal or Marsh
X Freshwater Stream/River
______ Freshwater Swamp
X Lake or Pond
______ Spring

12. Distance from closest surface water: 175 meters (or 574 feet)

C. ENVIRONMENTAL DATA [CONTINUED]

13. Current water speed: ______ knots

14. Water Depth: ______ meters

15. Water visibility: ________________

16. SCS Soils Typology and/or Sediment Type: GdB (Glenelg Loam)

17. Topographic Settings (check all applicable):

_______ Floodplain
_______ Interior Flat
_______ Terrace
_______ Low Terrace
_______ High Terrace
_______ Hillslope
X Hilltop/Bluff
_______ Upland Flat
_______ Ridgetop
_______ Rockshelter/Cave
_______ Unknown
_______ Other: ______________

18. Slope: 2%

19. Elevation: 178 meters (or 585 feet) above sea level

20. Land use at site when last field checked (check all applicable):

_______ Plowed/Tilled
_______ No-Till
X Wooded/Forested
_______ Logging/Logged
_______ Underbrush/Overgrown
_______ Pasture
_______ Cemetery
_______ Commercial
_______ Educational
_______ Extractive
_______ Military
_______ Recreational
_______ Residential
_______ Ruin
_______ Standing Structure
_______ Transportation
_______ Unknown
_______ Other: ______________

21. Condition of site:

_______ Disturbed
_______ Undisturbed
X Unknown

22. Cause of disturbance/destruction (check all applicable):

_______ Plowed
_______ Eroded/Eroding
_______ Graded/Contoured
_______ Collected
_______ Vandalized/Looted
_______ Dredged
_______ Heavy Marine Traffic
_______ Other: ______________

23. Extent of disturbance:

_______ Minor (0-10%)
_______ Moderate (10-60%)
_______ Major (60-99%)
_______ Total (100%)
_______ % unknown

C. ENVIRONMENTAL DATA [CONTINUED]

24. Describe site setting with respect to local natural and cultural landmarks (topography, hydrology, fences, structures, roads). Use continuation sheet if needed.

    The site is located on a forested hill summit that gently slopes down to the northwest to the Piney Run Reservoir. It is located approximately 75 meters northwest of the end of the paved portion of Hollenberry Road and 95 meters northeast of a small, modern residential development on Carroll Street. The site includes the remnants of a stone foundation that could not be investigated due to its location beyond the APE. It could be seen from the edge of the APE and approximately mapped, potentially coinciding with a residence first mapped in 1944 (though the stone foundation clearly indicates it was constructed considerably earlier than that). No road traces were observed that would have provided access to the site, and no other above-ground features were evident.

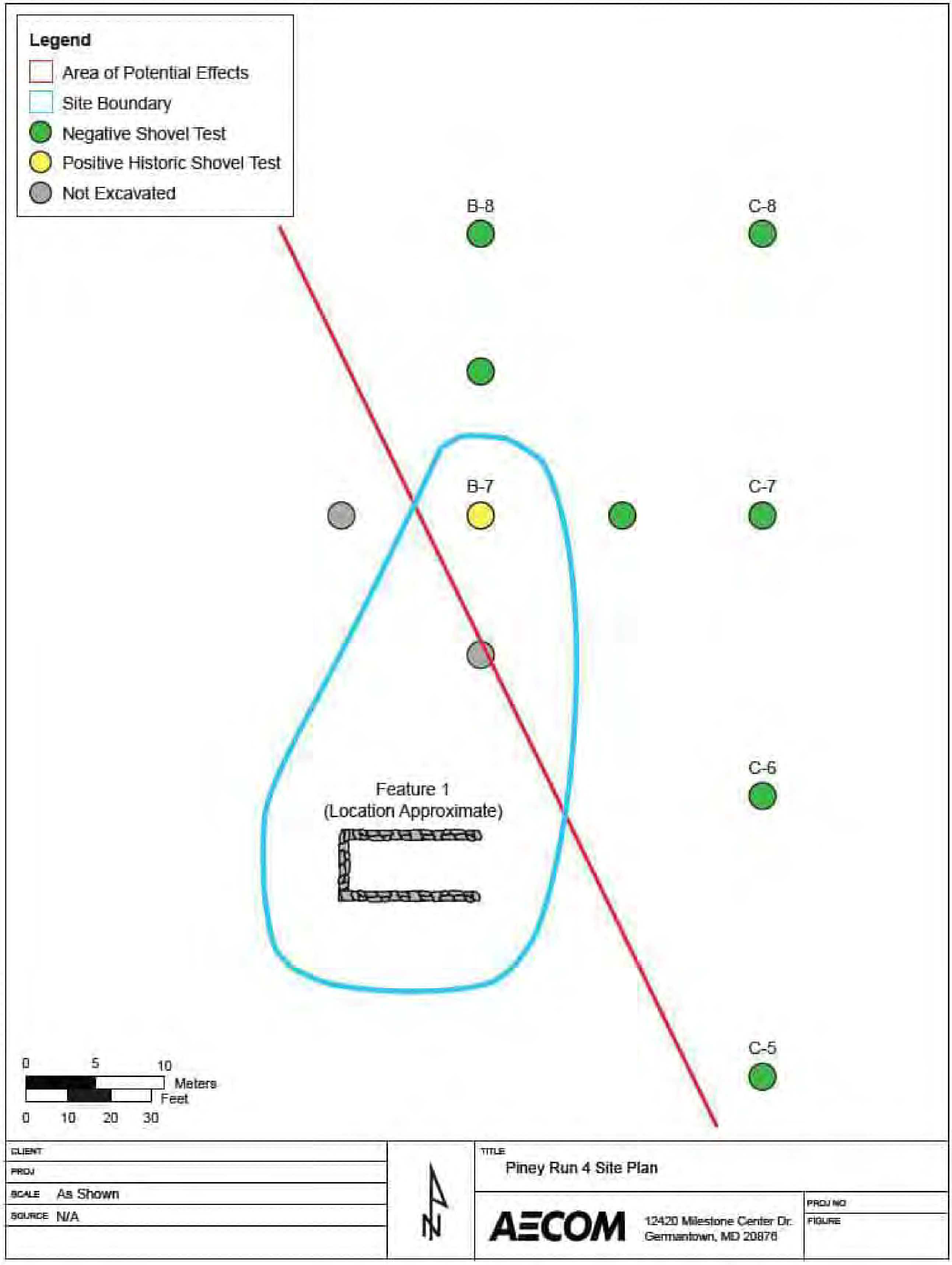
25. Characterize site stratigraphy. Include a representative profile on separate sheet, if applicable. Address plowzone (presence/absence), subplowzone features and levels, if any, and how stratigraphy affects site integrity. Use continuation sheet if needed.

    The only positive STP within Piney Run 4, B-7, was located approximately 25 m (82 ft) north of the foundation and revealed two strata. Stratum I was a 26-cm (0.85-ft) thick brown (7.5YR 4/3) silt loam Ap horizon overlying a strong brown (7.5YR 5/6) silty clay loam B horizon extending to the base of excavation. No obvious signs of modern disturbance were observed

26. Site size: __40____ meters by __20____ meters (or __131___ feet by 66____ feet)

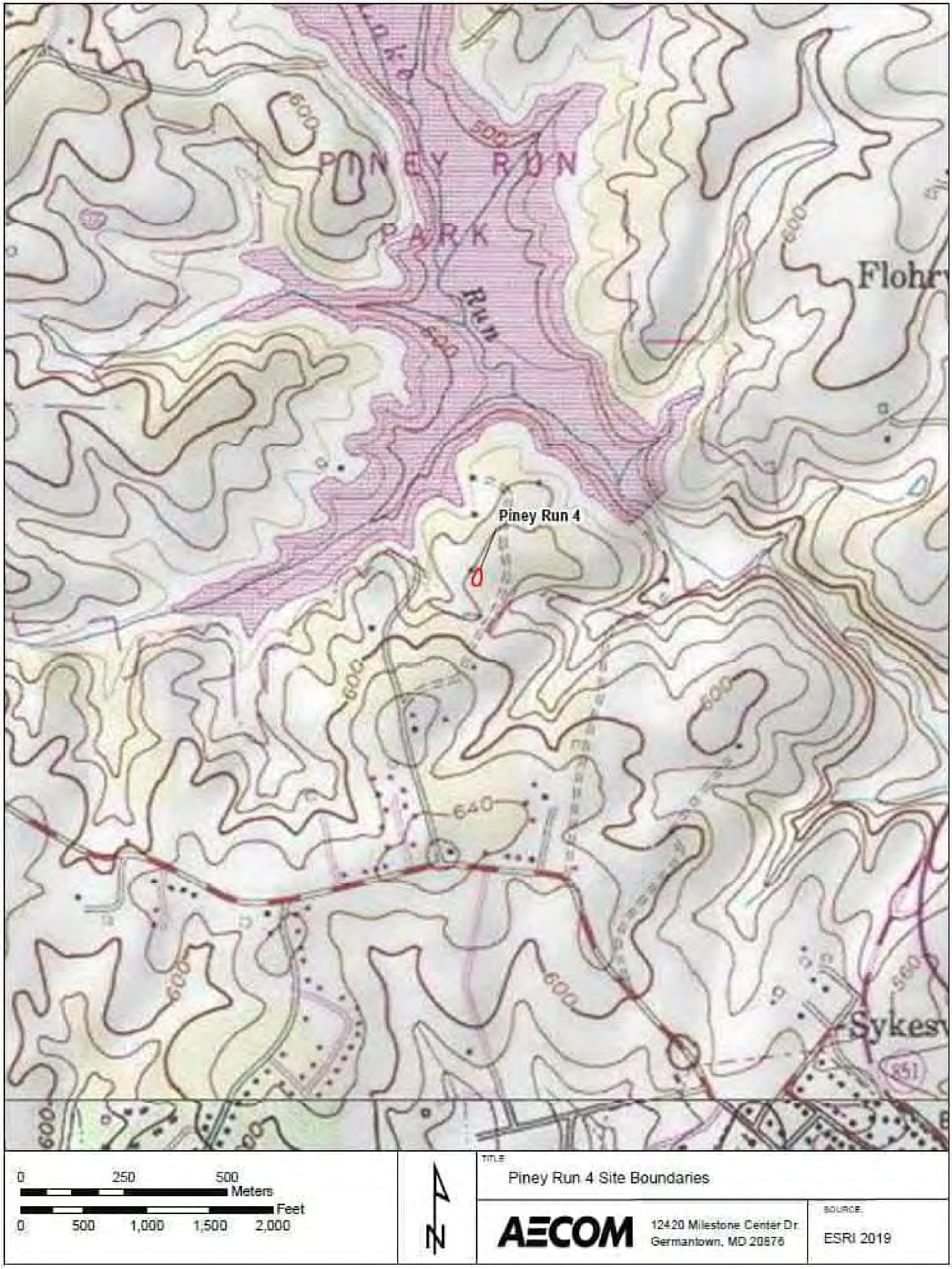
Site Number: 18CR295 **Page 3a**
BASIC DATA FORM

27. Draw a sketch map of the site and immediate environs, here or on separate sheet:



Scale: North arrow:

Photocopy section of quadrangle map(s) and mark site location with heavy dot or circle and arrow pointing to it.



D. CONTEXT

28. Cultural Affiliation (check all applicable):

PREHISTORIC
_______ Unknown
_______ Paleoindian
_______ Archaic
_______ Early Archaic
_______ Middle Archaic
_______ Late Archaic
_______ Terminal Archaic
_______ Woodland
_______ Adena
_______ Early Woodland
_______ Middle Woodland
_______ Late Woodland

_______ CONTACT

HISTORIC:
_______ Unknown
17th century
_______ 1630-1675
_______ 1676-1720
18th century
_______ 1721-1780
_______ 1781-1820
19th century
_______ 1821-1860
___X___ 1861-1900
20th century
___X___ 1901-1930
_______ post-1930

____ UNKNOWN

E. INVESTIGATIVE DATA

29. Type of investigation:
____X__ Phase I
_______ Phase II/Site Testing
_______ Phase III/Excavation
_______ Archival Investigation
_______ Monitoring
_______ Field Visit
_______ Collection/Artifact Inventory
_______ Report From Informant
_______ Other: _______________

30. Purpose of investigation:
____X__ Compliance
_______ Research
_______ Avocational
_______ Regional Survey
_______ Site Inventory
_______ MHT Grant Project
_______ Other: _______________

31. Method of sampling (check all applicable):
_______ Non-systematic surface search
____X__ Systematic surface collection
_______ Non-systematic shovel test pits
____X__ Systematic shovel test pits
_______ Excavation units
_______ Mechanical excavation
_______ Remote sensing
_______ Other: _______________

32. Extent/nature of excavation: Three STPs were excavated at 10-meter intervals to delineate the very small portion of the site within the APE, only one of which was positive. The site core, presumably collocated with a stone foundation observed beyond the APE boundary, could not be investigated during the current study.

F. SUPPORT DATA

33. Accompanying Data Form(s):
________ Prehistoric
______X__ Historic
________ Shipwreck

34. Ownership: _______ Private ________ Federal ________ State ___X____ Local/County _______ Unknown

35. Owner(s): County Commissioners of Carroll County
Address: 225 North Center Street, Westminster, MD 21157
Phone: ______
Email: ______

36. Tenant and/or Local Contact: ______
Address: ______
Phone: ______
Email: ______

37. Other Known Investigations: ______

38. Primary report reference or citation: Regan, Pete (2020) *Phase I Archaeological Investigation for the Piney Run Watershed Study, Piney Run Dam, Carroll County, Maryland.* (AECOM)

39. Other Records (e.g. slides, photos, original field maps/notes, sonar, magnetic record)?
___ Slides
X Photos
X Field maps
X Field record
___ Sonar
___ Magnetic record
___ Other: ___

40. If yes, location of records: AECOM, Germantown

41. Collections at Maryland Archeological Conservation (MAC) Lab or to be deposited at MAC Lab?
X Yes
___ No
___ Unknown

42. If NO or UNKNOWN, give owner: ______
location: ______
and brief description of collection: ______

43. Informant: ______
Address: ______
Phone: ______
Email: ______

44. Site visited by Pete Regan
Company/Group name: AECOM
Address: 12420 Milestone Center Drive, Germantown, MD 20876
Phone: 301-944-2554
Email: peter.regan@aecom.com Date: 12/06/2019

45. Form filled out by: Pete Regan
Company/Group name: AECOM
Address: 12420 Milestone Center Drive, Germantown, MD 20876
Phone: 301-944-2554
Email: peter.regan@aecom.com Date: 01/08/2020

46. Site Summary/Additional Comments (append additional pages if needed):

The site is located on a forested hill summit that gently slopes down to the northwest to the Piney Run Reservoir. It is located approximately 75 meters northwest of the end of the paved portion of Hollenberry Road and 95 meters northeast of a small, modern residential development on Carroll Street. The site includes the remnants of a stone foundation that could not be investigated due to its location beyond the APE (Feature 1). It could be seen from the edge of the APE and approximately mapped, potentially coinciding with a residence first mapped in 1944 (though the stone foundation clearly indicates it was constructed considerably earlier than that). No road traces were observed that would have provided access to the site, and no other above-ground features were evident.

The site is defined by one positive STP as well as Feature 1, which was photographed, but was not measured, drawn, or subjected to any pedestrian/subsurface investigation since it was not located within the APE. The rectilinear foundation is oriented roughly east-west along its long axis and appears to measure approximately 5 by 10 m (16.4 by 33 ft). Its west, north, and south walls were clearly visible, extending up to approximately 1 m (3.3 ft) above the forest floor. An opening in the west wall may be a doorway. No evidence for an east wall was observed, though it could be obscured by vegetation. The walls appear to be constructed of randomly coursed phyllite rubble with one entry piercing the west wall. Disarticulated sheet and piped metal objects could be seen within the foundation, but they could not be identified without closer inspection. The historically rural character of the local area suggests this may be the foundation of a dwelling, barn, or other agricultural outbuilding. The opening in the west wall could be a cellar access point, in which case Feature 1 may represent a dwelling foundation.

The only positive STP within Piney Run 4 was located approximately 25 m (82 ft) north of Feature 1. Four historic artifacts were collected from the A/Ap horizon in this STP, including one piece of machine-made bottle glass (1893+) and three wire nails (1890+). The artifacts' limited quantity and variety does not provide significant information into the use and occupation of Piney Run 1, though they do indicate that the site was occupied around the turn of the twentieth century or later.

According to historic mapping, a building was present within the vicinity of this site by at least 1944. The use of a stone foundation almost certainly predates 1944 by a considerable margin, suggesting that this site may have been omitted from earlier mapping. The building shown in 1944 was again illustrated on a 1953 USGS map, where it was shown as a Class 1 dwelling. Given the rural agrarian nature of the surrounding community, this almost certainly represents a dwelling. Whether Feature 1 was the foundation of this dwelling or an associated outbuilding presently is unclear.

Only the periphery of this site was located within the APE. The site core, which presumably lies in the direction of Feature 1, could not be investigated during the current study. The site's nature, age, and overall integrity therefore remain unknown at this time. Given that the site could not be more thoroughly investigated, AECOM cannot make a recommendation of potential NRHP eligibility. Additional work is recommended to determine potential eligibility in the event ground disturbance is anticipated.

MARYLAND ARCHEOLOGICAL SITE SURVEY: HISTORIC DATA FORM

Site Number 18CR295

1. Site class (check all applicable, check at least one from each group):

a.
- ______ domestic
- ______ industrial
- ______ transportation
- ______ military
- ______ sepulchre
- ______ religious
- ______ commercial
- ______ educational
- ______ non-domestic agricultural
- __X__ unknown
- ______ other: ____________

b.
- ______ urban
- __X__ rural
- ______ unknown

c. standing structure:
- ______ yes
- __X__ no
- ______ unknown

d. above-grade/visible ruin:
- __X__ yes
- ______ no
- ______ unknown

2. Site Type (check all applicable):
- ______ artifact concentration
- ______ possible structure
- ______ post-in-ground structure
- __X__ frame structure
- ______ masonry structure
- ______ log structure
- ______ farmstead
- ______ plantation
- ______ townsite
- ______ road/railroad
- ______ wharf/landing
- ______ bridge
- ______ ford
- ______ mill (specify: ____________)
- ______ raceway
- ______ quarry
- ______ furnace/forge
- ______ other industrial (specify): ____________
- ______ battlefield
- ______ military fortification
- ______ military encampment
- ______ cemetery
- ______ unknown
- ______ other: ____________

3. Ethnic Association:
- ______ Native American
- ______ African American
- ______ Angloamerican
- ______ Hispanic American
- ______ Asian American
- ______ other Euroamerican (specify): ____________
- __X__ unknown
- ______ other: ____________

4. Categories of material remains present (check all applicable):
- ______ ceramics
- __X__ bottle/table glass
- ______ other kitchen artifacts
- __X__ architecture
- ______ furniture
- ______ arms
- ______ clothing
- ______ personal items
- ______ tobacco pipes
- ______ activity items
- ______ human skeletal remains
- ______ faunal remains
- ______ floral remains
- ______ organic remains
- ______ unknown
- ______ other: ____________

5. Diagnostics (choose from manual and give number recorded or observed):

1 machine-made glass
3 wire nails

Page 2 **Site Number: 18CR295**
HISTORIC DATA FORM

6. Features present:
   - __X__ yes
   - ______ no
   - ______ unknown

7. Types of features present:
   - ______ construction feature
   - __X__ foundation
   - ______ cellar hole/storage cellar
   - ______ hearth/chimney base
   - ______ posthole/postmold
   - ______ paling ditch/fence
   - ______ privy
   - ______ well/cistern
   - ______ trash pit/dump
   - ______ sheet midden
   - ______ planting feature
   - ______ road/drive/walkway
   - ______ depression/mound
   - ______ burial
   - ______ railroad bed
   - ______ earthworks
   - ______ raceway
   - ______ wheel pit
   - ______ unknown
   - ______ other: ____________________

8. Flotation samples collected:
   - ______ yes
   - __X__ no
   - ______ unknown

   analyzed:
   - ______ yes, by ______________
   - ______ no
   - ______ unknown

9. Soil samples collected:
   - ______ yes
   - __X__ no
   - ______ unknown

   analyzed:
   - ______ yes, by ______________
   - ______ no
   - ______ unknown

10. Other analyses (specify):_________________________

11. Additional comments:

12. Form filled out by: Pete Regan
    Address/Company: AECOM
    Date: 01/08/2020

AECOM

PHASE II ARCHAEOLOGICAL EVALUATION OF SITE 18CR293

Piney Run Watershed
Carroll County, Maryland

Carroll County Bureau of Resource Management

AECOM Project Number: 60614688

February 2024

Delivering a better world

Quality information

Prepared by	Checked by	Verified by	Approved by
Christine Nestleroth, RPA Heather Crowl, RPA Sarah Traum Christina Sabol	Heather Crowl	Scott Seibel	

Revision History

Revision	Revision date	Details	Authorized	Name	Position

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February 2024

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Abstract

Under contract to the Carroll County Bureau of Resource Management (BRM), AECOM conducted a Phase II archaeological survey in support of the Piney Run Watershed Study at Piney Run Dam, Carroll County, Maryland. The BRM initiated this study to develop a Watershed Project Plan as the initial phase of work ultimately intended to mitigate design deficiencies identified at the Piney Run Dam. The Area of Potential Effects (APE) for the current archaeological study comprises approximately 20.47 hectares (50.58 acres) generally east, west, and south of the dam. This study was initiated to assist the BRM in meeting regulatory obligations under Section 106 of the National Historic Preservation Act of 1966, as amended. In 2019, AECOM completed a Phase I survey of the APE, resulting in identification of four archaeological sites (18CR292, 18CR293, 18CR294, and 18CR295). Sites 18CR292 and 18CR294 were determined to be not eligible for the National Register of Historic Places (NRHP), and 18CR295 was determined to be outside of the APE. Site 18CR293 was recommended potentially eligible based on the presence of features and artifacts spanning the nineteenth century. The goal of this Phase II investigation was to evaluate the eligibility of site 18CR293 for the NRHP.

The evaluation consisted of the excavation of 22 shovel test pits (STPs) and nine test units (TUs) and resulted in the recovery of one prehistoric and 7,089 historic artifacts. Site 18CR293, located immediately southeast of the dam's emergency spillway, represents a small nineteenth to early twentieth century farmstead. Features included a possible silo foundation, two barn/outbuilding foundations, a road/ driveway, a spring box, and remnants of a dwelling foundation, with features arranged into two discrete activity loci segregating agricultural from domestic site uses. Artifacts spanning the late eighteenth through twentieth century were recovered, with most found in the vicinity of the house. The house appears to have been a frame building resting on a stacked stone foundation with a stone chimney and brick hearth on the north side. At some point a standing-seam metal roof had been added. The house had been built into the hill side. A review of archival records suggests the house was occupied by farm hands and/or tenant farmers and not the property owners.

Artifacts were not well stratified, and the deposit appears primarily associated with the demise of the house and refuse disposal on the slope. Investigation in the dwelling showed that the former stacked stone foundation had deteriorated with no intact foundation or subsurface features remaining. While the stone and concrete outbuilding foundations remain intact, artifact deposits in this area were minimal and primarily consisted of machine-made bottle glass and wire nails. The site does not have potential to yield significant information about area history and the lives of the people who lived and worked on the site. Site 18CR293 is recommended not eligible for the NRHP and no further investigation is recommended.

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Tables

Figures

TABLE OF CONTENTS

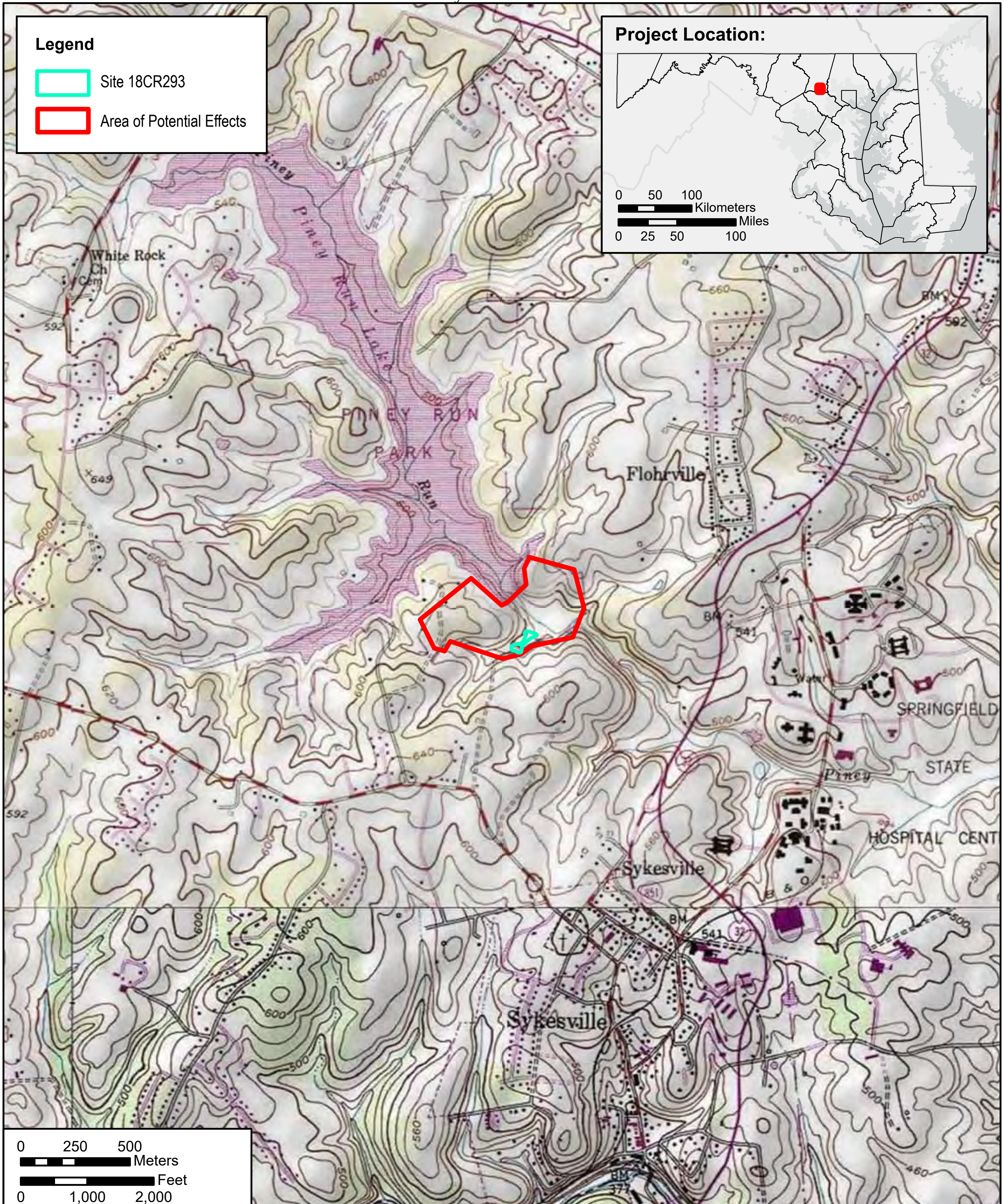
1. Introduction

Carroll County Bureau of Resource Management (BRM) contracted AECOM to conduct a Phase II archaeological evaluation of 18CR293 in support of the Piney Run Watershed Study, located at Piney Run Dam, Carroll County, Maryland (Figure 1-1). This investigation was undertaken as part of a broader initiative to mitigate design deficiencies that have become apparent in the dam. The Area of Potential Effects (APE) encompasses approximately 20.47 hectares (50.58 acres) generally east, west, and south of Piney Run Dam (Figure 1-2). The APE is located within Maryland Archaeological Research Unit 14, Patapsco-Back-Middle Drainages (Figure 1-3). AECOM identified 18CR293 during Phase I survey of the APE in 2019 and recommended the site potentially eligible for the National Register of Historic Places (NRHP; Regan 2020).

The goal of the Phase II investigation was to determine the eligibility of site 18CR293 for listing in the NRHP. The undertaking is federally funded and requires federal permits, making it subject to Section 106 of the National Historic Preservation Act of 1966, as amended. All work was conducted in accordance with the Maryland Historical Trust's (MHT) Standards and Guidelines for Archaeological Investigations in Maryland (Shaffer and Cole 1994), the Standards and Guidelines for Archaeological Investigations in Maryland, Technical Update #1 (Morehouse et al. 2018), and the Secretary of the Interior's Standards and Guidelines for Curation (36 CFR 79).

Archaeological field investigations were conducted from October 2 to 13, 2023 within the 0.83-acre site. Heather Crowl served as the Principal Investigator, and Christine Nestleroth was the Field Director. Amanda Valko, William Russo, Charles Simpson, and Layla Meyers served as field technicians. Carolyn Horlacher served as Laboratory Director, and Maddie Penney served as Lab technician. Nina Shinn Polizze and Kate McCormick served as the geographic information systems (GIS) specialists. Sarah Traum and Christina Sabol conducted archival research. All key personnel meet the Secretary of the Interior's Professional Qualification Standards for Archaeology and Architectural History (36 CFR 61).

Following this Introduction, the report includes seven sections of text: Environmental Setting, Cultural Context, Previous Investigations, Research Design, Results, Summary and Recommendations, and References Cited. Appendix A contains the Qualifications of the Investigators, and Appendix B contains the Artifact Catalog.



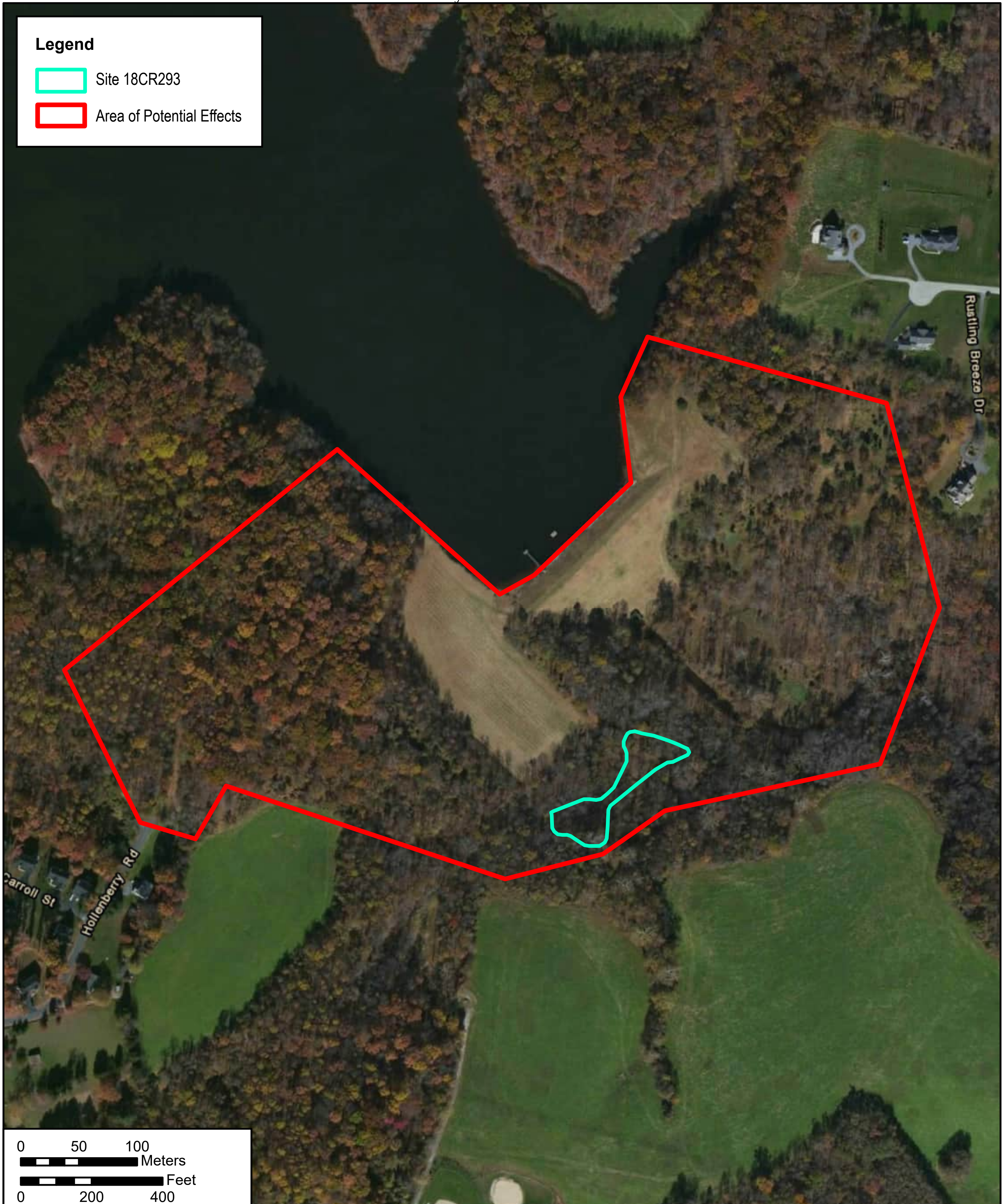
CLIENT: Carroll County Bureau of Resource Management
PROJECT: Piney Run Phase II
SCALE: 1:24,000
SOURCE: ESRI 2019
L:\Legacy\Projects\MD\Piney_Run\

N

TITLE
Project Location

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 1-1



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase II
SCALE:	1:4,500
SOURCE:	ESRI 2022

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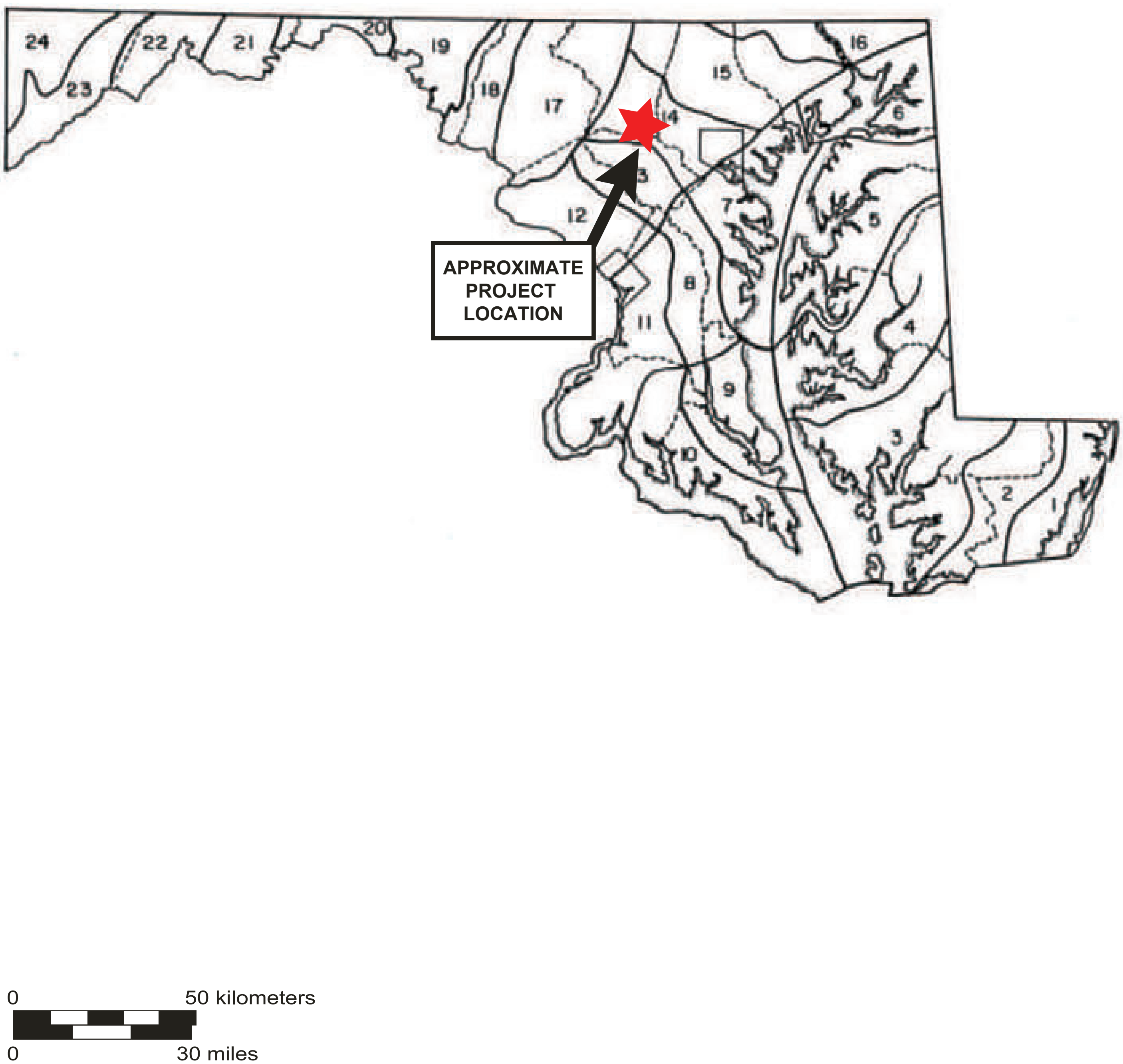
TITLE
Area of Potential Effects

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 1-2



CLIENT	Carroll County Bureau of Resource Management
PROJ	Piney Run Phase II
SCALE	As Shown
SOURCE	N/A

\\URSGermantown.us.ie.urs\Germantown\Projects\ENG\Dam&Reservoir Projects\Piney Run Watershed Study\400_Technical\436_Cultural\460 Graphics

TITLE
Maryland Archaeological Research Units

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 1-3

2. Environmental Setting

2.1 Project Location

The APE is located generally east, west, and south of Piney Run Dam along Piney Run less than 1 kilometer (km) (0.6 mile [mi]) north of the Sykesville corporate limits in Carroll County, Maryland. The APE extends up to 300 meters (m) (984 feet [ft]) east, 460 m (1,509 ft) west, and 205 m (673 ft) south of the center of the Piney Run Dam crest. Portions of the APE boundary correspond to the Piney Run Reservoir shoreline and the property lines of parcel 0714002626; elsewhere the APE has no physical or legal boundaries.

2.2 Geology and Physiography

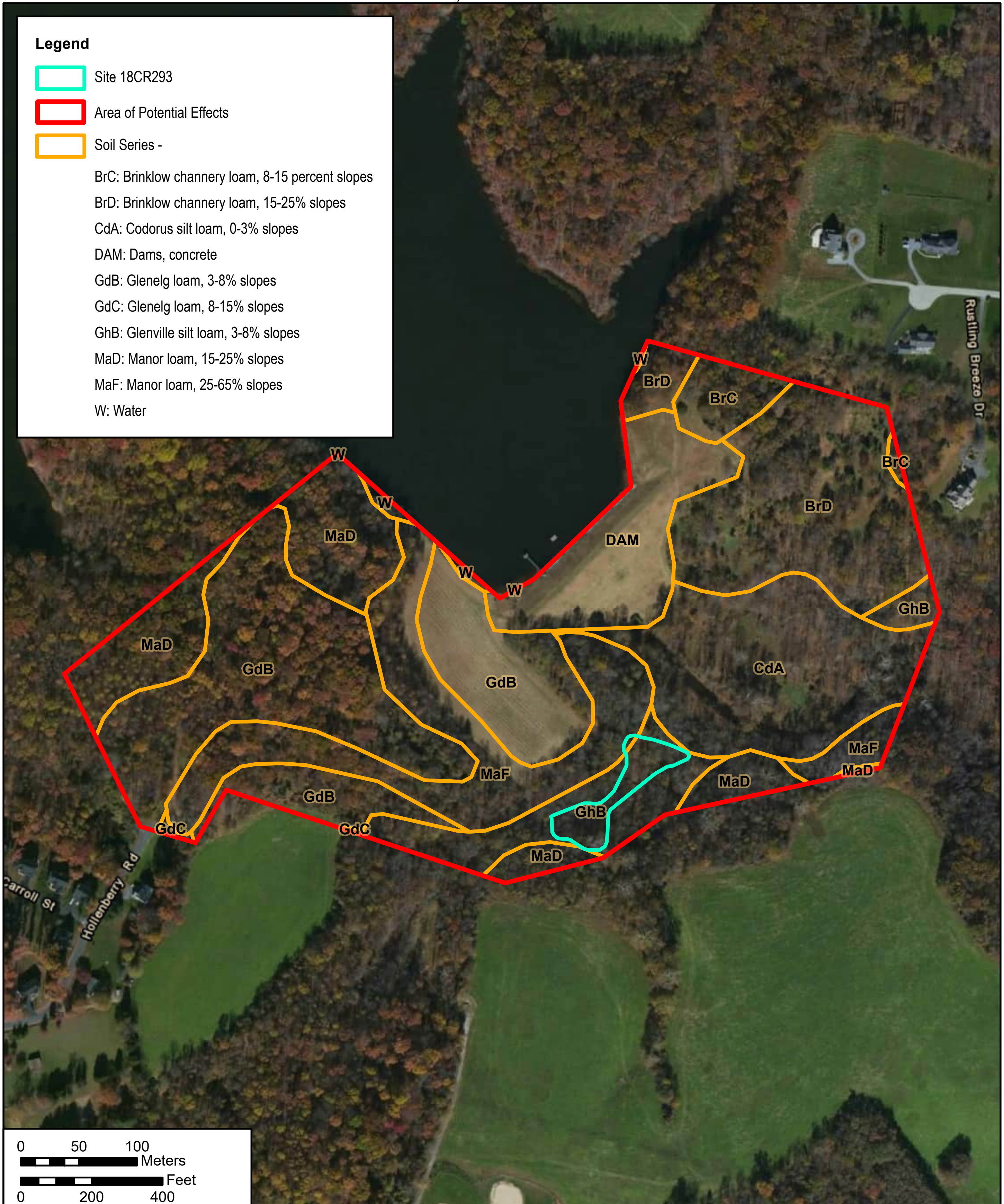
The APE is located in the Hampstead Upland District of the Piedmont Plateau Physiographic Province's Harford Plateaus and Gorges Region (Reger and Cleaves 2008). Spanning from the Coastal Plain west to Catoctin Mountain, the Piedmont Plateau exhibits a highly variable geologic profile (Maryland Geological Survey [MGS] 2012). The eastern portion of the province, in which the APE is located, is comprised of igneous and metamorphosed igneous and sedimentary rocks with pegmatite and granitic pluton intrusions (MGS 2012). The western portion is largely comprised of metamorphosed volcanic rocks. The Hampstead Upland District features rolling to steep terrain, often dissected by steep-walled gorges (Reger and Cleaves 2008). The APE is within the Morgan Run Formation, which primarily consists of "fine- to medium-grained, lustrous, silver-gray to greenish-gray, mica schist and quartz-mica schist" containing discontinuous layers and lenses of quartzite (Muller 1994:n.p.). Areas of Alluvium occur in floodplains of streams and consist of interbedded "light gray to brown gravel, sand, silt, and gray blue to gray-brown clay" (Muller 1994:n.p.). The gravel is dominantly quartz, and the sand and silt are dominantly quartz-mica mixtures.

2.3 Hydrology and Topography

Piney Run is the major waterbody within the immediate vicinity of the APE, bisecting it as the stream flows southeast from its impoundment in Piney Run Reservoir. Piney Run, a third-order stream, flows from its headwaters near the rural village of Winfield to its discharge into the Patapsco River approximately 10 km (6.2 mi) southeast of the APE. Topography within the APE is defined by rolling uplands interrupted by incised stream valleys. Side slopes are often very steep, though toe and summit slopes are typically gentle. The largest expanse of level terrain occurs on the Piney Run floodplain, southeast of the dam. In many places, the natural topography has been significantly impacted by the dam embankment/abutments, the emergency spillway, and large borrow/spoil wasting areas created during the dam's construction. Elevations within the APE range between 142 and 177 m (465 and 580 ft) above mean sea level.

2.4 Project Area Soils

The United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) has mapped five soil units within the APE (USDA NRCS 2023). The soils within the project area are displayed in Table 2-1 and a map of the documented soils within the project area is included in Figure 2-1. Site 18CR293 includes Glenville silt loam, 3-8 percent slopes (GhB). Table 2-2 presents the typical soil profile for Glenville silt loam.



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase II
SCALE:	1:4,500
SOURCE:	ESRI 2022 and USDA NRCS 2023

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N

TITLE
Project Area Soils

AECOM 12420 Milestone Center Dr. Germantown, MD 20876

PROJ NO 60614688
FIGURE 2-1

Table 2-1. Soil Types in the APE

Soil Type	Map Unit	Drainage Class	Parent Material
Brinklow Channery Loam	BrC, BrD	Well-Drained	Weathered Schist/Phyllite Residuum
Codorus Silt Loam	CdA	Moderately Well-rained	Phyllite/Schist/Diabase/Greenstone Loamy Alluvium
Glenelg Loam	GdB, GdC	Well-Drained	Weathered Mica Schist Residuum
Glenville Silt Loam	GhB	Moderately Well-Drained	Metamorphic Rock Colluvium or Phyllite Residuum
Manor Loam	MaD, MaF	Well-Drained	Weathered Mica Schist Residuum

Table 2-2. Glenville Silt Loam Typical Pedon

Horizon	Depth (cm)	Description
Ap	0-23	Dark Yellowish Brown (10YR 4/4) Silt Loam
Bt1	23-41	Yellowish Brown (10YR 5/6) Silt Loam
Bt2	41-48	Yellowish Brown (10YR 5/6) Silt Loam
Btx	48-63	Brown (10YR 5/3) Silt Loam
Btgx	63-84	Light Brownish Gray (10YR 6/2) and Brown (10YR 5/3) Silt Loam
BC	84-99	Yellowish Brown (10YR 5/4) Silt Loam
C	99-208	Yellowish Brown (10YR 5/4) Channery Loam

2.5 Current Land Use

The APE currently consists of rolling upland forests and lightly wooded floodplains within a publicly accessible recreation area that is part of Piney Run Park. Modern disturbances include the dam embankment/abutments, the emergency spillway, borrow/spoil wasting areas created during the dam's construction, dam and reservoir infrastructure, and modern access roads. These disturbances comprise a significant portion of the APE.

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3. Cultural Context

The MHT has developed cultural contexts that provide a necessary framework for the description and analysis of known and anticipated cultural resources (Weissman 1986). These contexts are the basis for evaluating the significance of resources within the APE. The contexts are organized by geographic region, time/developmental period, and theme. The time periods listed in the following prehistoric and historic contexts are those identified by the MHT as important historic contexts for the state (Weissman 1986). Where necessary, dates and terminology have been updated to incorporate new information.

3.1 Prehistoric Context

Archaeologists have traditionally divided prehistoric Native American settlement in Virginia into three general periods. They include the Paleoindian (ca. 10,000 – 8,000 B.C.), the Archaic (ca. 8,000 – 1,000 B.C.), and the Woodland (ca.1,000 B.C. – A.D. 1600) periods (Caldwell 1958; Dent 1995; Gardner 1989). The Archaic and Woodland can be further subdivided into Early, Middle and Late periods. These periods span the time from the earliest human occupation of the region until sustained contact with people from Europe and Africa at the beginning of the seventeenth century.

3.1.1 Paleoindian Period

During the Late Pleistocene geological period (the end of the last Ice Age), the first human activity began in what is now the eastern United States. The climate then was colder and moister than it is today, and the vegetation consisted of spruce, pine, fir, and alder (Brush 1986; LeeDecker and Holt 1991). The Paleoindian period traditionally begins in North America with the arrival of the first humans from Asia across Beringia a 1,000-mi-wide, ice-age land bridge connecting Siberia with British Columbia and Alaska. Microblade technology similar to that discovered at D'uktai Cave in Siberia (ca. 16,000 B.C.) has been found in the Yukon (e.g., Bluefish Caves), Alaska (e.g., Tanana Valley sites), and the eastern United States (e.g., Meadowcroft Rockshelter and Cactus Hill) (Adovasio and Pedler 2005; Fagan 2000). The peopling of the "New World" is often debated. Numerous additional migration routes into North America have since been proposed; future discovery of additional Paleoindian archaeological sites and multidisciplinary collaboration (e.g., paleoclimate, genetics, linguistics) will certainly aid in our understanding of the colonization of North America (Adovasio and Pedler 2005).

While definitive evidence of human occupation in the Mid-Atlantic region is generally attributed to the Clovis culture with its signature fluted points beginning about 10,000 B.C., traces of earlier occupation are present at several regional sites. The Cactus Hill site in southern Virginia (McAvoy and McAvoy 1997), the Meadowcroft Rockshelter site in southwestern Pennsylvania (Adovasio et al. 1998), and the Barton site in western Maryland (Wall et al. 2001) have all yielded carbon-dates pre-dating Clovis occupation, although no clear diagnostic artifacts have been identified in the earliest deposits at these sites. Although there is much to be learned about the pre-Clovis toolkit, micro-blade technology appears to be a defining characteristic.

The Paleoindian toolkit typically consists of diagnostic lanceolate projectile points, formal scrapers, gravers, unifacial and bifacial knives, and burins. Diagnostic projectile points consist of fluted and unfluted forms and include Clovis, Cumberland, and Dalton types (Justice 1995). Limaces are also thought to be diagnostic of this time (e.g., Vail Site, Gramly 1982). Paleoindian tools tend to be well made; they were typically manufactured from high-quality cryptocrystalline materials chosen for their predictable and consistent flaking properties.

Paleoindian sites are rare in the Mid-Atlantic region, but enough sites have been identified to provide for an interpretation of prehistoric settlement patterns and subsistence during the period. Much of what archaeologists know about Paleoindians comes from isolated finds of fluted projectile points (e.g., Flint Run Complex; Gardner 1974, 1977). Buried Paleoindian sites are rare in Maryland (e.g., Higgins Site, Ebright 1992). Paleoindian settlements consisted of seasonally occupied camps, from which forays were made to obtain specialized resources, such as stone for tool manufacture (Custer 1984a; Dent 1995; Gardner 1977).

Site types postulated for the Paleoindian period include base camps, quarry sites, quarry reduction stations, quarry-related base camps, base camp maintenance stations, outlying hunting stations, and isolated projectile point finds (Turner 1994).

The Paleoindian period inhabitants of the Mid-Atlantic region are typically viewed as being close to the idealized forager (Binford 1980), with small bands moving through the landscape for most of the year, hunting, fishing, and foraging for wild edibles. While Paleoindian subsistence was probably focused on hunted game, evidence suggests that plants and fish were also important food resources (Dent 1995; Kavanagh 1982; McNett l985). Bands may have come together to form larger groups during certain times of the year at sites located near geographically restricted resources such as quarry sites (Dent 1995). Turner (1994) describes this settlement/subsistence pattern as “tethered nomadism”. In this view, small foraging groups would move through relatively large territories throughout the year, returning to quarry sites in order to replenish and/or manufacture new tools (Barse and Harbison 2000; Gardner 1974).

3.1.2 Archaic Period (8,000-1,000 B.C.)

The Archaic period dates to ca. 8,000 to 1,000 B.C. and is conventionally subdivided into the Early (ca. 8,000–6,000 B.C.), Middle (ca. 6,000–4,000 B.C.), and Late (ca. 4,000–1,000 B.C.) periods. The Archaic period generally refers to pre-ceramic sites associated with hunter-gatherers that occupied the emerging deciduous forests of the Eastern Woodlands. Human populations living in the region during the Archaic period were adapting to major changes in the environment.

A climatic shift at the end of the Pleistocene ca. 8,000 B.C. brought about dramatic warming and environmental changes. As glaciers receded north, boreal (e.g., spruce) forest was replaced by pine and deciduous mast-producing species (e.g., oak and hickory). A variety of small game species arose. Innovations, such as ground stone for processing mast (i.e., nuts) and the introduction of the atlatl, occur during the Archaic period and represent new adaptations to a changing environment.

3.1.2.1 Early Archaic Period (8,000-6,000 B.C.)

The Early Archaic is marked by the replacement of lanceolate bifacial projectile points of Paleoindian assemblages with somewhat smaller, side- and corner-notched and bifurcate-base projectile points (Gardner 1974, 1977). These stylistic changes in lithic tool technology reflect changes in subsistence strategies, which moved towards the exploitation of a more diverse set of animals. The introduction of notching likely reflects the introduction of the atlatl. Side- and corner-notched projectile points diagnostic of the Early Archaic period in the region include Dalton/Hardaway, Kessel, Palmer, Charleston, and Kirk; bifurcate types include LeCroy, MacCorkle, St. Albans, and Kanawha (Dent 1995; Justice 1995). There was an apparent shift in lithic raw material preferences during the Early Archaic. At the beginning of the period, there was still a focus on imported stone for tool manufacturing, but by the end of the period, locally available stone was in more use.

Settlement patterns in this period were dictated by the distribution of floral and faunal resources, and were, therefore, scattered across a wider range of environmental zones (Barse and Harbison 2000). Both Gardner (1974) and Custer (1980) have hypothesized that, during the Early Archaic period, people banded together into macro-base camps—or groups of families—in the spring and summer and dispersed into smaller micro-base camps in the fall and winter. The larger base camps were in the valley floodplains, while the smaller fall and winter camps were in upland regions.

The number and distribution of Early Archaic sites across the region likely reflect an adaptation to the abundant and diverse game species that inhabited the rapidly spreading deciduous forests. There is little faunal evidence from archaeological sites dating to the Early Archaic period, though “it is assumed that this environment supported bear, deer, elk, and a variety of small game adapted to a northern climate” (Kavanagh 1982). One exception is the Cactus Hill site (44SX202), which contains the remains of species that are still common in the region today (Whyte 1995). Floral evidence from sites, such as the Crane Point site on the Maryland Western Shore, includes hickory nut, butternut, acorn, amaranth, and chenopodium (Lowery and Custer 1990; Lowery 2001, 2003). Other sites in the region have produced similar results (Dent 1995). The floral remains recovered from Early Archaic contexts indicate that a variety of plants were used for food. In addition to floral remains, stone artifacts, such as grinding slabs, milling stones, and nutting stones, are indications of increased reliance on plant foods, while adzes indicate the increased use of wood. The changes in tool types have been interpreted as a shift in subsistence strategies towards a broad-spectrum adaptation, which indicates the utilization of a variety of species of animals and plants, rather than a focus primarily on large animals.

3.1.2.2 Middle Archaic Period (6,000-4,000 B.C.)

The beginning of the Middle Archaic period coincided with the onset of the Atlantic climatic episode, a warm, humid period with a gradual rise in sea level that led to the development of inland swamps (Barse and Beauregard 1994). It was a period marked by an increase in summer drought, sea level rise, grassland expansion into the Eastern Woodlands, the appearance of new plant species, and the spread of deciduous forests (Carbone 1976; Hantman 1990). These changes significantly altered the Mid-Atlantic region, from a relatively homogeneous to a much more diverse environment (Barse and Harbison 2000). During this time, the effects of sea level rise following deglaciation were visible; extensive riverine swamps formed, and river and estuary systems took on their modern configurations. Large Middle Archaic occupations have been identified around Zekiah and Mattawoman Swamps in southern Maryland, and Dismal Swamp in Virginia, evidence that Middle Archaic populations opportunistically expanded into a newly emerging, ecologically productive environment (Custer 1990).

Stemmed and side-notched projectile point forms are characteristic of the Middle Archaic period. Diagnostic projectile points include Stanly, Morrow Mountain, Guilford, Halifax, Otter Creek, and Brewerton series (Coe 2006; Dent 1995; Hranicky 1994; Justice 1995; Klein and Klatka 1991). The Laurentian Tradition (ca. 4,000–2,000 B.C.), which encompasses the late Middle Archaic and early Late Archaic, is represented by Otter Creek, Vosburg, and Brewerton corner- and side-notched types (Ritchie 1980). Fully grooved axes are also diagnostic of this period.

Most Middle Archaic sites are identified through projectile point finds on Holocene terraces and upland surfaces in the Potomac Valley, as well as along estuaries and swamp margins, and near springheads. Middle Archaic occupations tend to be small and artifact assemblages limited primarily to tool manufacturing debitage related to toolkit replenishment (Barse and Beauregard 1994). Most are surface finds (e.g., Zekiah Swamp, Looker and Tidwell 1963); however, Middle Archaic occupations have been identified at a few stratified sites (e.g., Clifton Site, Barse and Beauregard 1994; Higgins Site, Ebright 1992).

A rise in the number of Middle Archaic sites is indicative of steady population growth. Settlement patterns of the period are defined by a foraging pattern that emphasized the use of seasonally available floral and faunal resources (Barse and Harbison 2000; Chapman 1975). Settlements consisted of small base camps located in or near inland swamps that were conveniently accessible to seasonally available subsistence resources, as well as small, temporary upland hunting sites. Custer (1990) has interpreted available Middle Archaic settlement data as indicating a serial settlement system that began replacing the more cyclical system prevalent during the Early Archaic beginning around 6,500 B.C. In this model, Middle Archaic groups moved through their territory, establishing base camps with smaller, satellite resource procurement camps or base camp maintenance stations (e.g., hunting, collecting, or quarrying sites), from which resources were brought to the base camps. Base camps were moved seasonally as resources in different environments became available.

Reliance on seasonally available resources required a dependable collecting and harvesting schedule, and the development of a more specialized toolkit to process diverse resources. The increasing reliance on seasonally available plant and animal resources required Middle Archaic groups to schedule their occupations based on the time of year when resources, such as nuts and seeds, could be harvested or collected.

3.1.2.3 Late Archaic Period (4,000-1,000 B.C.)

By approximately 3,000 B.C., modern vegetation had become established in the region, and the climate was punctuated by alternating periods of dry and moist conditions (Brush 1986). In general, the Late Archaic period is characterized by a warmer and drier climate than that of today, with the development of xeric forests (e.g., oak and hickory) and open grasslands (Carbone 1976; Custer 1984b; Kellogg and Custer

1994). The sea level continued to rise but was relatively stable by the end of the Late Archaic period (Colman et al. 1993; Dent 1995; Lowery 2003).

This period is characterized by the exploitation of riverine and estuarine resources. Higher sea levels resulted in the saline cline moving upriver in tidal environments, which forced freshwater-spawning fish to travel further upstream to spawn. This, in turn, resulted in seasonal fish runs in the rivers and streams along the Coastal Plain. Another effect of sea level rise was the development of brackish water estuaries in the greater Chesapeake area, which encouraged the spread of aquatic food species, including oysters and blue crabs (Barse et al. 2006; Gardner 1982). The exploitation of new food sources resulted in changes to the Late Archaic toolkit, site types, and settlement patterns.

As previously mentioned, the Laurentian Tradition (ca. 4,000–2,000 B.C.) continued into the early Late Archaic period, and is represented by Otter Creek, Vosburg, and Brewerton corner- and side-notched types (Ritchie 1980). Other diagnostic projectile points of the Late Archaic period include the Piscataway, Vernon, and Bare Island/Holmes types of the Piedmont Tradition (Steponaitis 1983); however, Mouer (1991) assigns Piscataway and Vernon points to the Early Woodland period, following the reinterpretation of the Stephenson et al.'s (1963) work at the Accokeek Creek site.

The Broadspear Tradition appeared throughout most of the eastern Coastal Plain around the beginning of the second millennium B.C. (Mouer et al. 1981). Diagnostics include the Savannah River, Koens-Crispin, and Susquehanna Broadspear points, as well as steatite bowls. In Maryland and Virginia, the beginning of the Transitional period is marked by the appearance of the Savannah River Complex, originally described by Coe (2006) with the appearance of Savannah River points around 2,200 B.C. (Mouer 1991). Bannerstones and three-quarter grooved axes first appear in the archaeological record during the Late Archaic period.

Technological development continued throughout the Late Archaic period. Groundstone objects, including carved steatite bowls and steatite net weights, are common components of period assemblages (Barse et al. 2006). The steatite bowls recovered from Late Archaic sites represent the first archaeologically visible, durable container technology in the Mid-Atlantic region. It is believed that, prior to the appearance of steatite bowls, the prehistoric inhabitants of the region used containers made from more perishable materials, such as wood or woven baskets, but these objects have not been preserved in the archaeological record.

The most common steatite vessel form is the shallow, round to oblong, thick-walled bowl with an unrestricted opening and opposing lug handles on the side (Dent 1995). Traditionally, these bowls have been interpreted as cooking vessels used in indirect heat cooking, whereby the contents of the bowl were boiled by the addition of heated stones (Dent 1995; Klein 1997). Steatite vessels have also been interpreted as vessels used to process items consumed during rituals, or to serve ritual drinks or foods, rather than for generalized cooking (Hantman and Gold 2002; Klein 1997).

While most Late Archaic sites can be characterized as short-term exploitive sites or camps, and short-term base camps, the movement of the saline cline, creation of brackish water estuaries, and development of seasonal fish runs led to a new settlement type, the long-term base camp. These larger, semi-sedentary base camps were typically located at the divide between fresh water and brackish water sections of major rivers (Dent 1995). Late Archaic semi-sedentary base camps appear to represent multi-season occupations near stable, predictable riverine/estuarine resources (Barse et al. 2006; Klein and Klatka 1991). Not only were these sites occupied for longer periods of time, but also Late Archaic populations began to invest labor in constructing permanent features that could be used year after year by groups returning to these base camps.

Subsistence was still largely based on gathering and hunting, although there was an increased reliance on riverine resources towards the end of the period (Steponaitis 1983). Seasonal hunting and foraging continued, but exploitation of riverine resources rapidly became an important part of the subsistence base. This continued the earlier trend towards a broad-spectrum adaptation, in which a variety of resources were exploited in many different environmental settings. This broad-spectrum adaptation is another way of characterizing what Caldwell (1958) called "primary forest efficiency" in the Archaic of the Eastern Woodlands.

Several indicators point to an intensification of certain subsistence strategies ca. 2,000 B.C., representing a major change in lifeways. This intensification has been explained both as a consequence of gradual change (Caldwell 1958) and as episodic change relating to shifts in the composition of the environment (Carbone 1976). Structures used to exploit anadromous fish runs, such as fish weirs, were constructed during this period and reflect the intensive riverine focus of the latter part of the period. While riverine resources were certainly important, interior and upland areas continued to be utilized by Late Archaic peoples. Late Archaic subsistence economies may be described as diffuse, considering the use of upland areas for a broad range of resource procurement activities, including gathering foods, such as acorns, hickory nuts, and butternuts, as well as hunting large and small game (Cleland 1976). By 1,500 B.C., subterranean storage pits and steatite containers appear in the archaeological record; both are direct evidence of technological development that reflects the production of food surpluses and the need to preserve them over an extended period. The appearance of large numbers of implements used to process seed and fiber products is further evidence of this emerging economic pattern.

3.1.3 Woodland Period (1,000 B.C.-A.D. 1600)

The Woodland period in Maryland is divided into the Early (1,000–500 B.C.), Middle (500 B.C.–A.D. 900), and Late (A.D. 900–1600) periods based on changes in ceramic types, lithic technologies, subsistence patterns, and social development. The climate during the Woodland period is characterized by a return to cool, moist conditions and the establishment of vegetation that is typical of the region today.

The Woodland period across most of the Mid-Atlantic is marked by the introduction of ceramics, significant population growth, and the development of semi-sedentary and sedentary ways of life. Production innovations, as reflected in ceramic types, have become a significant basis for dating Woodland period archaeological site components. Hunting and gathering of wild floral and faunal resources remained important, but budding horticulture, based on maize cultivation, eventually formed an important part of the subsistence base (Dragoo 1975). An increased focus on estuarine resources, especially shellfish, is manifested in numerous shell middens, especially in the lower reaches of the Potomac estuary (Mouer 1991).

3.1.3.1 Early Woodland Period (1,000-500 B.C.)

Early Woodland sites are generally larger than sites of previous periods, and reflect an increasing reliance on estuarine resources, such as shellfish. This is evidenced by finds of large shell midden sites dated to this period. It was previously thought that the transition between the Archaic and Woodland periods, between 2,000 and 1,000 B.C., represented the introduction of horticulture (e.g., Fritz 1993; Smith 1992). Although Early Woodland groups in the South and Midwest used cultivated plants, there is presently no evidence that cultivated foods played a role in the diet of Early Woodland people in the area. Very efficient hunting and gathering systems (Caldwell 1958), including riverine and marine species exploitation, may have made the acceptance of cultigens slow at first. Only after A.D. 900, when varieties of tropical cultigens adapted to local conditions arrived in the Mid-Atlantic, did cultivated foods begin to assume an important role (Smith 1992).

Projectile points characteristic of the Early Woodland period includes Calvert, Rossville, Potts, and Piscataway types, some of which are also found in Late Archaic contexts (Dent 1995; Hranicky 1991, 1993, 1994). Other artifact types include drills, perforators, flake tools, scrapers, bifaces, anvil stones, net sinkers, mortars, pestles, manos, metates, groundstone tools (e.g., axes, adzes, celts), ground slate, gorgets, and tools made from animal bone and teeth (Dent 1995).

The introduction of pottery around 1,000 B.C. marks the beginning of the Woodland period. Potters' innovations, as reflected in ceramic types, have become a significant basis for dating Woodland period archaeological site components. The earliest ceramic types from the area are the steatite-tempered Marcey Creek ware and Selden Island varieties, which were replaced by the sand or crushed quartz-tempered Accokeek wares. These ceramics are associated with fishtail and corner-notched projectile point types. Accokeek ceramics are often associated with Calvert and Rossville points (Wesler et al. 1981).

Settlement patterns in the Early Woodland period are like those of the Late Archaic, and at numerous sites, Early Woodland occupations succeed earlier Late Archaic habitations with little or no evidence of a break in occupation. The settlement-subsistence system was focused primarily on a series of base camps, where people gathered to exploit seasonally available resources (Gardner 1982). These base camps were used to harvest anadromous fish in the spring and early summer, and to exploit estuarine resources in the fall and early winter. Smaller sites generally associated with specialized ventures, such as hunting or quarrying, are found on or near interior drainages. Other than a trend towards sedentism and more focused hunting and gathering, subsistence patterns were similar to those of the preceding Late Archaic period, with increasing reliance on marine resources (e.g., shellfish) and cultivated plants (Dent 1995). Barber (1991) contends that an increase in sedentism was, in part, a result of a stabilized sea level that facilitated the establishment of resource-rich environments.

3.1.3.2 Middle Woodland Period (500 B.C. – A.D. 900)

Generally, the Middle Woodland period is not well defined, and researchers disagree about the exact boundaries of the period. Dent (1995:235) has referred to this as a period of “technological homogenization,” where “ceramic and projectile point variability becomes limited to fewer types.” Despite the presence of fewer ceramic and projectile point styles, the Middle Woodland period represents a continuation and further development of cultural complexity that culminates in the Late Woodland period. In addition, intensification in trade networks over a large region is one of the notable trends evident by the onset of the Middle Woodland period. It is thought that warmer and drier conditions may have prevailed during this period (Kellogg and Custer 1994).

Stone toolkits utilized by Middle Woodland peoples are basically the same as those used during the succeeding Late Woodland, but more exotic lithic materials are evident in Middle Woodland assemblages. The technology evident in many of the Middle Woodland sites seems to favor bifacial tool production rather than the prepared core and blade flake technology that typifies Ohio Valley cultures at this time. Projectile points characteristic of the Middle Woodland period includes Selby Bay/Fox Creek and Jack’s Reef types (Custer 1989; Dent 1995; Potter 1993). Other tool types found during the Middle Woodland period are similar to those found during the Early Woodland period, and include drills, perforators, flake tools, scrapers, bifaces, anvil stones, net sinkers, mortars, pestles, manos, metates, groundstone tools (e.g., axes, adzes, celts), ground slate, and gorgets (Dent 1995). Dent (1995) also notes that bone tools, such as awls and needles, appear to be more ubiquitous during the Middle Woodland than the preceding Early Woodland period. The presence of non-local rhyolite, argillite, and jasper at a few sites suggests that exchange networks may have been in place between the Coastal Plain and areas near both western Maryland and the New Jersey Fall Line (Barse and Beauregard 1994).

The major ceramic type for the area is Popes Creek (Barse and Beauregard 1994; Dent 1995), which was first manufactured in the Early Woodland period. The style persisted through the early Middle Woodland period in the region (Maryland Archaeological Conservation Laboratory [MAC] 2003). Mockley ware was introduced ca. A.D. 200. Different diagnostic projectile point/knife types are associated with the Pope’s Creek and Mockley phases of the Middle Woodland. Rossville and Adena points are found at early Middle Woodland sites in association with Pope’s Creek ceramics. Lithic artifacts associated with Mockley ceramics include crudely flaked, side-notched, and parallel-stemmed Selby Bay or Fox Creek points. These projectile point/knife types are followed by terminal Middle Woodland arrowheads, such as Jack’s Reef corner-notched (Sperling 2008; Wright 1973).

Settlement patterns were largely similar to those of the Early Woodland period, although base camp settlements located at fresh and brackish water junctions appear to have been abandoned in favor of broader floodplain sites, where maximum resource exploitation of both non-tidal and tidal aquatic resources was possible (Dent 1995). The large number of sites for this period and the extensive size of some of the sites support the argument for possible seasonal aggregation and dispersal. There is some evidence for a significant shift towards settlement of coastal and estuarine areas (Davidson 1981), though Hughes (1980) notes that inland areas along swamps and small streams were still being utilized. Hunting and gathering continued as the primary method of acquiring food, with an increased reliance on riverine and domesticated plant resources. The presence of large, shell middens during the Middle Woodland period indicates the increased reliance on shellfish. There was also an intensification of horticultural practices, although hunting, fishing, and plant collecting were still important subsistence pursuits.

3.1.3.3 Late Woodland Period (A.D. 900-1600)

The Late Woodland period is traditionally viewed as the culmination of technological, settlement, and subsistence trends that began in the Early Woodland. By the Late Woodland, cultivated crops became important in subsistence for much of the region (Dent 1995). It was during this time that maize horticulture was adopted, although hunting, gathering, and fishing remained an important part of the subsistence economy. The Holocene was historically thought to have been climatically stable; however, research within the past two and a half decades has demonstrated that it was punctuated by abrupt periods of cooling or drought lasting decades or centuries (e.g., Brush and Hilgartner 2000; Osborn and Briffa 2006; Willard et al. 2005). One of these cooling cycles, the Little Ice Age, occurred between ca. A.D. 1300 and 1850. Wall et al. (2001) notes that archaeological evidence in the region suggests less agriculturally productive areas were occupied after A.D. 1400, which is perhaps a reflection of deteriorating environmental conditions caused by the Little Ice Age.

Late Woodland ceramics found in the region include Page, Shepard, Townsend, Potomac Creek, and Shenks Ferry wares (Egloff and Potter 1982; MAC 2003). Ceramic decoration and embellishment appear to be very important at this time. Projectile points characteristic of the Late Woodland period includes small triangular styles, such as the Madison and Levanna types and their variants and are evidence of a change in hunting technology from the atlatl-launched spear to the bow and arrow (Custer 1989; Dent 1995). There is an apparent preference for locally available stone material for making points. Other stone artifacts associated with Late Woodland period sites include scrapers, perforators, bifaces, hoes, choppers, net sinkers, groundstone axes, celts, adzes, mauls, grinding slabs, metates, manos, mortars, pestles, pendants, boatstones, bannerstones, and abraders (Dent 1995; Stephenson et al. 1963). Artifacts made from shell and bone are also recovered from Late Woodland period sites, including fishhooks, scraping implements, pendants, awls, bodkins, beamers, needles, pins, and beads (Dent 1995). Clay tobacco pipes were manufactured during this period and copper beads and pendants are also found (Dent 1995).

The establishment of stable agriculture during the Late Woodland period led to the development of sedentary floodplain villages, which were often located within palisades near agricultural fields (Wall 2001). The reliance on agriculture, as well as the presence of the remains of village palisades, hearths, storage pits, middens, and burials, indicates the greatest degree of sedentism seen until this time. Settlements were generally located on broad floodplains, often near the junction of a tributary stream and river (Wall 2001). Hunting and gathering was conducted from larger estuarine camps surrounded by micro-band camps. Smaller foraging and hunting ranges would have resulted in more limited exploration for lithic raw materials and greater dependence on resources found near the camps, as well as those regularly obtained through exchange with other groups.

One of the first widespread and clearly defined Late Woodland groups was the Montgomery Focus/Complex (Slattery and Woodward 1992). The Montgomery Focus initially was defined based on a suite of characteristics associated with numerous sites excavated along the Middle Potomac River Valley and adjacent tributaries (e.g., the Monocacy River) dating to A.D. 900–1450 (Dent 2005; Slattery and Woodward 1992). The Montgomery Focus sites have been interpreted as representing the settlements of small communities of agriculturalists along the banks of the Middle Potomac River and its larger tributaries (Dent 2005; Slattery and Woodward 1992). The type was defined by Schmitt (1952) based on his excavations at the Shepard site (18MO3) in Montgomery County, Maryland. Montgomery Focus/Complex sites are characterized by a circular palisade wall enclosing a series of elongated circular wooden post structures that are arranged around a ring of storage/trash pits encircling a small open space. The diagnostic ceramic ware associated with Montgomery Focus sites is Shepard ware (Dent 2005; Slattery and Woodward 1992).

Increased population density and competition for choice land and resources led to the rise of chiefdoms and a hierarchical political organization (Dent 1995). After A.D. 1500, there was an increase in social and political interaction among native tribes in the region, and Potter (1993) has suggested that an alliance of Coastal Plain Algonquian groups was formed prior to European contact. By the time of European contact, multiple chiefdoms existed along the Coastal Plain of Virginia and Maryland, including the Conoy, Piscataway, and Powhatan chiefdoms (Potter 1993).

3.1.4 European Contact (ca. A.D. 1600)

Native American culture at the time of contact with Europeans was a continuation of the Woodland lifeways. However, at this time, materials of European manufacture, acquired via trade, were also being incorporated into the indigenous tool kit. Subsistence was largely based on agriculture, though wild plants and game continued to be important. Settlements in the Mid-Atlantic region were typically nucleated villages of dome shaped wigwams and semi-rectangular long-house structures constructed of sapling poles and covered by grass, reeds, or tree-bark panels. Sometimes villages were fortified with wooden palisade walls. Societies were stratified and organized into chiefdoms that at times became confederated paramount chiefdoms (Dent 1995). Captain John Smith's explorations of the Chesapeake Bay area during the years 1608–1610 marked the first well-documented contact between European explorers and Native Americans in the region. Captain Smith's journal (Sultana Projects 2019) describes his travels and maps Indian villages along the extensive estuaries of the Potomac River. Captain Smith noted six tribes living on the northern side of the Potomac River, with the largest population found at the community of Moyaone, possibly near the modern town of Accokeek, Maryland (Stephenson et al. 1963).

Sixteenth and seventeenth century societies living in the Potomac River valley and along Maryland's western shore belonged largely to the Potomac and Piscataway chiefdoms, many of which were allied into loose confederacies (Grumet 1992). Further upriver lived the more independent Portobagos, Doegs, and Nacotchtankes, of whom little is known. European exploration and settlement in the area continued through the 1600s, with relations between the Native Americans and Europeans marked by periods of peaceful coexistence interrupted by times of tension and hostility (Potter 2006). As more land was granted to colonists and local tribes were encroached upon, relations further deteriorated. Natives of the Maryland coastal plain probably first felt the impact of European contact through contagious diseases and the movements of other native groups. By the 1650s, the Europeans had taken an aggressive role in claiming lands and driving out the Native Americans. Disease and warfare virtually exterminated the extant Native American cultures, and those that survived eventually were forced out of their homelands. By 1697, surviving peoples of the Potomac Valley began to move west of the Fall Line and into the depopulated Susquehanna Valley (Grumet 1992). At the start of the eighteenth century, most surviving local Native Americans had left the area. However, descendants of survivors continue to live in Maryland today, and some have become organized as the Piscataway Indian Nation, and the Piscataway Conoy Tribe of Maryland. The groups have not been granted Federal recognition but are recognized by the State of Maryland (MHT 2019).

3.2 Historic Context

The following discussion divides the historic period of Maryland and Carroll County into five subperiods following those identified by the MHT as important historic contexts for the state. These include Euro-American Contact and Settlement (1570–1725); Rural Agrarian Intensification (1725–1815); Agricultural-Industrial Transition (1815–1870); Industrial Dominance (1870–1930); and Modern (1930–Present).

3.2.1 Euro-American Contact and Settlement (A.D. 1570-1725)

In 1634, Europeans established St. Mary's City, the first permanent settlement in Maryland. St. Mary's City was the capital of the Colony of Maryland and remained so until the capital was moved to Anne Arundel County in 1694. The first historical record of the name Baltimore County did not appear until 1659 in a writ issued to the county sheriff; formal boundaries were first mentioned in 1674, when Cecil County was created from the eastern portion of the county (Brooks and Rockel 1979; Lanman 2009). Baltimore County originally included parts of what are now Cecil, Harford, Carroll, Anne Arundel, Howard, and Kent counties, as well as Baltimore City. The county was named after the second Lord Baltimore, Cecil Calvert, who took his title from his barony estates in Longford County, Ireland (Brugger 1988).

The charter from King Charles I gave Cecil Calvert ownership over the approximately seven million ac of land of the Maryland colony. From 1634 through 1680, the Calverts promoted the settlement of the colony through the headright system in which small tracts of land were granted to those who funded their own or others' passage to the colony, usually 50 ac per "head". Over 34,000 land patents are known to have been recorded under the headright system, a figure that is thought to account for 80 percent of the settlers entering Maryland prior to 1684 (Maryland State Archives 2018). During the early settlement period, settlements focused on the Potomac and Patuxent Rivers, and Maryland quickly became an important tobacco-producing colony. The landscape remained sparsely populated, however, with few resident landlords.

3.2.2 Rural Agrarian Intensification Period (A.D. 1725-1815)

Agriculture, specifically tobacco cultivation, remained the primary occupation of settlers and residents in the Baltimore County area throughout most of the eighteenth century, though the county was largely uninhabited at the beginning of the century. In the early part of the eighteenth century there were fewer than 500 families living within the county boundaries, and most of those were concentrated along the coastline (Brooks and Rockel 1979). Initially the inhabited landholdings in the county consisted of small clearings with simple one or two room houses. The small clearings eventually grew, giving way to large farms with a number of outbuildings and workers.

The widespread cultivation of tobacco, a highly land- and labor-intensive cash crop, contributed towards the persistence of larger land holdings and the rise of slave ownership in the region. The falling value of tobacco also led to increased dependence on enslaved labor in the eighteenth century, and by 1737, slaves made up 38.5 percent of the total taxable population of Baltimore County (Brooks and Rockel 1979). In 1747, in an effort to regulate the quality and quantity of tobacco produced in the colony, the colonial legislature instituted tobacco inspections, a system already in place in Virginia. Tobacco inspection points were established throughout the colony, each with warehouses and inspectors (Brugger 1988). Tobacco remained the principal cash crop throughout the colonial period in the Baltimore County area; however, the rapid depletion of the soil from intensive tobacco cultivation led to early crop diversification, and staples such as wheat and corn supplemented tobacco as major cash crops. Towns began to develop throughout the colony around major land routes, ports, and mills (Brugger 1988).

Meanwhile, further west in the county, the area that would become Carroll County would remain sparsely occupied until well into the nineteenth century (Wesler et al. 1981; Bunting and D'Amario 1999). Few navigable waterways and a landscape bisected by deep gullies discouraged settlement by wealthy landowners interested in high yield crops like tobacco. The land was settled by German immigrants from Pennsylvania, who established small grain farms, and built mills on the many rushing streams in the area. Settlements consisted of small hamlets connected by road networks to mills and harbors on the Patapsco River (D'Amario 1976). The primary industry was grain milling.

3.2.3 Agricultural-Industrial Transition (A.D. 1815-1870)

The continued exhaustion of the soil from tobacco cultivation and the subsequent decline in quality and price of tobacco resulted in economic and demographic changes throughout the Chesapeake region. Societies were formed to experiment with and disseminate alternative agricultural practices such as crop rotation and diversification (Brugger 1988). One method to improve soils was through the introduction of organic and mineral materials, such as lime. German chemist Justus Freiherr von Liebig is often considered the father of modern "agricultural chemistry" for demonstrating the importance of nitrogen and noting that plants require inorganic nutrients to grow (e.g., Justus 1847). This type of scientific treatment of soils and promotion of these farming practices began to appear in popular publications in the 1840s and 1850s. For example, Samuel Sands' publication, The American Farmer, ran monthly in Baltimore starting in 1845. The first issue was chiefly concerned with advice on different types of manure, including the use of lime, to "resuscitate worn-out lands" (American Farmer 1845:19). Similarly, the 1849 British publication On the Use of Lime in Agriculture is a 300-page step-by-step manual on the proper preparation and use of lime to improve soils, covering different types of limestone, procurement, burning, stacking, and field application (Johnston 1849). Books and journals that explained the benefits and proper use of mineral and organic materials to improve farm produce found a ready market in Maryland. In the limestone-rich Piedmont areas of Baltimore and Carroll counties, lime kilns for private use were a common element of farms during this period (Chapman Publishing Company 1897).

In addition to attempts to improve soil quality, large land holdings were divided into smaller tracts for small-scale, family-owned diversified farms that produced a variety of crops. Commerce and industry became increasingly important, influencing the development of new transportation systems. In 1828 the construction of the Baltimore and Ohio Railroad began at Mt. Clare in what is now Baltimore City (O'Donnell 1968). It was hoped the railroad would open up access to the port at Baltimore to farms and industries farther west. The Baltimore and Susquehanna Railroad was completed in 1832, with a track running north from Baltimore to York, Pennsylvania, and by 1838 a train was making the round-trip journey between the two cities once a day (Clemens 1983).

In 1830, the Baltimore and Ohio Railroad built a stop at a small hamlet of Sykesville. The town grew around the rail stop, and nearby farmers were able to diversify crops and grow more perishable foods that could now be rapidly shipped to markets by rail (Tyler et al. 2015). Carroll County became a distinct jurisdictional entity in 1837 (Wesler et al. 1981).

The late Antebellum period and Civil War brought much friction into Carroll County. The German farmers with small plots tended to be against slavery, while the English farmers with larger plantations favored slavery but not secession (Hall 2005). The split sympathies put Carroll County residents against each other. During the war, Sykesville was raided by J.E.B. Stuart and his cavalry.

3.2.4 Industrial Dominance (A.D. 1870-1930)

Farming continued to be the prime economic engine of Carroll County in the early twentieth century. There was little growth outside of the burgeoning mill towns along the Patapsco, like Daniels and Ellicott City in neighboring Howard, County.

In 1868 much of Sykesville was destroyed by flooding (Hall 2005). The town was originally centered on the Howard County side of the Patapsco River, but following the flood, the city was rebuilt on higher ground, on the Carroll County side of the river. Most of the Victorian buildings extant in downtown Sykesville were built by architect J.H. Fowble during the 1890s. The town was incorporated in 1904 (Wimmer 1985).

3.2.5 Modern (A.D. 1930-Present)

The county remained largely rural into the 1930s. During the Depression many of the small farm plots were foreclosed. Large sections of Sykesville's business district were destroyed by fire in 1937 (Downtown Sykesville Connection 2018). Following the Second World War, Sykesville and surrounding environs began to grow rapidly as part of the post-war suburban expansion. Today Carroll County and its population centers of Sykesville, Eldersburg, and Mt. Airy are closely intertwined economically and culturally with Baltimore and Frederick.

3.3 Project-Specific History

Historic maps and aerial photographs were reviewed to develop a preliminary history of the APE, characterizing historic land use patterns and the built environment to the extent possible. Historic images from the Library of Congress, United States Geological Survey (USGS), Johns Hopkins University, and other repositories were examined as appropriate. Archival materials, including land records, wills, and tax lists were used alongside the historic maps and secondary narratives to provide an ownership chain-of-title for the site along with additional information on the land's potential occupants and structural improvements. Table 3-1 presents a summary of the ownership history. It should be noted that in some instances, the archival record is incomplete, and property ownership has been inferred based on available data. The occupation of this particular site is largely unclear because it has long been part of a very large parcel, and likely functioned as a tenant farm within the larger farm.

Table 3-1. Chain of Title Summary

Instrument	Document	Description	Date
	Patent Map	Samuel Smith patented 201 acre “Charles Delight Enlarged”	1783
	MSA 2023C	William Patterson patented “Springfield”, which incorporated “Charles Delight Enlarged”	1827
	MSA 2023C	George Patterson added land and repatented the tract as “Springfield Enlarged”	1854
Deed	53:301	Prudence Patterson and James Carroll, executors of will of Florence Patterson Carroll convey 1700 acres of “Springfield” to Frank Brown for $50,000	22 June 1880
Deed	64:510	Frank Brown and wife, Mary R., convey 229.75 acres of “Springfield Enlarged”, encompassing Lots 6, 7, and the “Mine Lot Relocated” to John Welbourn for $9,000	29 July 1886
Deed	68:318	John Welbourn and wife, Lucy H, convey 229.75 acres of “Springfield Enlarged”, encompassing Lots 6, 7, and the “Mine Lot Relocated” to John T. and A.K. Williams	18 May 1888
Deed	71:544	Anthony K. Williams and wife, Ann Elizabeth, convey their half-interest in the 229.75 acres of “Springfield Enlarged”, encompassing Lots 6, 7, and the “Mine Lot Relocated” to John T. Williams for $3,000	17 September 1890
Deed	81:543	John T. Williams died intestate in 1894. His widow, Jane E. Williams purchased the 229.75 acres of “Springfield Enlarged”, encompassing Lots 6, 7, and the “Mine Lot Relocated” from the other heirs of John T. Williams for $5743.70.	27 November 1895
Deed	92:78	Charles W. Quynn, executor of the will of Jane E. Williams, conveyed the 229.75 acres of “Springfield Enlarged”, encompassing Lots 6, 7, and the “Mine Lot Relocated” to Mordecai C. Jones for $3791.	12 January 1901
Deed	93:115	Mordecai Jones and wife, Alice K, convey 229.75 acres of “Springfield Enlarged”, encompassing Lots 6, 7, and the “Mine Lot Relocated” to Joseph T. Harris	22 April 1901
Deed	93:315	Joseph Harris and wife, Margaret, convey 229.75 acres of “Springfield Enlarged”, encompassing Lots 6, 7, and the “Mine Lot Relocated” to Mary H. Todd for $6000	1 November 1902
Deed	98:565	Mary H. Todd conveys 112 acres, part of “Springfield Enlarged,” to Johnzie Beasman for $2,600.	6 February 1904
Intestate		Johnzie Beasman died 25 January 1922, intestate. His real estate was vested in his widow, Laura E. Beasman, and son, Frank B. Beasman.	
Will	16:27	Laura E. Beasman’s will, dated 16 November 1929, devised all of her real estate, inherited from her husband, Johnzie Beasman, to her son, Frank Beasman	16 November 1946

Instrument	Document	Description	Date
Will	17:544	Frank B. Beasman's will, dated 2 August 1950, devised all of his real estate to the Convention of the Protestant Episcopal Church of the Diocese of Maryland	20 July 1960
Deed	511:543	The Convention of the Protestant Episcopal Church of the Diocese of Maryland sold 56.0505 acres to the County Commissioners of Carroll County, for use as part of the Piney Run	11 May 1972

While historic maps from the seventeenth through early nineteenth centuries were available for review, none provided sufficient detail to determine land use practices and occupancy status within the APE. It is expected that during the seventeenth and eighteenth centuries, the APE likely was unoccupied, given the generally dispersed nature of Carroll County's rural population at the time. At the end of the eighteenth century, 18CR293 was part of the tract "Charles Delight Enlarged" as shown on a map of early land patents (Horvath 1984). This 201-acre tract was patented in 1783 by Samuel Smith in what was then Baltimore County (Maryland State Archives, 2023c). A connection between this tract and Samuel Smith was unable to be made with later landowner's records. Also given the frequency of the Smith surname in Baltimore, more information on this patentee was unable to be established.

It appears that the tract "Charles Delight Enlarged," including site 18CR293 was incorporated into another tract "Springfield," then 1,378.25 acres, which was patented by William Patterson in 1827. William Patterson was an Irish émigré, who came to Maryland in 1775. He married Dorcas Spear, of the prominent Spear-Smith family. He rose to become a very wealthy and influential Baltimore merchant, helping found the Merchant's Exchange, the Bank of Maryland, and Canton Company. He was an early investor and promoter of the Baltimore and Ohio Railroad (Maryland Center for History and Culture 2023).

Upon William Patterson's death soon after the patent, Springfield passed to William Patterson's youngest son, George Patterson. George Patterson made Springfield his home and focused on general farming. His farm was known as a "model farm" and he practiced scientific farming, including a nine-year pattern of crop rotation and heavy application of manure and phosphates. He was well-known for his herds of Devon cattle and Berkshire hogs. Springfield also included a grist mill, constructed ca. 1824 along Piney Run, and iron and copper mines that were opened ca. 1850 (Maryland State Archives 2023b; Scharf 1882 vol. 2:873-874). George Patterson added parcels to Springfield and in 1854 repatented it as "Springfield Enlarged", including 1,759 acres (Maryland State Archives 2023c).

The 1840 census lists George Patterson as living in Carroll County, with four free white persons, three free colored persons, and 48 slaves making up his household (United States Bureau of the Census 1840). In the 1850 census of free persons, the George Patterson household included himself, a 53-year-old farmer, his wife, daughter, and Margaret Wilhelm, relationship unknow (United States Bureau of the Census 1850a). Listed in the 1850 census' slave schedule are 40 slaves, ranging in age from 70 to 5 months old (United States Bureau of the Census 1850b). Similar occupants are listed in the 1860s census, with the free population including George Patterson, a 63-year-old farmer, with real estate valued at $150,000 and personal property at $78,000, his wife, daughter, a relative of his wife's and two female servants (United States Bureau of the Census 1860a). The slave schedule for that census lists George Patterson as owning 37 slaves, ranging in age from 75 to 3 years old (United States Bureau of the Census 1860b).

The earliest available maps detailing developments within the vicinity of the APE were separately produced in 1862 by Simon J. Martenet and J.N. Macomb (Figures 3-1 and 3-2). The Martenet map includes significantly more detail that the Macomb map, the latter being a simplified version that used the former as a basis. Neither map shows development within or adjacent to 18CR293, although they do show other developments on Patterson's property, including the sawmill and copper mines. It is interesting to note that the Macomb map shows a small, incompletely drawn road spur leading north from a bend in what is now Obrecht Road and on a trajectory that may have led north into the APE.

CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase II
SCALE:	1:24,000
SOURCE:	Martenet 1862

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TITLE
1862 Martenet Map

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO	60614688
FIGURE	3-1

CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase II
SCALE:	1:48,000
SOURCE:	Macomb 1862

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TITLE
1862 Macomb Map

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-2

In 1863, William Shearer produced a more rudimentary map of Carroll County that somewhat crudely depicts the principal roads and waterways in the vicinity of the APE (Figure 3-3). Useful only as a schematic, Shearer's map does not illustrate road alignments, stream courses, and historic occupations with the spatial accuracy evident in the 1862 maps above. It correctly shows how principal features of the cultural landscape were arranged relative to one another, but their distances and orientations appear to be general approximations. Fewer residential and industrial occupations are shown compared to the 1862 Martenet map, though Shearer depicted some dwellings absent from earlier maps. Despite the inaccuracies, Shearer's map generally concurs with the 1862 maps insofar as no improvements were shown within the APE.

George Patterson died in 1869, with his property passing to his only child, Florence Patterson Carroll. After Florence Patterson Carroll's death in 1879, Springfield was sold by her executors to Frank Brown for $50,000 (Carroll County Deed Book [CCDB] 53:301). No census records were able to be located for Florence Patterson Carroll in 1870.

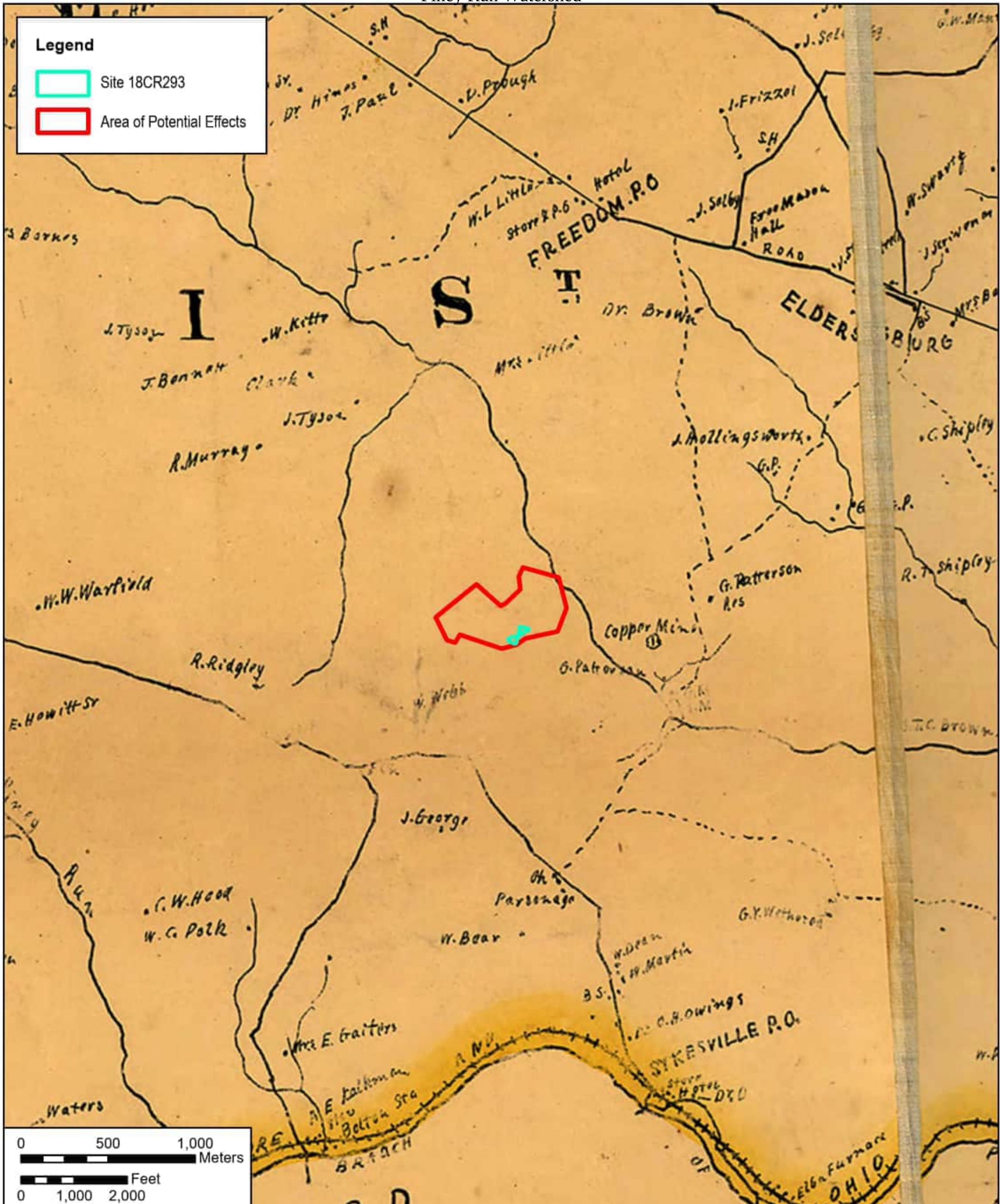
Frank Brown was the cousin of Florence Patterson Carroll, and nephew of George Patterson. Brown also had owned a large, adjoining tract of land, "Brown's Inheritance." Frank Brown continued the model farming of his uncle, while also serving in Maryland politics as a member of the House of Delegates from 1875-1879 and governor of Maryland from 1892-1896 (Maryland State Archives 2023a). The 1880 population census lists the Frank Brown household as including the 33-year-old Brown, enumerated as a farmer, his wife, his mother, and an aunt. Also listed with his household are six servants, including three coachmen (United States Bureau of the Census 1880).

Frank Brown only briefly owned the part of Springfield Enlarged that included 18CR293. In 1886, he sold 229 acres of "Springfield Enlarged" to John Welbourn for $9,000 (CCDB 64:510). The property then was sold again several times in quick succession, including in May 1888 to John and A.K. Williams for $6,000 (CCDB 63:318); then in September 1890 A.K. Williams sold his share to John Williams for $3,000 (CCDB 71:544). John Williams had died in 1894, and his widow, Jane Williams, purchased the property from his heirs (CCDB 81:543).

The 1892 United States Geological Survey's (USGS) Ellicott quadrangle provided some additional details regarding the rural road network within the APE (Figure 3-4). A nonextant road is shown branching northwest from what is now Maryland Route 32 (MD 32), following the foot slopes and floodplain on the south side of "Winter Run" (now Piney Run). Shortly after entering the APE, this road abruptly turns northeast to cross an unnamed stream as well as Piney Run before continuing northwest to intersect what is now a portion of Martz Road submerged beneath Piney Run Reservoir. The map only selectively illustrated local buildings, giving preference to those associated with towns/villages; more dispersed buildings (e.g., farmsteads) typically were not shown, with the exception of those serving industrial or institutional purposes (e.g., mills, churches, schoolhouses). Therefore, while no buildings are depicted within the APE or vicinity, this does not indicate that none existed.

After Jane Williams' death in 1901, there was a series of short ownership periods, with the property remaining intact as 229 acres. Jane Williams' executor sold the property to Mordecai Jones for $3,791 in January 1901 (CCDB 92:78); in April 1901 Jones sold the property to Joseph T. Harris for $4,000 (CCDB 93:115); a little over a year later, in November 1902, Harris sold the property to Mary Todd for $6,000 (CCDB 96:315); then in February 1904, Mary Todd sold the property to Johnzie Beasman for $2,600 (CCDB 98:565). Johnzie Beasman was a farmer who renamed the property "Fairhaven." He built a large, frame, two-and-one-half story tall Queen Anne house with a wrap-around porch (Maryland Historical Trust 1972). This house was located approximately 0.75 mile southeast of 18CR293, near SR 32/Sykesville Road. Johnzie Beasman was also involved in state politics, serving in the House of Delegates from 1884-1894 and in the Maryland Senate from 1900-1910.

The 1906 USGS Ellicott quadrangle is the first map to depict buildings at 18CR293 (Figure 3-5). The unnamed road shown in 1892 linking MD 32 to the APE still survived as an unimproved route following Piney Run to an unidentified occupation located south/southwest of the existing Piney Run Dam. This farmstead was built into the foot slopes of the Piney Run valley.



CLIENT: Carroll County Bureau of Resource Management

PROJECT: Piney Run Phase II

SCALE: 1:30,000

SOURCE: Shearer 1863

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TITLE

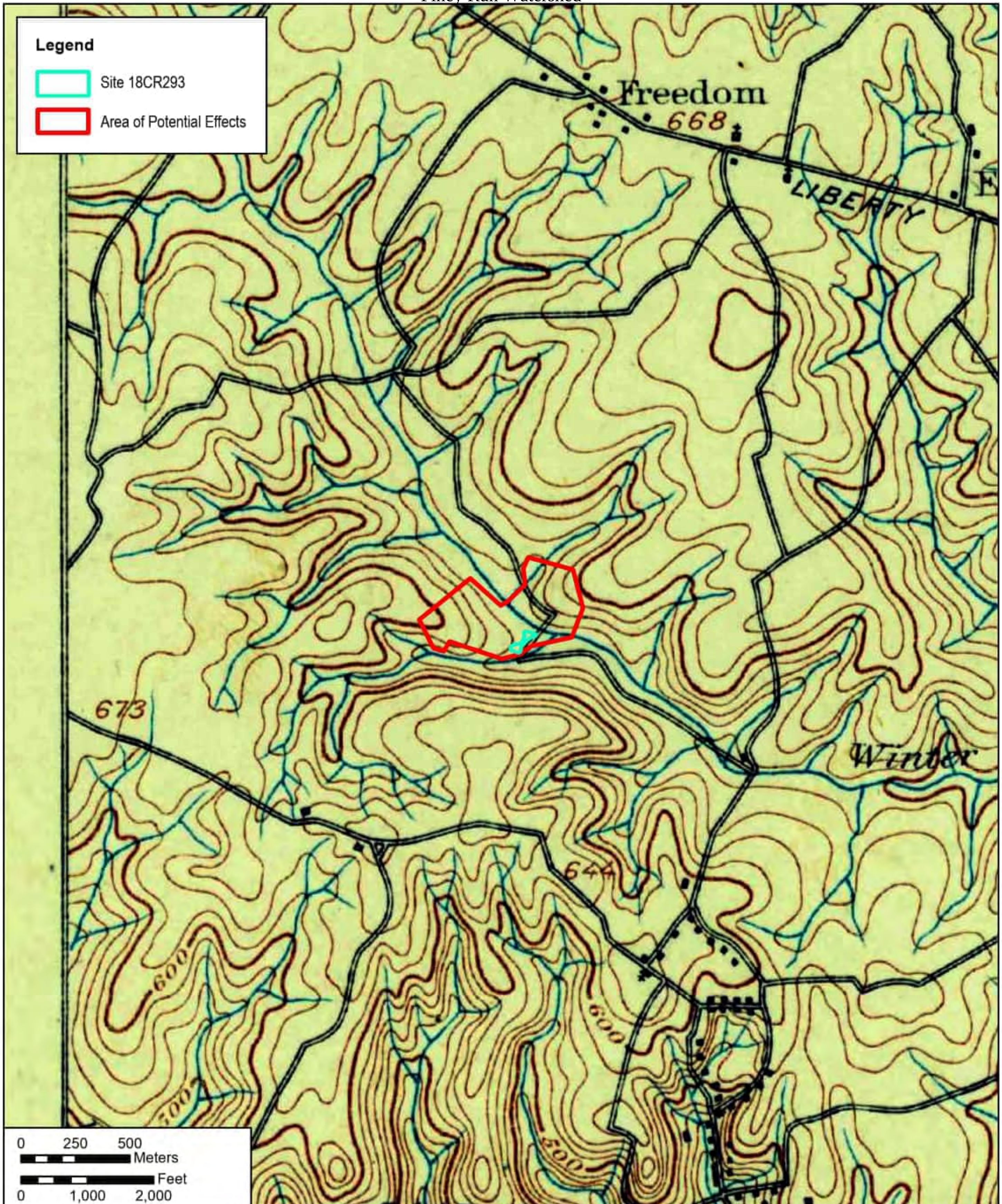
1863 Shearer Map

AECOM

12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688

FIGURE 3-3



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase II
SCALE:	1:24,000
SOURCE:	USGS 1892

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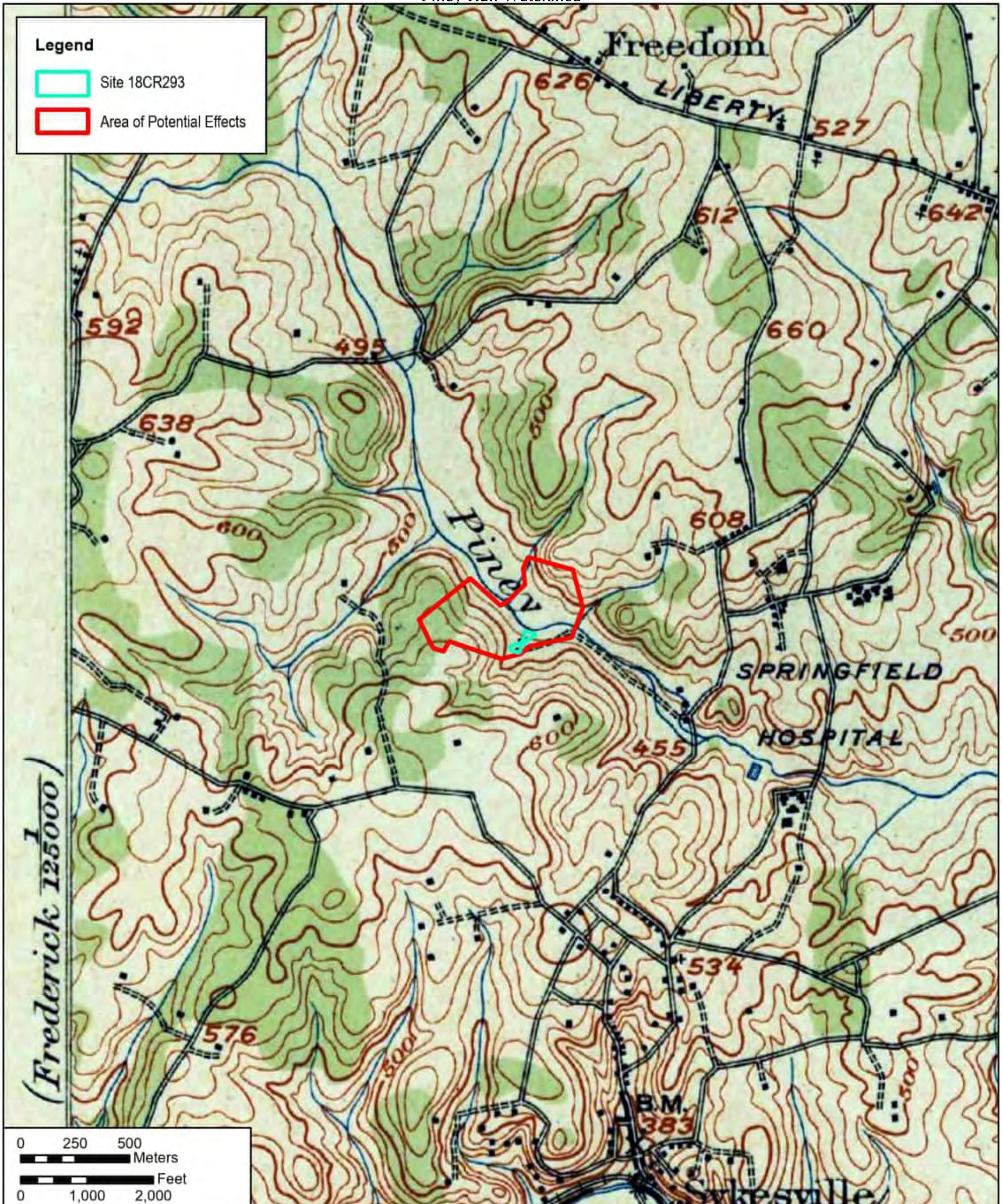
TITLE
1892 USGS Map

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-4



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase II
SCALE:	1:24,000
SOURCE:	USGS 1906

L:\Legacy\Projects\MD\Piney_Run\

TITLE
1906 USGS Map

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-5

In 1911, the United States Post Office Department (USPOD) issued a rural delivery service map of Carroll County, showing residences, delivery points, and the road network (Figure 3-6). No occupations are depicted within or adjacent to the APE. The unimproved road depicted on the 1906 USGS map is still shown, though the building at its northwestern terminus is not. Whether the building was unoccupied, or whether its isolation precluded its illustration, is not clear.

The 1910 and 1920 Census entries for Johnzie Beasman are very similar. In 1910 the Johnzie Beasman household is listed as a 51-year-old farmer, living with his wife, and 21-year-old son, Frank. Also in the household are two servants (United States Bureau of the Census 1910). The only difference in the 1920 census are a lack of servants in the household (United States Bureau of the Census 1920). Johnzie Beasman was also involved in state politics, serving in the House of Delegates from 1884-1894 and in the Maryland Senate from 1900-1910.

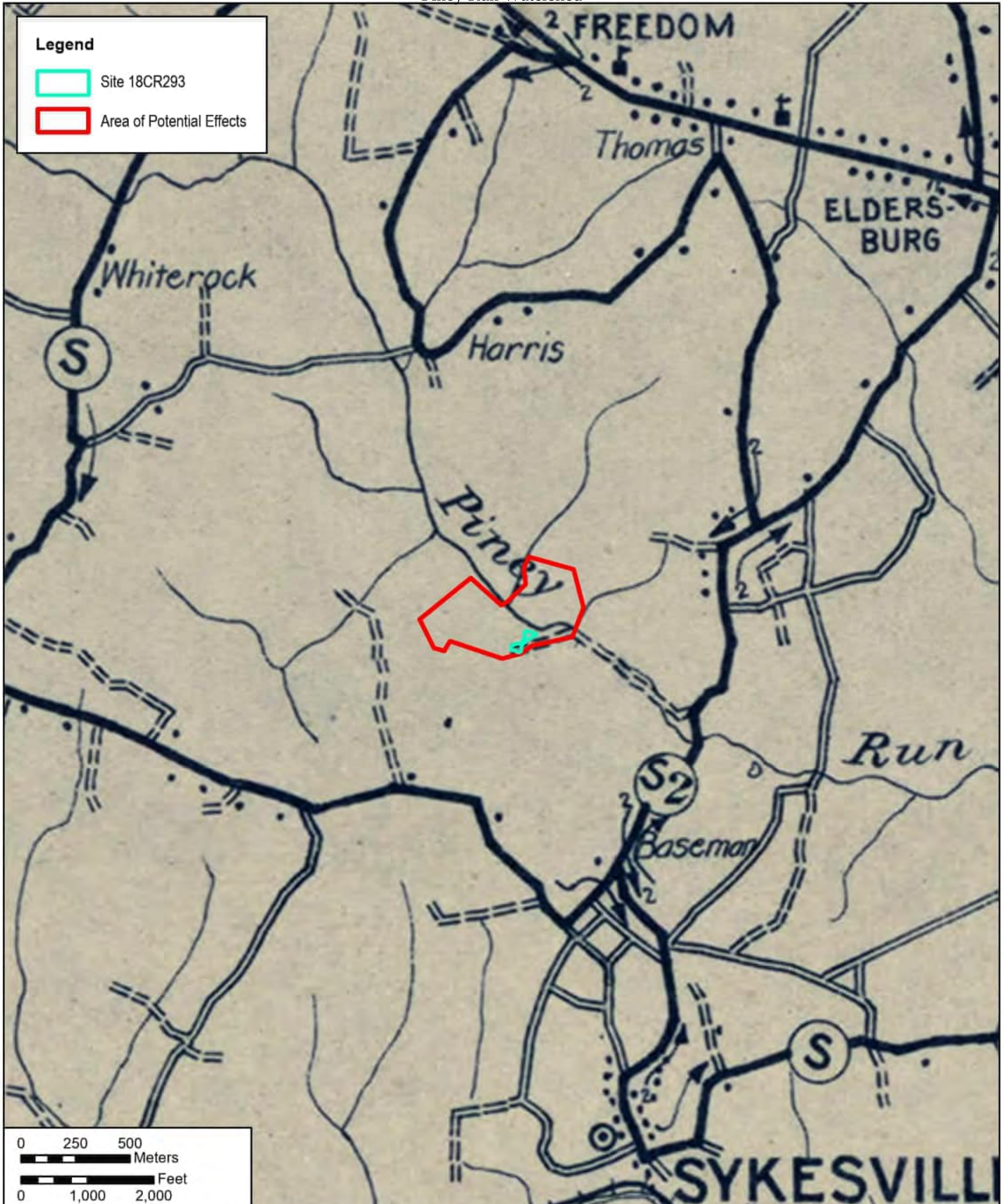
Johnzie Beasman died in 1922 and Fairhaven passed to his son, Frank, who was a Baltimore-based businessman who maintained Fairhaven as a summer home. Frank Beasman worked in construction and began his own company, which merged with the McLean Construction Company in the mid-twentieth century (Getty 1993). He also maintained a dairy farm at Fairhaven, with a large herd of pedigreed cows that had very good production records (The Evening Sun [Hanover, PA], September 21, 1960).

A 1943 aerial photograph depicts 18CR293 as a small complex accessed via a dirt road leading north-northeast from what is now Obrecht Road (Figure 3-7). Two barns/outbuildings are visible along either side of this road, with a dwelling surrounded by lawn located to the northeast on the opposite side of a small stream. The 1944 USGS Finksburg quadrangle is the earliest available 7.5-minute map and provides a simplified view of the built environment depicted in the 1943 aerial photograph (Figure 3-8). Each building is represented with the same generic solid black square symbol, making it impossible to differentiate between a range of possible functions (e.g., industrial, agricultural, domestic). However, the 1953 USGS Finksburg quadrangle used unique symbols to distinguish broad classes of building types (Figure 3-9). Site 18CR293 is shown as containing a large barn and a dwelling.

A 1958 aerial photograph shows that the farmstead may have fallen into disuse, though poor image quality and contrast makes it difficult to determine (Figure 3-10). While the two barns/outbuildings clearly visible on the 1943 aerial photograph are still evident, the location of the dwelling immediately to the northeast appears to be overgrown. A small access road linking the barns to the dwelling has all but faded by this time and no yard spaces are clearly visible. Additionally, some tree growth has returned to the far northern end of the agricultural fields surrounding this property, possibly indicating a lapse in agricultural activity.

A marked-up 1963 aerial photograph notes 18CR293 as vacant and associated with Frank Beaseman (Beasman) (Figure 3-11). At his death in 1960, Frank Beasman left his real estate to the Episcopal Church, Diocese of Maryland (CCDB 511:543). The church used the property to build a retirement community, also called Fairhaven, and sold the portion of the property containing 18CR293 to the County Commissioners of Carroll County for use in building the Piney Run Reservoir (CCDB 511:543). Beasman's livestock, machinery, roughage, and equipment were sold after his death (The Evening Sun [Hanover, PA], September 21, 1960). A 1970 aerial photograph shows increasingly dense forest growth returning to the former agricultural fields that once dominated the central and eastern portions of the APE (Figure 3-12). The only remnant of 18CR293 visible is the large barn.

In 1972, as-built drawings were prepared for the construction of the Piney Run dam and reservoir, encompassing the APE (Figure 3-13). The site plan drawing provides coverage for most of the APE and clearly shows three structures located south/southeast of the emergency spillway (located on the southwest side of the dam embankment, collocated with "Borrow II"). The easternmost and westernmost buildings respectively correspond to the dwelling and barn within 18CR293, and a third building immediately southeast of the barn represents the outbuilding.



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase II
SCALE:	1:24,000
SOURCE:	USPOD 1911

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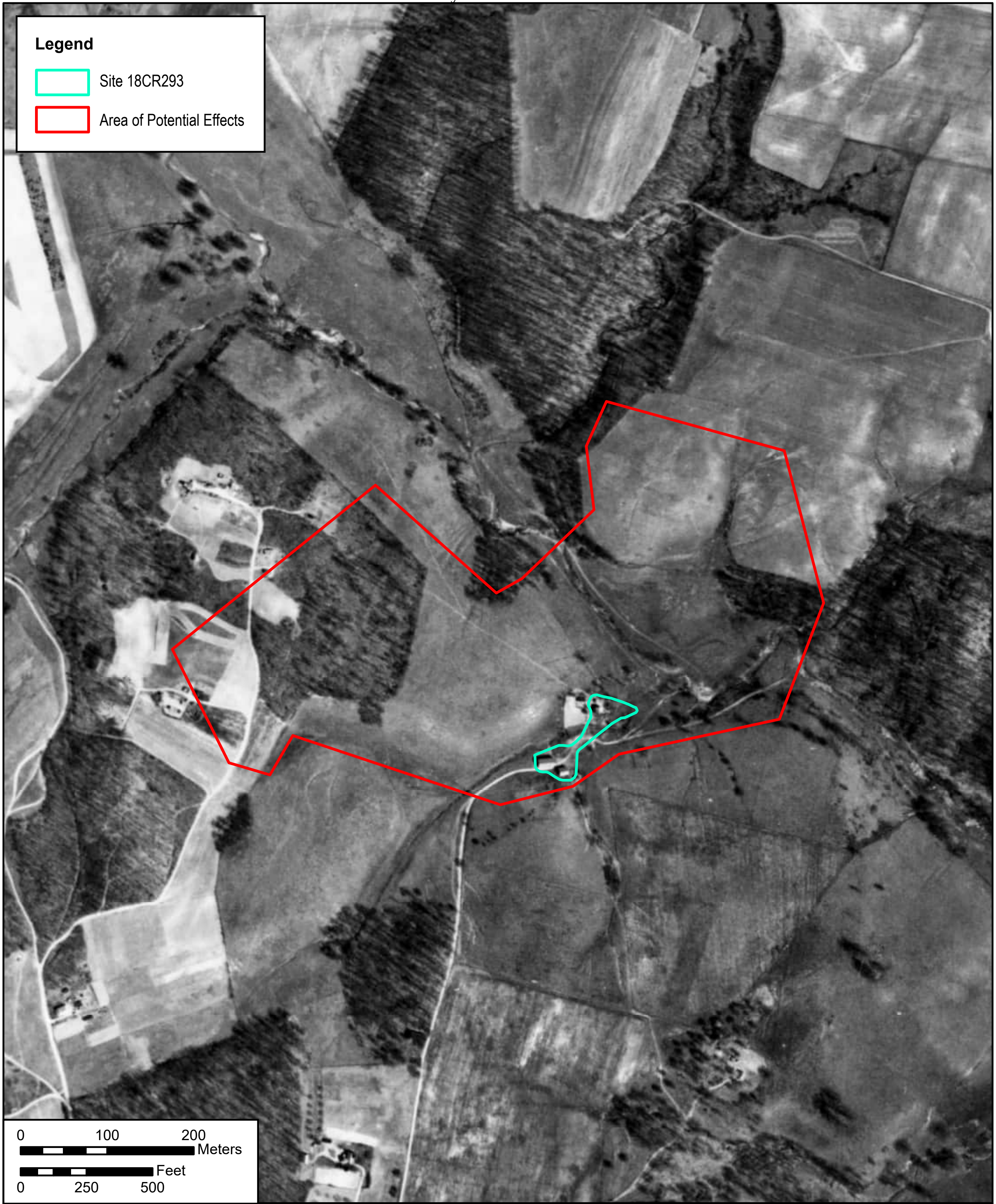
TITLE
1911 USPOD Map

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-6



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase II
SCALE:	1:6,000
SOURCE:	Image Courtesy of BRM

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TITLE
1943 Aerial Photograph

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-7

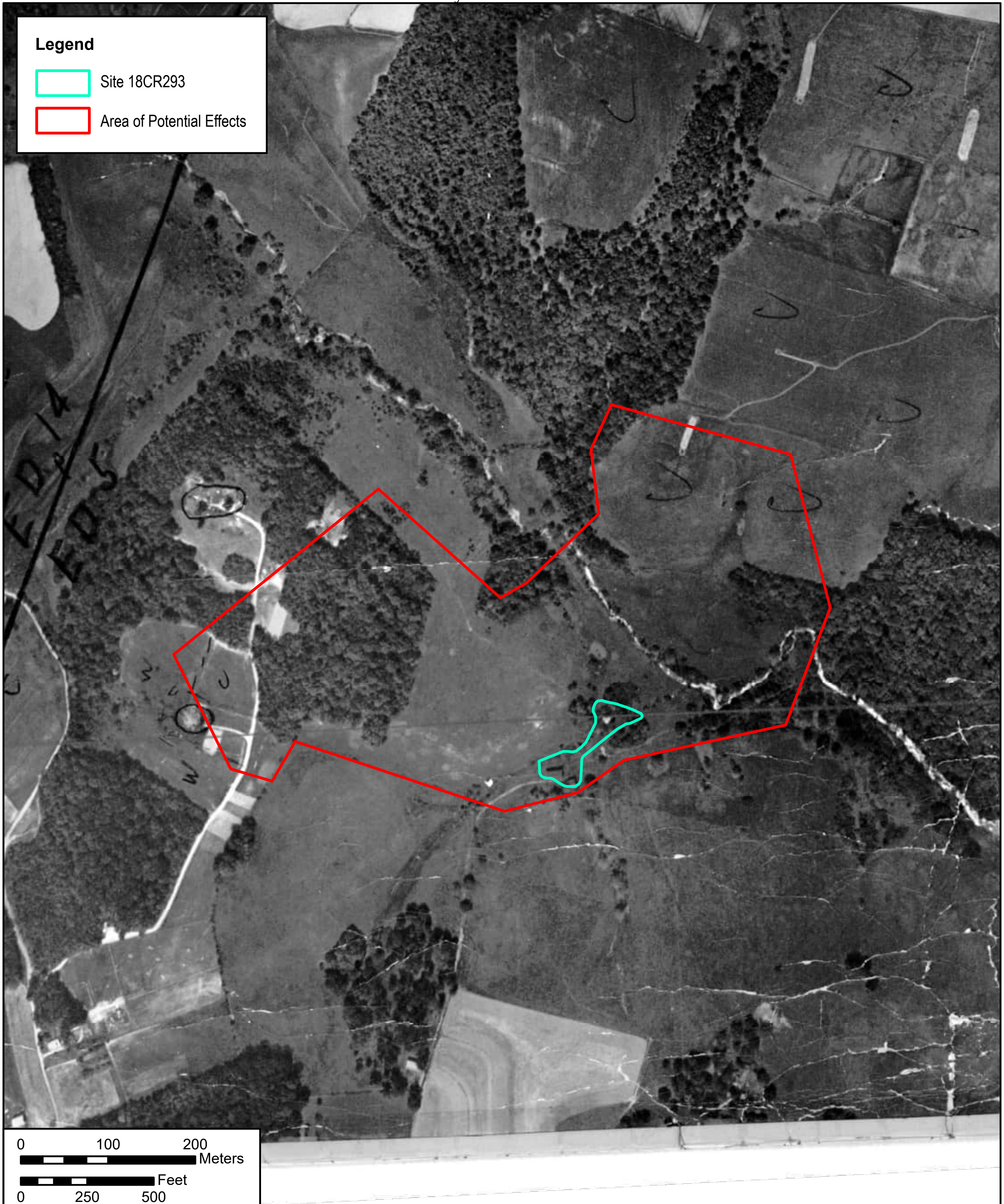

Legend
Site 18CR293
Area of Potential Effects
Run
Flohrville
BM 541
USC&GS TANK 1943
SPRINGFIELD ROLLER MILLS
Sykesville
Freedo
Churc
500
600
32
624000 YARDS
GAITHER 1.1 MI.
625
JUNC. 40 5.3 MI.
626
627
57'30
by U.S. Department of Agriculture, Soil Conservation Service,
direction of the Chief of Engineers, U. S. Army, 1944.
C. & G. S., U. S. G. S., U. S. E. D., and S. C. S., 1943.
photography for S. C. S., 1943.
atum, 1927.
0 250 500 Meters
0 1,000 2,000 Feet
CLIENT: Carroll County Bureau of Resource Management
PROJECT: Piney Run Phase II
SCALE: 1:18,000
SOURCE: USGS 1944
L:\Legacy\Projects\MD\Piney_Run\
N
TITLE
1944 USGS Map
AECOM
12420 Milestone Center Dr.
Germantown, MD 20876
PROJ NO 60614688
FIGURE 3-8

CLIENT: Carroll County Bureau of Resource Management
PROJECT: Piney Run Phase II
SCALE: 1:18,000
SOURCE: USGS 1953
L:\Legacy\Projects\MD\Piney_Run\

TITLE
1953 USGS Map

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-9



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase II
SCALE:	1:6,000
SOURCE:	Image Courtesy of BRM

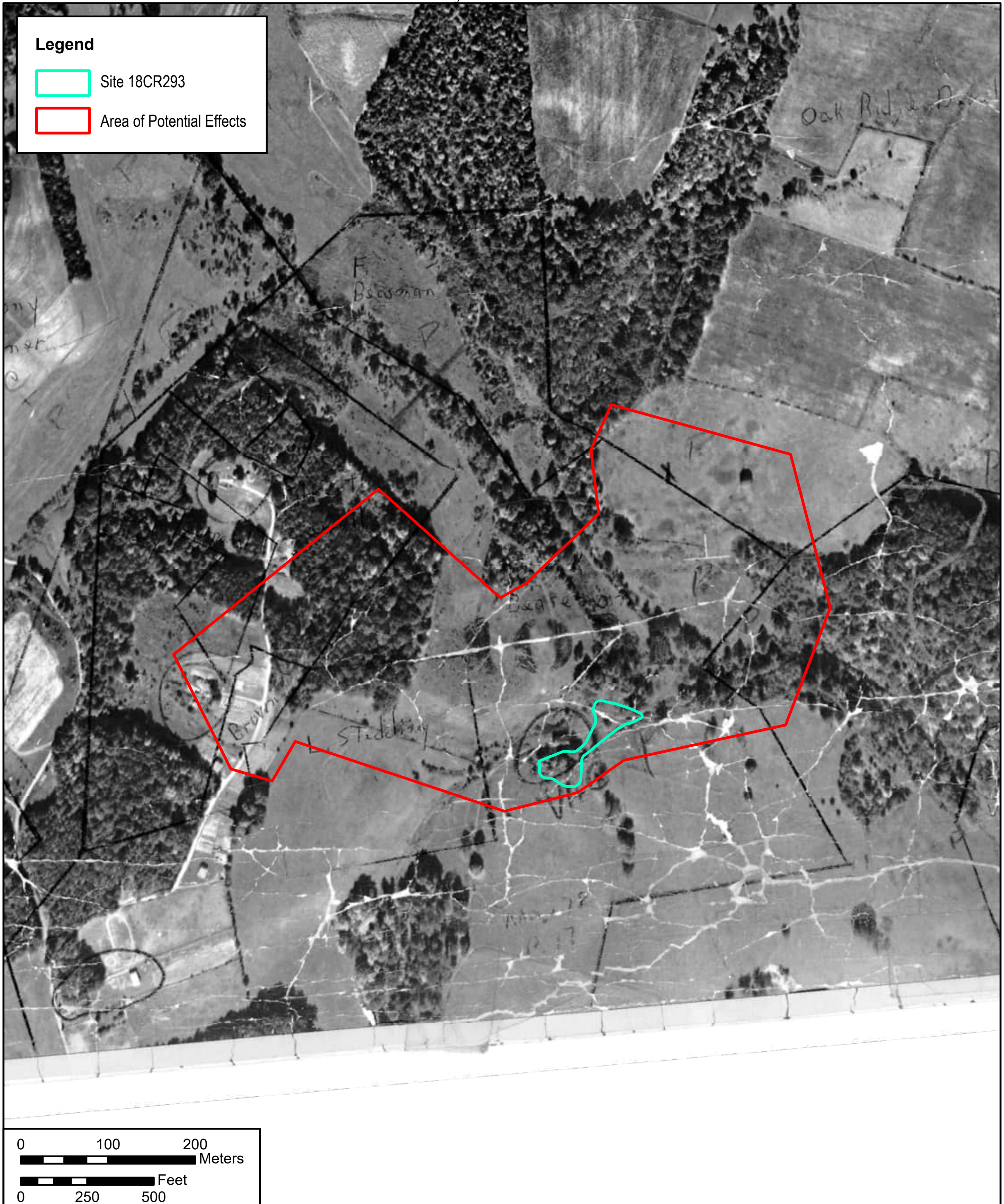
L:\Legacy\Projects\MD\Piney_Run\

N

TITLE
1958 Aerial Photograph

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-10



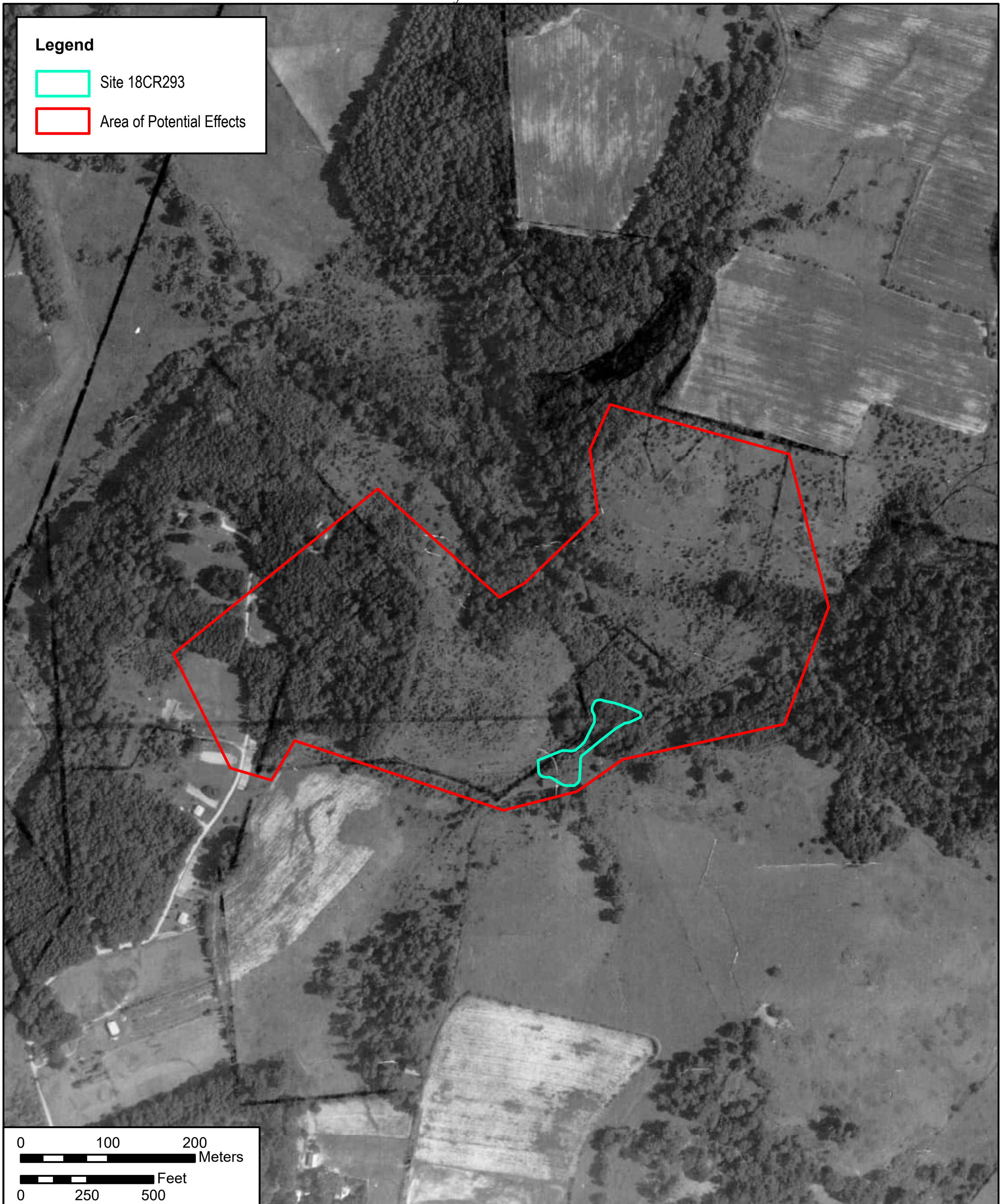
CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase II
SCALE:	1:6,000
SOURCE:	Image Courtesy of BRM
L:\Legacy\Projects\MD\Piney_Run\	

N

TITLE
1963 Aerial Photograph

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-11



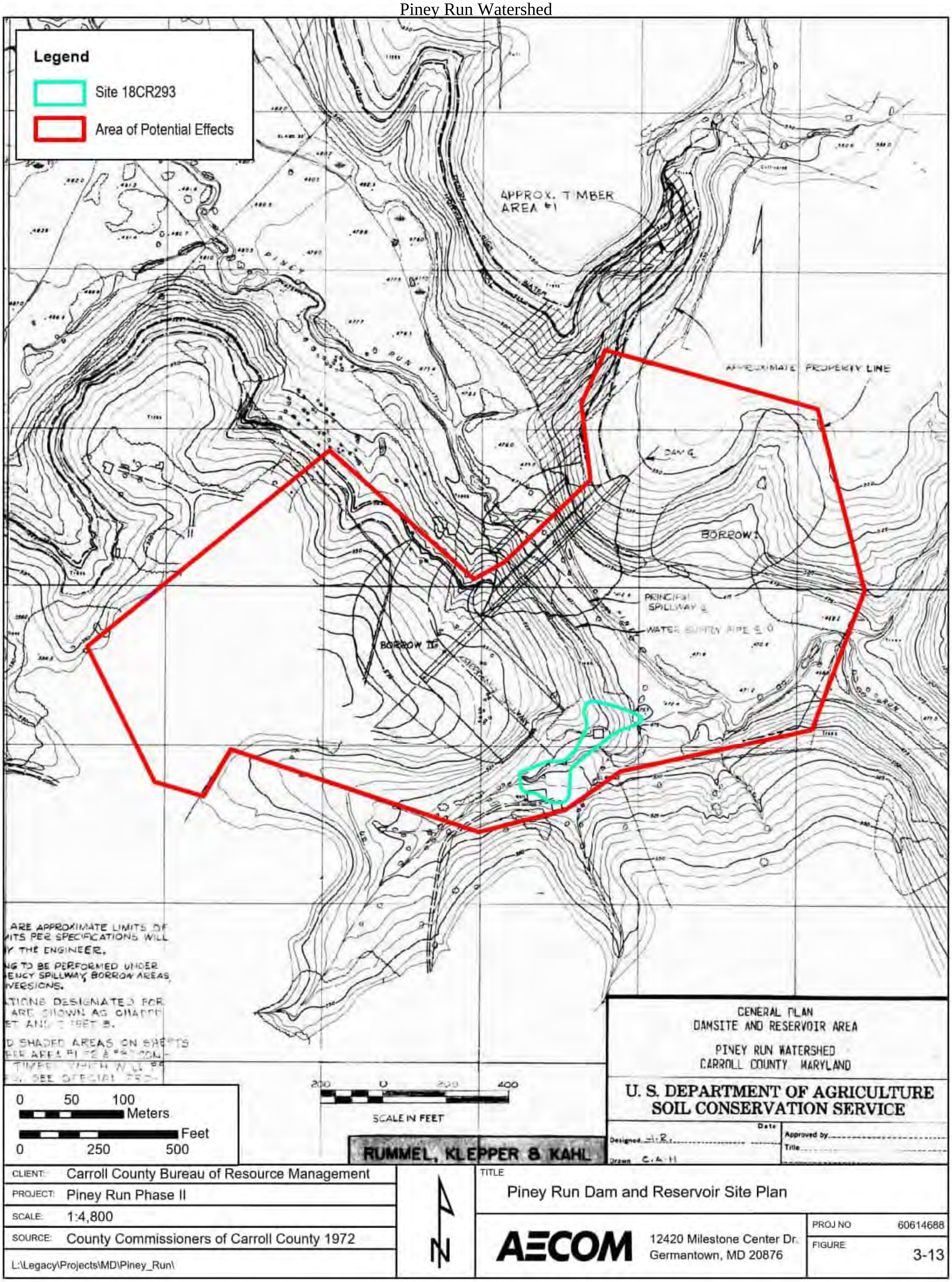
CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase II
SCALE:	1:6,000
SOURCE:	Image Courtesy of BRM

L:\Legacy\Projects\MD\Piney_Run\

TITLE
1970 Aerial Photograph

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 3-12


Legend
Site 18CR293
Area of Potential Effects
APPROX. TIMBER AREA #1
APPROXIMATE PROPERTY LINE
DAM ℄
BORROW I
BORROW II
PRINCIPAL SPILLWAY ℄
WATER SUPPLY PIPE ℄
PINEY RUN
GENERAL PLAN
DAMSITE AND RESERVOIR AREA
PINEY RUN WATERSHED
CARROLL COUNTY MARYLAND
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SCALE IN FEET
RUMMEL, KLEPPER & KAHL
0 50 100 Meters
0 250 500 Feet
CLIENT: Carroll County Bureau of Resource Management
PROJECT: Piney Run Phase II
SCALE: 1:4,800
SOURCE: County Commissioners of Carroll County 1972
L:\Legacy\Projects\MD\Piney_Run\
TITLE
Piney Run Dam and Reservoir Site Plan
AECOM
12420 Milestone Center Dr.
Germantown, MD 20876
PROJ NO 60614688
FIGURE 3-13

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4. Previous Investigations

AECOM conducted a review of available information, including NRHP listings, and historic maps and images (e.g., historic aerial photographs and historic topographic maps). The primary goal of this research was to identify previously recorded archaeological sites and above ground resources within 1 mile (mi) (1.6 kilometers [km]) of the project area and any associated archaeological survey reports. The records search included review of site-specific records using MHT's Maryland's Cultural Resource Information System (MEDUSA).

4.1 Previous Cultural Resource Investigations

Seven previous cultural resource investigations have been registered with MHT within a 1-mi (1.6-km) radius of the APE. In 1980, Wesler et al. conducted surveys along 326 systematically selected half-mile road segments across Maryland's piedmont region (Wesler et al. 1981). Two such segments were investigated along MD 32, resulting in the identification of no archaeological deposits.

In 1993, the American University conducted a Phase I survey of a 2-ha (5-ac) area for a proposed water treatment facility associated with Piney Run Reservoir (Dent and Jirikowic 1994). In total, 135 STPs were excavated, resulting in the recovery of an isolated quartz flake and the identification of a ruin immediately east of the project's limits and within the current APE. The ruin was depicted on an incomplete excavation plan map adjacent to a trail in the valley south of the spillway. While the investigators did not record it as a site, they described it as:

> the remains of what appears to have been a wooden barn constructed on a foundation of local micaceous schist fieldstone. The structure measures 30 x 60 feet, with 10 foot openings on both ends and a silo foundation just east of the ruins. The hardware used in the structure indicate it was constructed in the 20th century (Dent and Jirikowic 1994:26).

No subsurface investigation occurred within the ruins, and no evidence for additional structural features was observed. This building is the same as that which first appeared on the 1944 USGS map and identified as a Class 2 building on the 1953 USGS map (Figures 3-8 and 3-9).

In 2003, Robert Wall & Associates conducted a Phase I survey of the proposed reconstruction of MD 32 at Maryland Route 851 (Wall 2003). The project area encompassed approximately 6.9 ha (17 ac), most of which was agricultural fields. No archaeological sites or isolated artifacts were identified during pedestrian survey and systematic shovel testing.

In 2004, Charles Hall conducted a Phase I survey of 97 acres on the grounds of the Springfield State Hospital and Phase II evaluations of 18CR172, 18CR255, and 18CR256 (Hall 2005). Site 18CR172 represents a nineteenth century domestic occupation subsequently used as a hospital facility. Site 18CR255 is a low-density, nondiagnostic prehistoric lithic scatter. Site 18CR256 is an early to mid-twentieth century concentration of hospital dining hall refuse. Sites 18CR172 and 18CR256 were recommended eligible for listing in the NRHP, while 18CR255 was not.

In 2015, Applied Archaeology and History Associates, Inc. (AAHA) conducted a Phase I survey of 5.1 ha (12.61 ac) in advance of the construction of the proposed Freedom Readiness Center (AAHA 2015). Fifty-two STPs were excavated, and a systematic pedestrian survey was conducted, resulting in the identification of 18CR283, a collection of late historic concrete foundations. The site was recommended not eligible for listing in the NRHP.

In 2017, AECOM conducted a Phase I survey in advance of stream restoration efforts along Piney Run over 1 km (0.8 mi) east of the APE (Koziarski 2018). In total, 886 STPs were excavated, resulting in the identification of 18CR287 and 18CR288. Site 18CR287 represents the remnants of the eighteenth to twentieth century Elias Brown mill, while 18CR288 represents a nineteenth to twentieth century rock quarry. Neither site was determined to possess good research potential, and both were recommended not eligible for listing in the NRHP.

In 2019, AECOM conducted a Phase I survey in support of the Piney Run Watershed Study. The archaeological survey consisted of visual surface inspection for above-ground evidence of archaeological sites and the excavation of 217 shovel test pits (STPs). Primary STPs were excavated on a 20-m (65.6-ft) interval grid oriented to true north, radial STPs were excavated around positive primary STPs at 10-m (32.8-ft) intervals, and judgmental STPs were placed in opportunistic locations to test specific landforms and/or archaeological deposits as needed. This survey resulted in the recovery of one prehistoric artifact and 242 historic artifacts and the identification of four historic archaeological sites (18CR292 through 18CR295). The prehistoric artifact and one of the historic artifacts occurred as isolated finds, while the remaining 241 historic artifacts are attributed to three of the four newly recorded sites.

4.2 Previously Recorded Archaeological Resources

Ten archaeological sites have been registered with MHT within the 1-mi (1.6-km) radius of the APE (Table 4-1). These resources include one prehistoric and nine historic sites. Historic sites include domestic, industrial, and institutional sites dating from the late eighteenth to the early twentieth century. The prehistoric site represents a low-density lithic scatter lacking diagnostic material. MHT staff have determined 18CR172 and 18CR256 eligible for listing in the NRHP, while four sites have been determined not eligible by MHT and the other two have not been assessed.

Table 4-1. Previously Recorded Archaeological Resources within 1-mi of APE

DHR ID	Site Name	Site Type	NRHP Eligibility	Location
18CR172	Buttercup Cottage	Farmhouse/Hospital Building	Eligible	Outside APE
18CR173	Martin Gross “K” Cottage	Hospital Cottage/Ind. Site	Not Evaluated	Outside APE
18CR174	Patterson House	Mansion/Hospital Building	Not Evaluated	Outside APE
18CR255	Warfield Pre. Scatter #1	Lithic Scatter	Not Eligible	Outside APE
18CR256	Warfield Dump	Dining Hall Debris	Eligible	Outside APE
18CR283	Springfield North Gate	Hospital Structure	Not Eligible	Outside APE
18CR292	Piney Run 1	Refuse Pit	Not Eligible	Within APE
18CR293	Piney Run 2	Farmstead	Potentially Eligible	Within APE
18CR294	Piney Run 3	Spring Box	Not Eligible	Within APE
18CR295	Piney Run 4	Domestic Occupation	Not Evaluated	Outside APE

4.2.1 Site 18CR293

AECOM identified 18CR293 in 2019 in the south-central portion of the Phase I APE, southeast of the emergency spillway within the small, forested valley of an unnamed Piney Run tributary (Regan 2020). The site corresponds to the historic farmstead shown in the southcentral part of the APE on historic maps and aerial photographs presented in Section 3 of this report. The site was organized into two discrete loci on adjacent but distinct landforms.

Locus A was located on the south side of the unnamed tributary, partially within its floodplain and partially cut into a terrace on the toe slopes rising to the south. Locus B was located on the north side of the unnamed tributary, midway up the hillslopes rising northwest toward the emergency spillway. A road trace bisects Locus A along the floodplain’s southern margin. The site encompasses 0.33 ha (0.83 ac) and is defined by five features. Features 1 through 4, representing an agricultural complex, are located in Locus A, while Feature 5, the remnants of a farmstead dwelling, is located in Locus B.

The Phase I investigation of 18CR293 included surface inspection and the excavation of 27 STPs at 15 and 10-m intervals as well as judgmental STPs within features. Fourteen of the STPs yielded historic artifacts. The survey resulted in recovery of 224 historic artifacts and the identification of five features. Feature 1 was a concrete silo foundation adjacent to Feature 2, a large stone barn foundation. Feature 3 was a stone and concrete spring box. Feature 4 was the foundation of an outbuilding consisting of stone piers, and Feature 5 was a collapsed stone foundation of a dwelling. Artifacts dated to the late eighteenth to twentieth century. The site was recommended potentially significant and recommended for avoidance or Phase II evaluation.

4.3 Previously Recorded Above-Ground Resources

Over 80 above-ground resources have been registered within 1.6 km (1 mi) of the APE, most of which are associated with the Springfield Hospital Center to the east. The center was established in 1894 as a psychiatric hospital built on the “cottage design” that has grown to include 62 historic buildings (Bowlin 1986). Parts of the Sykesville Historic District also fall within a 1.6-km (1-mi) radius of the APE. The district includes 97 resources constructed between 1850 and 1925 and is listed in the NRHP.

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5. Research Design

5.1 Objectives

The objective of the Phase II archaeological evaluation was to determine if site 18CR293 is eligible for listing on the NRHP.

5.2 Methods

5.2.1 Research

Background research was undertaken using resources available from the MHT library and Maryland's cultural resource information system (MEDUSA) to characterize archaeological and above-ground resources within the vicinity of the APE. Digital archives, site forms, survey reports, and GIS data were examined to provide a depiction of the local archaeological record as part of this project's broader contextual framework. Electronic resources were utilized to compile cartographic data and supplementary historic context information to detail the area's cultural background more thoroughly. These include digital materials available from the Library of Congress, Johns Hopkins University, and other repositories as appropriate. Land records, wills, and census records available from the Maryland State Archives were also reviewed.

5.2.2 Field Methods

The Phase II survey consisted of STP and TU excavation. Each STP measured 40 centimeters (cm; 1.3 ft) in diameter and was excavated 10 cm (0.33 ft) into sterile subsoil. No STPs were excavated on slopes greater than 15 percent. STPs were assigned alphanumeric identifiers (JUD01 through JUD22). TUs measured 1 x 1 m (3.3 ft) square and were assigned sequential numbers starting from TU 1. Upon completion of TU excavation, units were documented through drawing and photography before being backfilled.

Field data were recorded on standard field forms and in general field notes. The forms included Munsell soil color, soil texture, profiles, features present, artifacts recovered, excavator's initials, and the date of excavation. The locations of STPs were noted on field maps and recorded using a global positioning system (GPS) unit. Archaeological features were documented on site plans, in photographs, and on feature forms describing the features' shapes and dimensions, location, and interpretation/feature types.

All soils were screened through 6.34-millimeter (mm) (0.25-inch [in]) hardware mesh to ensure uniform artifact recovery. Collected artifacts were bagged in plastic sealing bags labeled with all relevant provenience information, including project name, site name/locus (as appropriate), STP, TU, or feature number (as appropriate), stratum, level, the number of artifacts recovered, excavator initials, and date. Obviously modern artifacts (e.g., plastic) were generally noted on forms and discarded in the field. Brick fragments observed while screening was separated from other artifacts and weighed at the end of each stratum. Artifacts were placed in resealable plastic bags labeled with all relevant provenience information and transported to the AECOM archaeology laboratory in Gaithersburg, Maryland.

5.2.3 Laboratory Analysis

Artifacts were transported to the AECOM archaeological laboratory in Burlington, New Jersey, where they were cleaned, cataloged, and analyzed according to the Secretary of the Interior's Standards and Guidelines for Curation (United States Department of the Interior 1991) and the MHT's (2005) Standards and Guidelines for Archaeological Investigations in Maryland – Collections and Conservation Standards, Technical Update No. 1. Artifacts were cataloged using MDOT SHA's Artifact Database and Manual. The objectives of laboratory analysis and cataloging were to determine the date, function, cultural affiliation, and preliminary significance of the artifacts to the extent possible. Artifacts will be curated with the Maryland Archaeological Conservation Laboratory in St. Leonard, Maryland.

5.2.3.1 Prehistoric Artifacts

Prehistoric artifacts from the investigation included one quartz projectile point fragment. The following basic information was recorded for lithics: count, weight, class (lithic material), type, object, and lithic color. Weight was recorded to the nearest 0.01 g using a digital Sartorius scale calibrated to 800.00 g. A three-tiered system of classification (type, material, and object) was used; the broadest level of classification is the group. Lithic types include bifacial flaked tool, debitage, unifacial flaked tool, use modified, and other lithics. Interpretations of morphology and temporal affiliation follow nomenclature as outlined in MAC Lab's Diagnostic Artifacts in Maryland website.

5.2.4 Historic Artifacts

Many of the historic artifacts were identifiable as to material, form, and function, while others required research to determine their function and/or dates of manufacture. Numerous internet resources were helpful such as MAC Lab's Diagnostic Artifacts in Maryland (2019), the Florida Museum's Historical Archaeology Ceramic Type Collection (2019), and the BLM/SHA Historic Glass Bottle and Identification and Information (Lindsey 2019). Most artifact dating and identification were based on the following sources: Deetz (1996); Miller (2000); Noël Hume (1969); South (1977); and Visser (1997).

The same attributes were recorded for all artifacts, including count, material (i.e., the main material composition of the artifact), class, type, and object. The object was often difficult to determine given the fragmentary nature of artifacts. Additional group-specific attributes were recorded as appropriate.

Identical, or nearly identical, artifacts within a provenience were grouped together under the same catalog number (note: The catalog number is the bag number followed by artifact number.) For example, all the window glass fragments within a single bag number (i.e., all from the same provenience) would be given the same artifact number. Whenever possible, mendable artifacts were grouped together. An attempt was made to classify all historic ceramics according to published pottery types (e.g., whiteware, pearlware, stoneware). Those sherds not easily recognized were assigned a descriptive name based on surface treatment and paste. Diagnostic ceramic, glass, and metal artifacts were used to estimate dates for site activities.

Historic artifacts were classified using Orser's (1988) functional typology (Table 5-1), which provides a means for interpreting the function of specific historic artifact classes. Within Orser's system, historic artifacts were analyzed according to material type and function, when possible. One additional category (6 Unknown) was added to the functional typology to better capture unidentified artifacts. An additional subcategory was added to the labor category (5c Household) to capture artifacts used during household work (e.g., cleaning products).

Table 5-1. Functional Typology (Modified from Orser 1988)

1. Foodways	
	a. Procurement – Ammunition, fishhooks, fishing weights, etc.
	b. Preparation – Baking pans, cooking vessels, large knives, etc.
	c. Service – Fine earthenware, flatware, tableware, etc.
	d. Storage – Coarse earthenware, stoneware, glass bottles, canning jars, bottle stoppers, etc.
	e. General Foodways – Unidentified glass and ceramic containers
	f. Floral – Nut shells, seeds, fruit pits, phytoliths, pollen
	g. Faunal – Animal bones, antlers, horns, shells and other remains
2. Clothing	
	a. Fasteners – Buttons, eyelets, snaps, hooks, eyes, etc.
	b. Manufacture – Needles, pins, scissors, thimbles, etc.
	c. Other – Shoe leather, metal shoe shanks, clothes hangers, etc.
3. Household/Structural	
	a. Architectural/Construction – Nails, flat glass, spikes, mortar, bricks, slate, etc.
	b. Hardware – Hinges, tacks, nuts, bolts, staples, hooks, brackets, etc.
	c. Furnishings/Accessories – Stove parts, furniture pieces, lamp parts, fasteners, etc.
4. Personal	
	a. Medicinal – Medicine bottles, droppers, etc.
	b. Cosmetic – Hairbrushes, hair combs, jars, etc.
	c. Recreational – Smoking pipes, toys, musical instruments, souvenirs, etc.
	d. Monetary – Coins, etc.
	e. Decorative – Jewelry, hairpins, hatpins, spectacles, etc.
	f. Other – Pocketknives, fountain pens, pencils, ink wells, etc.
5. Labor	
	a. Agricultural – Barbed wire, horseshoes, harness buckles, hoes, plow blades, scythe blades, etc.
	b. Industrial – Tools, etc.
	c. Household – Household cleaning products, clothes, iron, etc.
6. Miscellaneous	
	a. Automotive – Car/vehicle components
	b. Unknown – Functionally unidentifiable or unassignable artifacts

5.3 Expected Results

Based on the identification of site 18CR293 during the Phase I survey, more detailed evidence of a homestead and agricultural complex was expected. A high number of historic resources both domestic and agricultural were expected based on initial findings during the Phase I. It was also expected that prehistoric sites may be present within the APE, possibly beneath layers associated with the historic occupation of the site.

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6. Results

The Phase II evaluation of 18CR293 included the excavation of 22 STPs and nine TUs, resulting in the identification of six features and recovery of 7,090 artifacts. STPs 1-2 and TUs 1-3 were placed within Locus A and the remaining STPs and TUs 4-9 were excavated in Locus B (Figures 6-1 through 6-3).

6.1 Features

Six features were identified within 18CR293. Five of the features were first described during the Phase I testing and are summarized here again. Feature 6 was identified in TU 1 during the Phase II investigation. No soil or other artifact-bearing features were found.

6.1.1 Feature 1

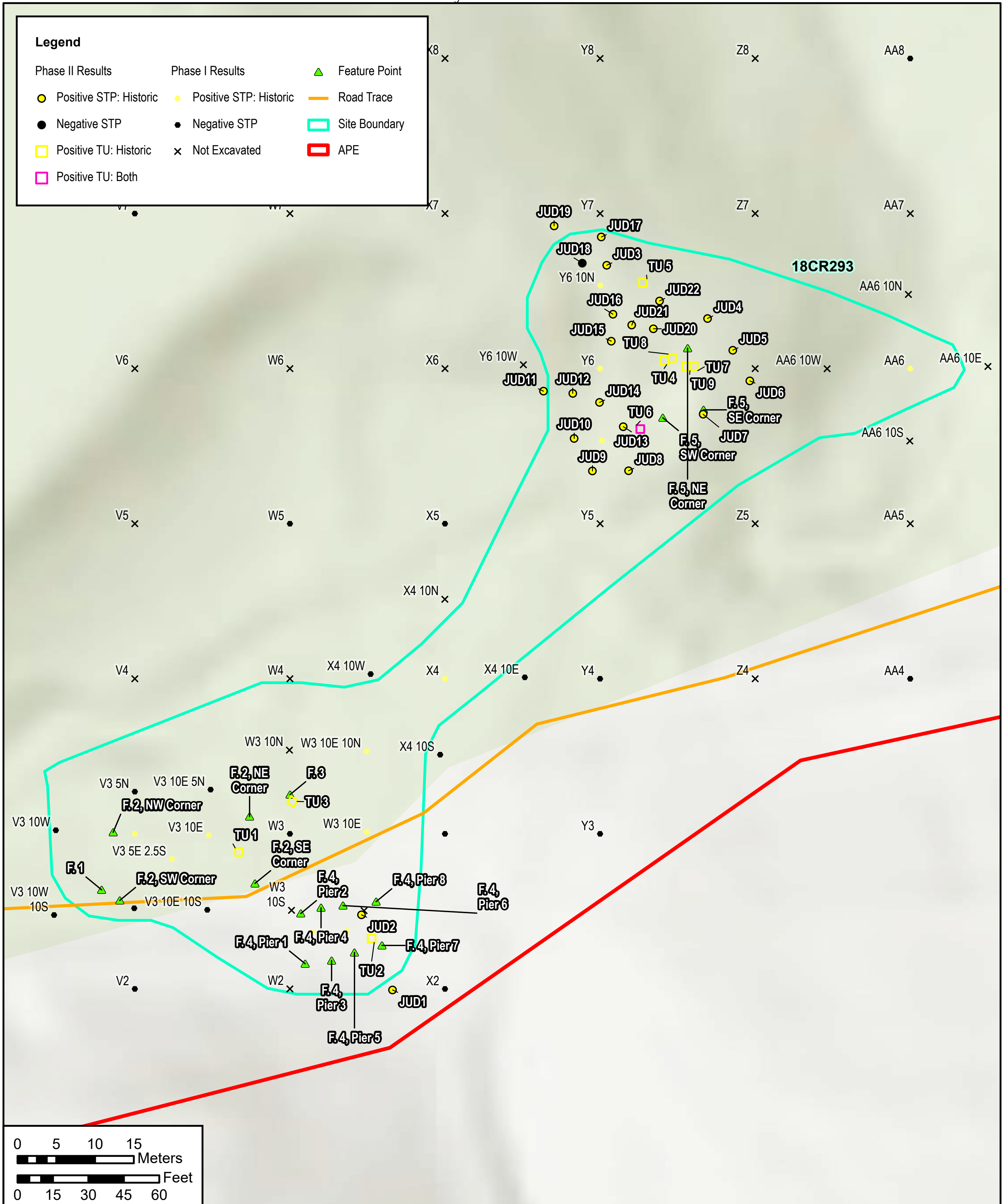
Feature 1 is a cylindrical concrete foundation at the edge of the unnamed tributary's floodplain (Figure 6-4). The feature is short, rising less than 1 m (3.3 ft) above the floodplain to an elevation nearly level with the grade of the road trace. Measuring approximately 2.5 m (8.2 ft) in diameter, the feature's upper surface is shallowly dished, forming a broad bowl shape less than 0.15 m (0.5 ft) deep and filled with leaf litter. While the concrete itself is not diagnostic, it features small, rounded pebbles in a medium-hard cement matrix which is likely of more recent construction (perhaps early twentieth century) than the stone-built features nearby. The 1972 Piney Run Dam and Reservoir site plan (Figure 3-13) identifies this feature as a capped well, although it is more likely a silo foundation. A small concrete-over-stone pad joins Feature 1 to the southwest corner of Feature 2, a large barn foundation.

6.1.2 Feature 2

Feature 2 is a large, rectilinear stone barn foundation in Locus A (Figure 6-5). Measuring 18.25 m (60 ft) east-west by 9.3 m (30.5 ft) north-south, Feature 2 exhibits mirrored 3-m (10-ft) wide openings on its east and west walls and directly abuts a road trace along its south wall. The foundation is composed of randomly coursed phyllite and/or schist rubble with several of the individual stones measuring more than 1 m (3.28 ft) in length. Small pockets of lime/sand mortar are still evident in the stonework, though much of it has disintegrated. While the wall fabric generally exhibits few modified stones, each of the exterior corners exhibit massive cut quoins. Large remnants of sawn lumber representing beams or rafters are strewn about Feature 2. In some locations, the remains of a timber sill plate survives intact on the uppermost course of stonework. This detail indicates that the feature's superstructure was of frame construction and possibly sheathed in timber siding (e.g., board and batten, lapboard). A large, nearby pile of standing-seam metal panels represents the building's roofing. The feature's size, dimensions, and wide parallel openings indicate that it almost certainly served as a barn, likely built in the style of a small transverse crib/frame barn (Mroszczyk 2007).

6.1.3 Feature 3

Feature 3 is located approximately 5 m (16.4 ft) northeast of the northeast corner of Feature 2 and represents an ell-shaped rubble stone and concrete spring box (Figure 6-6). The west side of the ell consists of a 1.3-m (4.25-ft) long, 0.4-m (1.3-ft) wide stone retaining wall built to prevent the surrounding floodplain from slumping into the head of the spring channel. The south side of the ell consists of the 1.1-by-0.75-m (3.6-by-2.5-ft) closed-top spring box flanked by small stone retaining walls. The stonework consists of randomly coursed phyllite and/or schist rubble that appears to have been set in highly degraded lime/sand mortar. The stone spring box has been resurfaced with the same kind of concrete used to build Feature 1. Stone construction similarities shared with Feature 2 suggest a nineteenth century origin. The concrete surfacing presumably indicates twentieth century maintenance. No historic or modern mapping depicts Feature 3.



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PROJECT:	Piney Run Phase II
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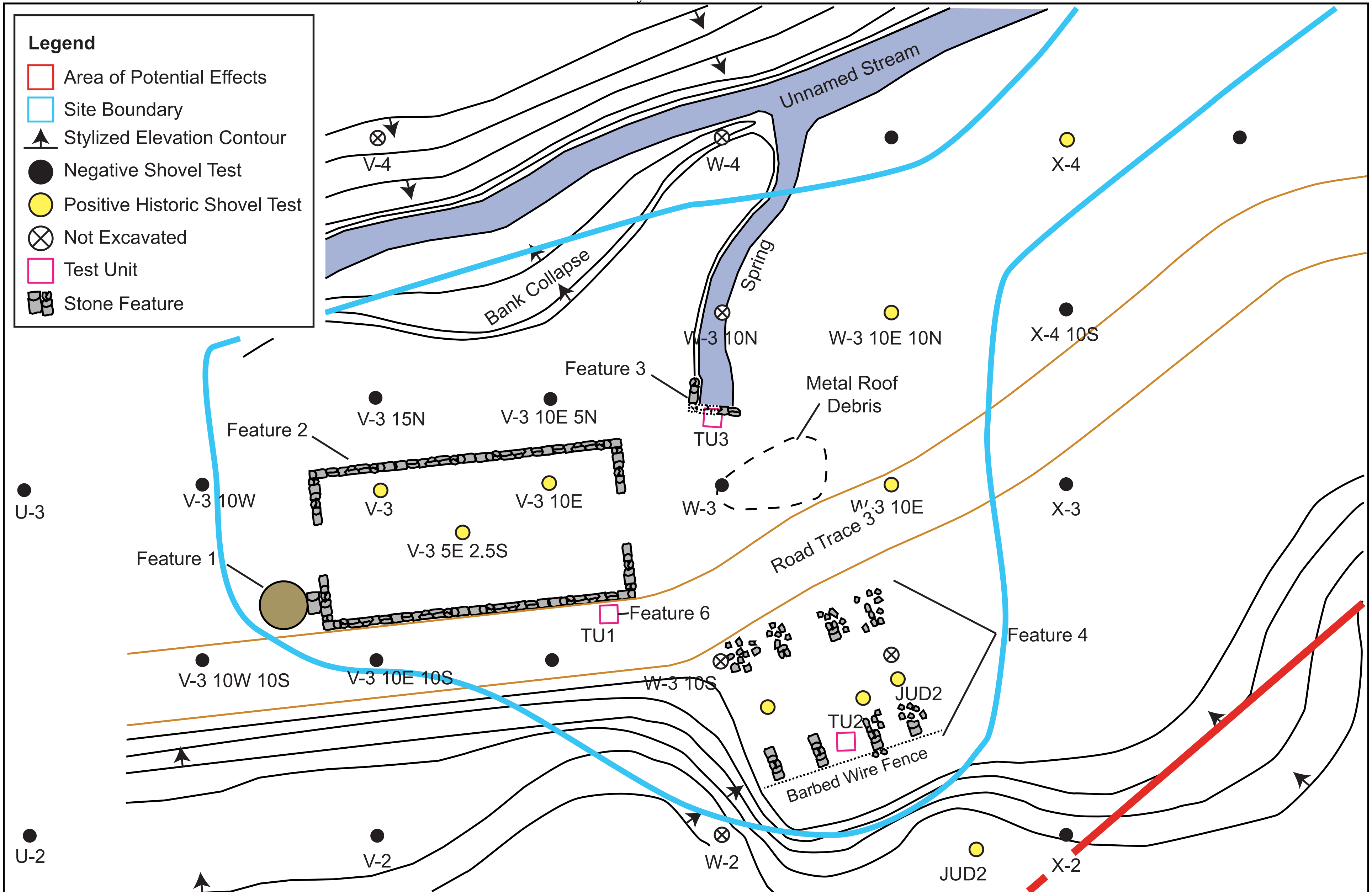
N

TITLE
Archaeological Survey Results

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 6-1



CLIENT	Carroll County Bureau of Resource Management
PROJ	Piney Run Phase II
SCALE	As Shown
SOURCE	N/A
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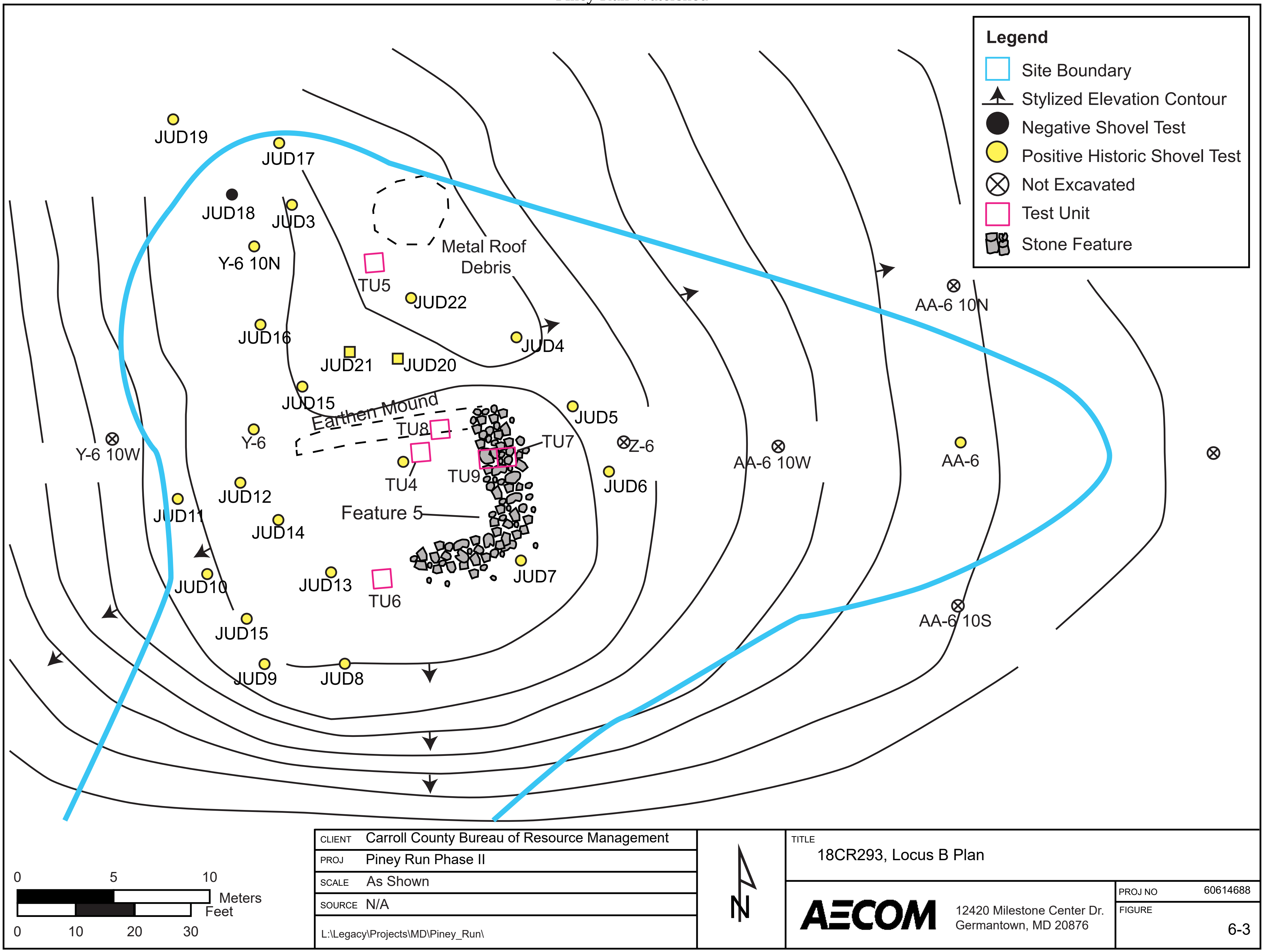
TITLE
18CR293, Locus A Plan

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO 60614688
FIGURE 6-2


Legend
Site Boundary
Stylized Elevation Contour
Negative Shovel Test
Positive Historic Shovel Test
Not Excavated
Test Unit
Stone Feature
JUD19
JUD17
JUD18
JUD3
Y-6 10N
Metal Roof Debris
TU5
JUD22
JUD16
JUD4
JUD21
JUD20
JUD15
Earthen Mound
TU8
JUD5
TU7
Y-6
Y-6 10W
Z-6
AA-6 10N
AA-6 10W
AA-6
TU4
TU9
JUD6
JUD12
JUD11
Feature 5
JUD14
JUD10
JUD13
TU6
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AA-6 10S
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Feet
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N
TITLE 18CR293, Locus B Plan
AECOM
12420 Milestone Center Dr.
Germantown, MD 20876
PROJ NO 60614688
FIGURE 6-3

Figure 6-4. Feature 1 Facing South

Figure 6-5. Feature 2 Facing Southwest

Figure 6-6. Feature 3 Facing Southwest

6.1.4 Feature 4

Feature 4 represents the second outbuilding identified in Locus A (Figures 6-7). Built onto a modified terrace above the unnamed tributary's floodplain, Feature 4 is located approximately 10 m (33 ft) southeast of Feature 2 on a slightly different orientation that fronts the southern edge of a road trace. Parallel rows of four stone piers each define the building's footprint. The piers survive in varying states of completeness, with the intact ones each measuring 2.1 m (6.9 ft) north-south by 0.6 m (2 ft) east-west. The pier columns are spaced slightly more than 2 m (6.5 ft) apart and the rows are 4.8 m (15.75 ft) apart, producing a nearly square footprint measuring approximately 9.2 m (30.2 ft) east-west by 9 m (29.5 ft) north-south. Each pier is less than 0.5 m (1.6 ft) tall, built predominantly of phyllite and/or schist fieldstone that was once set in a lime/sand mortar that has heavily decayed. Two STPs excavated within the piers included the same A/Ap over B horizon profile found elsewhere.

6.1.5 Feature 5

Feature 5 is a collapsed stone foundation for a dwelling situated in Locus B approximately 70 m (230 ft) northeast of Feature 4 (Figures 6-8). The building was sited on a highly constrained, artificially leveled terrace approximately midway up a moderately inclined hillslope rising north above the unnamed tributary. Remnants of the building's outline were only visible along its north, east, and south sides, with each wall mound measuring approximately 7.5 m (24.6 ft) long and consisting of disarticulated phyllite/schist rubble. No evidence of the building's west foundation wall was observed, while the north side of the foundation appears to have partially banked into the hillslope. No clearly defined stone structure was visible on the north side, but a linear earthen berm suggests where the north foundation may have been. Approximately midway along this berm, a small concentration of disarticulated bricks may signify the location of a hearth/chimney. A pile of standing seam metal roofing is located 10 m (33 ft) to the north.

Figure 6-7. Feature 4 Facing Northwest

Figure 6-8. Feature 5 Facing South

6.1.6 Feature 6

Feature 6 is a stone road paving uncovered in TU 1 at the base of Stratum III (Figure 6-9). The historic road runs parallel to the south wall of the Feature 2 barn.

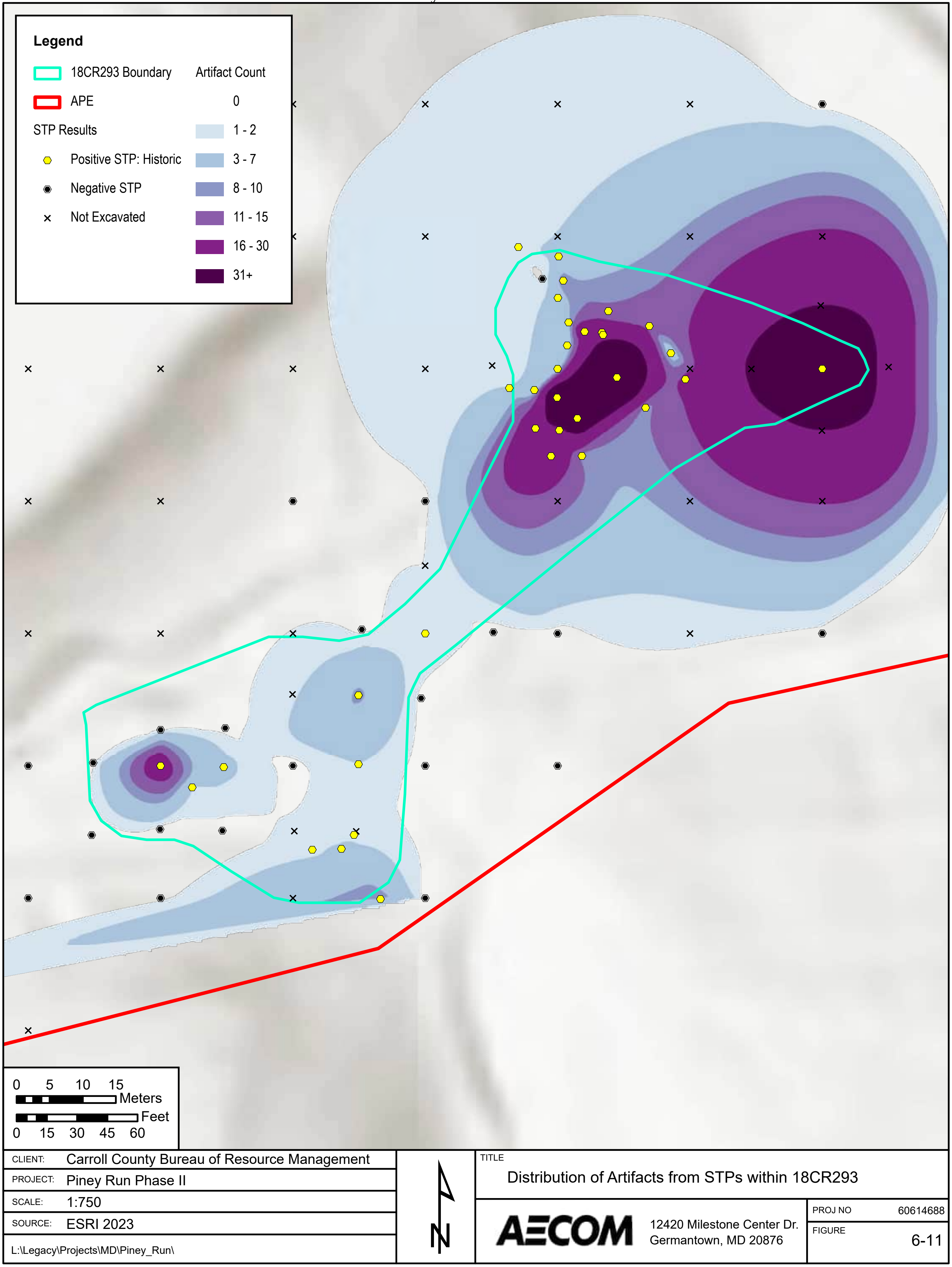
Figure 6-9. Feature 6 in TU 1, Facing West

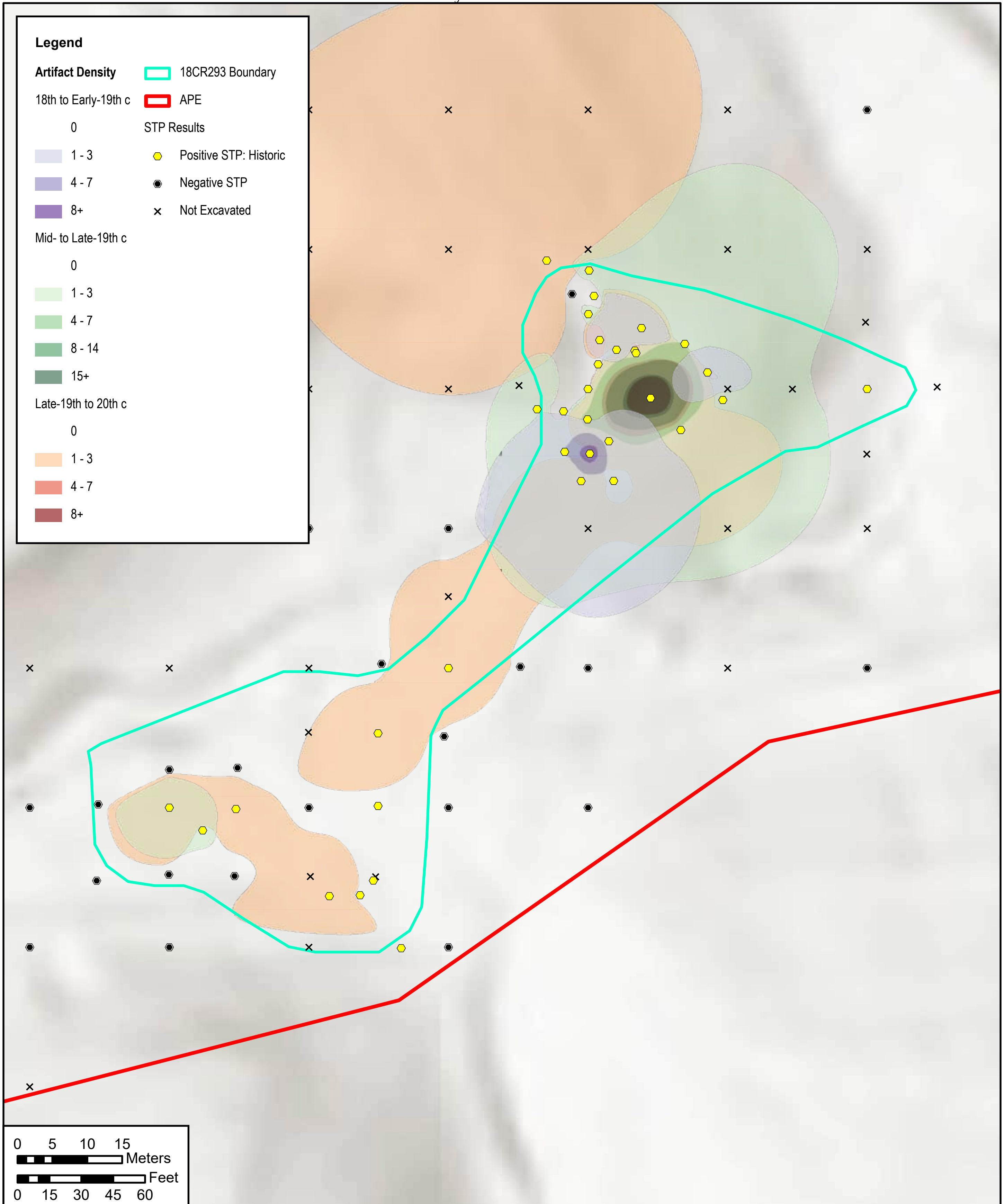
6.2 Shovel Test Excavation

In total, 22 Phase II STPs were excavated to refine the Phase I results. Two STPs were judgmentally placed in Locus A in the vicinity of Feature 4. Twenty STPs were excavated judgmentally or at 5-m intervals in Locus B in the vicinity of the house in order to examine potential yard deposits and to gather more information about artifact distributions surrounding the house (Figures 6-1 and 6-3). Soil profiles of STPs exhibited two strata, representing the surface mineral horizon/plowzone (A/Ap horizon) atop the culturally sterile subsoil (B horizon). In several instances, an organic layer (O horizon) overlay the A/Ap horizon. STPs 20 and 21 were excavated as 0.5-meter square tests north of the house foundation. STP 20 was placed within a concentration of brick on the surface and TU 21 was placed across a concentration of stone on the surface (Figure 6-10). Both STPs showed that the architectural materials represent debris and not intact features. These materials may be the remains of a chimney and hearth that collapsed outward and north of the house.

Figure 6-10. STP 20 in Foreground and STP 21 vicinity in the Background

Of the 22 Phase II STPs, 21 were positive for historic artifacts. Figure 6-11 presents the distribution of artifacts recovered from both the Phase I and II STPs, and Figure 6-12 presents the distribution broken out into basic time periods. Historic artifacts were concentrated in the vicinity of the house and downslope from the house. Diagnostic artifacts from STPs in the vicinity of the outbuildings dated primarily to the late nineteenth to twentieth century with a low-density scatter of mid- to late nineteenth century artifacts. Diagnostic artifacts in the house area primarily dated to the mid- to late nineteenth century with eighteenth to early nineteenth century and late nineteenth to twentieth century artifacts also present. These results suggest that the house was present before the barns were built.


Legend
18CR293 Boundary
APE
STP Results
Positive STP: Historic
Negative STP
Not Excavated
Artifact Count
0
1 - 2
3 - 7
8 - 10
11 - 15
16 - 30
31+
0 5 10 15 Meters
0 15 30 45 60 Feet
CLIENT: Carroll County Bureau of Resource Management
PROJECT: Piney Run Phase II
SCALE: 1:750
SOURCE: ESRI 2023
L:\Legacy\Projects\MD\Piney_Run\
N
TITLE
Distribution of Artifacts from STPs within 18CR293
AECOM
12420 Milestone Center Dr.
Germantown, MD 20876
PROJ NO 60614688
FIGURE 6-11



CLIENT:	Carroll County Bureau of Resource Management
PROJECT:	Piney Run Phase II
SCALE:	1:750
SOURCE:	ESRI 2023

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TITLE
Distribution of Artifacts by Time Period

AECOM
12420 Milestone Center Dr.
Germantown, MD 20876

PROJ NO	60614688
FIGURE	6-12

6.3 Test Unit Excavation

Nine TUs were placed with the boundary of 18CR293 (Figures 6-1 through 6-3). TU coordinates were determined in relation to features identified during the Phase I investigation in 2019. All nine TUs measured 1 x 1 m (3.3 x 3.3 ft) in size. TUs 1-3 were excavated in Locus A of site 18CR293 (agricultural complex), and TUs 4-9 were excavated in Locus B (farmstead dwelling).

6.3.1 Test Unit 1

TU 1 was placed just outside the southeast corner of Feature 2 barn to determine whether a builder's trench existed or if historic use extended outside the structure's walls. Feature 2 is a large, rectilinear stone foundation representing the predominant building in Locus A. A datum was set at the southwest corner of the unit. TU 1 documented a shallow O horizon 1-3 cm (0.03-0.1 ft) thick composed of a very dark brown (10YR 2/2) to brown (10YR 3/2) silty clay loam that had 5 percent rock, gravel, and root inclusions (Figure 6-13). One corroded, likely wire, nail was recovered from Stratum I (Table 6-1). Stratum II was a 13-cm (0.4 ft) thick brown (10YR 4/3 to 10YR 5/3) sandy clay loam with 20 percent rocks. Soil colors varied somewhat from the east to the west half of the unit. Stratum II was 8 to 9 cm (0.3 ft) deeper on the east side of the TU. Stratum II contained 12 bottle glass fragments, 29 corroded nails, a spike and 11 window glass fragments. Stratum III was 5-cm (0.2-ft) thick dark brown (10YR 3/3) sandy loam with 30 percent rock, gravel, and root inclusions. The stratum was deeper in the north half of the TU compared to the south half. Stratum III artifacts resembled those from Stratum II and included five bottle glass fragments, 17 rusted nails, and eight window glass fragments. Strata II and III appear to have been associated with collapse of the barn structure in the twentieth century. The TU terminated approximately 21 cm (0.7 ft) below the surface when a stone paving was encountered.

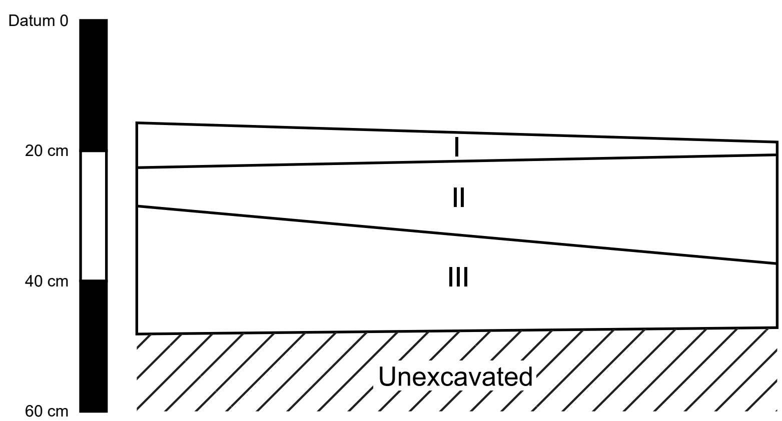
Table 6-1. Artifacts from TU 1

Group	Artifact	Strat. I	Strat. II	Strat. III	Total
Foodways	Container Glass		12	5	
Household/ Structural	Nail, Corroded	1	29	17	47
	Spike		1		1
	Window Glass		11	8	19
Total		**1**	**53**	**30**	**84**

Approximately 3 cm (0.1 ft) and directly under the O horizon a 2-x-8-in board was encountered running east-west across the unit. The board was very fragile and actively decaying. The board, presumed to have been part of the barn structure, rested on a layer of stone, which also underlay Stratum III to the south of the board. The stone (Feature 6) appeared to be part of the historic road running parallel to the south wall of the barn.

6.3.2 Test Unit 2

TU 2 was placed within Feature 4 to investigate what type of building may have existed during historic occupation of the site. Feature 4 represents the second building identified in Locus A. Feature 4 is located approximately 10 m (33 ft) southeast of Feature 2. TU 2 was placed between two of the surviving stone piers documented during the Phase I survey. Stratum I documented a brown (10YR 4/3) silt loam Ap horizon measuring 12 cm (0.4 ft) thick atop a yellowish brown (10YR 5/6) silty clay B horizon (Figure 6-14). The only artifacts recovered were 13 wire nails from Stratum I. No floor surface or burned layer was observed. The stratigraphy is representative of the non-modified landscape: a plowed level atop a culturally sterile B horizon. The frame outbuilding that had been present had rested on the stone piers without any type of cellar or foundational features below. Based on the presence of wire nails, the outbuilding may have been added at the end of the nineteenth century or early twentieth century when the property operated as a dairy farm.



I Very Dark Grayish Brown (10YR 3/2) Silty Clay Loam

II Brown (10YR 4/3) NE/SE and
Brown (10YR 5/3) SW/NW Sandy Clay Loam

III Dark Brown (10YR 3/3) Sandy Loam

Figure 6-13. TU 1 North Wall Profile

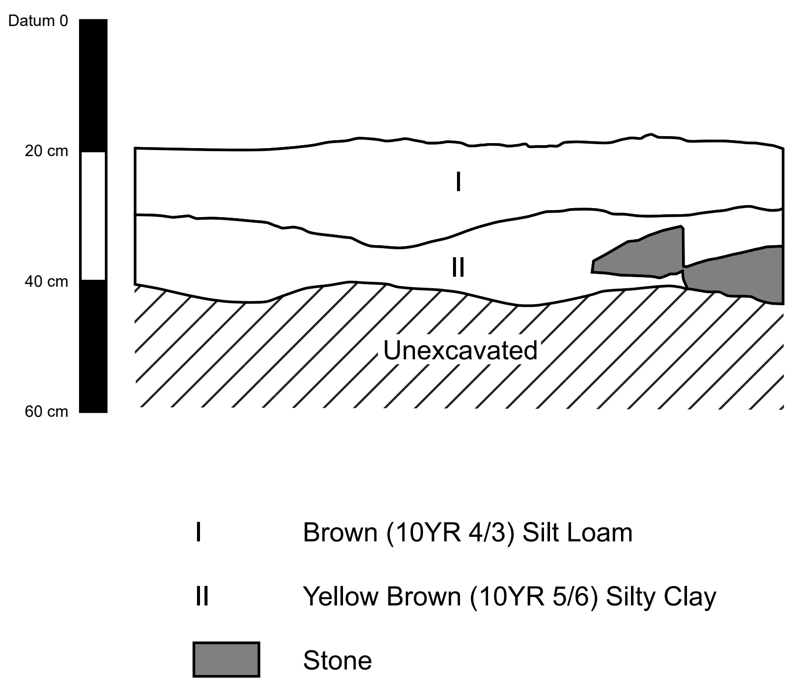


Figure 6-14. TU 2 South Wall Profile

6.3.3 Test Unit 3

TU 3 began as STP JUD03 but was expanded into a 1-x-1-m unit to get a better picture of the spring box identified in the Phase I survey as Feature 3. Feature 3 is located approximately 5 m (16.4 ft) northeast of the northeast corner of Feature 2 and represents an L-shaped rubble stone and concrete spring box. The south side of the L consists of the 1.1-by-0.75-m (3.6-by-2.5-ft) closed-top spring box flanked by small stone retaining walls. The top of the spring box was partially obstructed by fill and a tree. Two strata were uncovered in the unit, though these layers were clearly redeposited layers of fill atop the concrete spring box top (Figure 6-15). Stratum I consisted of a yellowish brown (10YR 6/6) silty clay loam measuring 23 cm (0.8 ft) thick above a brown (10YR 4/3) silty loam Stratum II. In total, 120 artifacts were recovered, all from Stratum I (Table 6-2). Large roots from the tree obstructed complete excavation of the unit and were not removed.

Figure 6-15. TU 3 and Feature 3 Facing South

Table 6-2. Artifacts from TU 3

Group	Artifact	Date Range	Strat. I
Foodways	Ironstone/Stone China/White Granite	1842-1930	2
	North American Stoneware, Slip Glazed		1
	Bottle Glass, Machined	1903-Present	8
	Container Glass		102
Household/ Structural	Nail, Cut	1790-1910	4
	Nail, Wire	1890-Present	3
Total			**120**

6.3.4 Test Unit 4

TU 4 was one of the six TUs excavated in Locus B, within Feature 5, the collapsed stone foundation of a dwelling identified during the Phase I survey. Stone and earthen piles suggestive of the building outline were present on the north, east, and south walls, with each wall measuring approximately 7.5 m (24.6 ft) long and consisting of disarticulated phyllite/schist rubble and mounded dirt. No evidence of the building's west foundation wall was observed. The north side of the building appears to have banked into the hillslope.

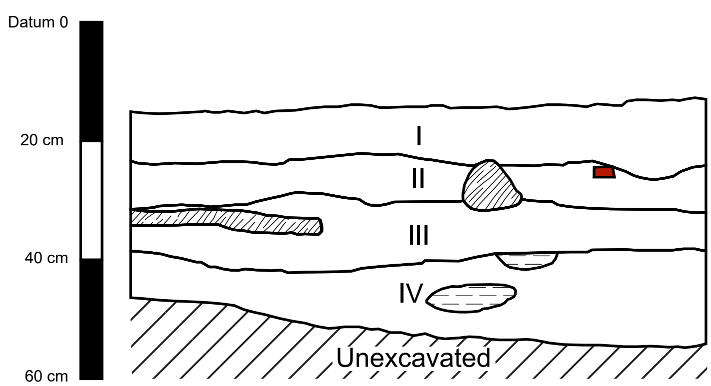
TU 4 was placed on the interior of the building in order to determine if interior features or deposits are present, and to expose possible paved or dirt interior floors. TU 4 included four strata, and no evidence of a floor was found (Figure 6-16). Stratum I consisted of a dark yellowish brown (10YR 3/6) silty clay loam measuring 8 cm (0.3 ft) thick. Stratum II was a brown (7.5 YR 4/4) silty clay measuring 10 cm (0.3 ft) thick. Strata I and II appeared to be associated with the demise of the building and primarily contained structural remains, including 81 plaster fragments, 33 window glass, 12 nails, and 6 brick fragments (Table 6-3); an additional 1.6 kg of brick from Strata I and II were documented in the field. A concentration of charcoal, mortar, and plaster, including painted fragments, was found at the base of Stratum II confirming that Strata I and II likely were deposited after the primary occupation had ended and the building began to deteriorate. The quantity of charcoal suggests the building may have burned, although it is also possible that TU 4 was situated close to the historic hearth. Stratum III was a dark yellowish brown (10YR 3/6) silty clay measuring 11 cm (0.4 ft) thick. Artifacts from this stratum were primarily recovered from the transition to subsoils and consisted of bottle glass and architectural materials that could not be dated. Stratum IV was a brown (7.5YR 4/4) mottled with a dark yellowish brown (10YR 4/6) silty clay that contained no artifacts.

Table 6-3. Artifacts from TU 4

Group	Artifact	Date Range	Strat. I	Strat. II	Strat. III	Total
Clothing	Thimble		1			1
Foodways	Creamware	1762-1820	1			1
	Pearlware	1775-1840	3			3
	Redware, Brown Glazed		1			1
	Container Glass, Machined	1893-Present	2			2
	Container Glass		8	2	3	13
Household/ Structural	Brick			6	2	8
	Nail, Cut	1790-1910	9			9
	Nail, Wire	1890-Present	1			1
	Nail, Corroded			2		2
	Plaster/ Mortar		13	68	3	84
	Window Glass		21	12	1	34
Labor	Charcoal Fragment		1	9		10
Total			**61**	**99**	**9**	**169**

6.3.5 Test Unit 5

TU 5 was placed on a small terrace sloping north above Feature 5 to investigate structural stones and disarticulated bricks observed on the ground surface. Three strata were observed in TU 5 (Figure 6-17). Stratum I was a dark brown (10YR 3/3) silty loam with 10-15 percent rock and gravel inclusions measuring 10 cm (0.3 ft) in thickness. Stratum II was a yellowish brown (10YR 5/6) mottled with a reddish yellow (7.5YR 6/8) silty clay loam measuring 18 cm (0.6 ft) in thickness. Stratum III consisted of a strong brown (7.5YR 4/6) clay subsoil. Stone and brick were confined to the surface and Stratum I and appeared to represent wall/ chimney fall to the north of the house. In total, 111 artifacts were recovered from TU 5 (Table 6-4), with most found in Stratum I (n=85). In addition, less than 0.1 kg of brick were weighed in the field and discarded. Container glass and redware fragments were most numerous. Artifacts from both Strata I and II included items dating to the late eighteenth through twentieth century. In addition, a prehistoric projectile point fragment was found in Stratum II in association with the historic artifacts.



I Dark Yellowish Brown (10YR 3/6) Silt Clay Loam

II Brown (7.5YR 4/4) Silty Clay

III Dark Yellowish Brown (10YR 3/6) Silty Clay

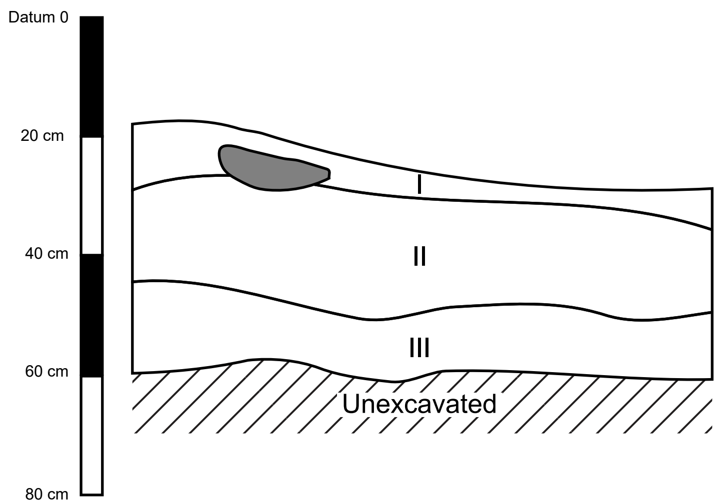
IV Brown (7.5YR 4/4) Silty Clay mottled with Dark Yellowish Brown (10YR 4/6)

Brick

Root

Clay Stone

Figure 6-16. TU 4 North Wall Profile



I Dark Brown (10YR 3/3) Silt Loam

II Yellowish Brown (10YR 5/6) Silty Clay Loam

III Strong Brown (7.5YR 4/6) Clay

Stone

Figure 6-17. TU 5 East Wall Profile

Table 6-4. Artifacts from TU 5

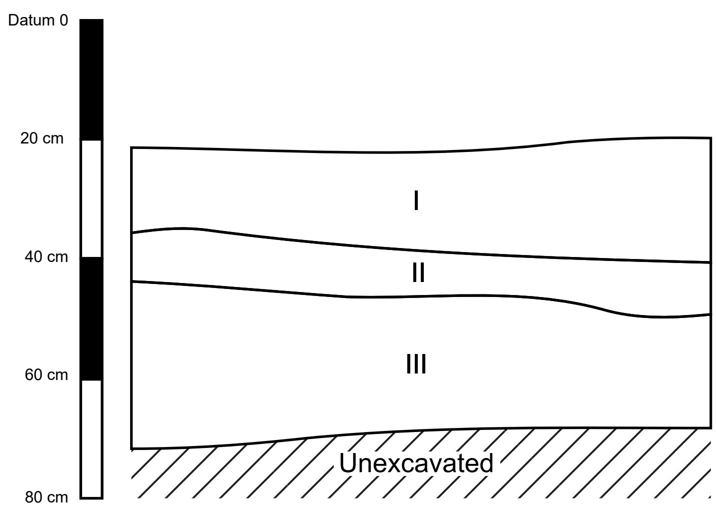
Group	Artifact	Date Range	Strat. I	Strat. II	Total
Foodways	Pearlware	1780-1830	1	10	11
	Whiteware	1820-Present		1	1
	Redware		20	3	23
	Container Glass		50	8	58
	Container Glass, Machined	1880-Present		1	1
	Cruet	1893-Present	1		1
Household/ Structural	Nail, Corroded		2	1	3
	Window Glass		10	1	11
Personal	Redware Flower Pot		1		1
Prehistoric	Projectile Point	Prehistoric		1	1
Total			85	26	111

6.3.6 Test Unit 6

TU 6 was placed within Feature 5 where an entryway was suspected in an apparent break in the collapsed south foundation wall. The unit produced nearly a third of the artifacts from the Phase II evaluation. Three strata were documented (Figure 6-18). Stratum I consisted of a dark brown (10YR 3/3) silt loam measuring 18 cm (0.6 ft) in thickness. This layer appeared to be associated with the late occupation and demise of the building and contained significant amounts of structural materials, including 1,389 pieces of window glass and109 nails. Approximately 5 kg of brick was also documented in Stratum I. Artifacts from Stratum I ranged in date from the late eighteenth through twentieth century (Table 6-5). Stratum II was a dark yellowish brown (10YR 3/4) to brown (7.5YR 4/4) silty clay measuring 20 cm (0.7 ft) in thickness. Stratum II contained artifacts primarily dating to the late eighteenth to late nineteenth century. Artifacts definitely dating to the twentieth century were notably absent from Stratum II. This layer is likely associated with occupation of the house throughout the nineteenth century. Stratum III documented a strong brown (7.5YR 4/6) silty clay. Artifacts from Stratum III were recovered from the transition from Stratum II to III; below the transition, Stratum III did not contain artifacts. Artifact density diminished with depth.

Table 6-5. Artifacts from TU 6

Group	Artifact	Date Range	Strat. I	Strat. II	Strat. III	Total
Clothing	Button, Rubber		1			1
	Button, Prosser	1840-1960	1			1
	Button, Shank	1861-1901	1			1
Foodways	Black Basalt	1750-1850	1	2		3
	Creamware	1762-1820			1	1
	Pearlware	1780-1840	6	72	3	81
	Castleford Stoneware	1780-1815		2		2
	North American Stoneware, Salt Glazed	1790-1940	1	9		10
	Whiteware	1820-Present	11	65		76
	Rockingham	1830-1940	2			2
	White Granite	1840-1930	6			6
	North American, Albany and Bristol Slipped	1890-1920	3			3
	North American, Bristol Slipped	Post 1920	1			1



I	Dark Brown (10YR 3/3) Silt Loam
II	Dark Yellowish Brown (10YR 3/4) Silty Clay Loam
III	Strong Brown (7.5YR 4/6) Clay

Figure 6-18. TU 6 North Wall Profile

Table 6-5. Artifacts from TU 6 continued

Group	Artifact	Date Range	Strat. I	Strat. II	Strat. III	Total
Foodways	Porcelain, Hard Paste	1890-Present	1			1
	Redware		6	51		57
	Unidentified Refined Earthenware				1	1
	Artillery Shell	1866-Present	4			4
	Bullet, Lead		1			1
	Bone, Mandible			5		5
	Gun Flint			1		1
	Container Glass		282	17	3	302
	Container Glass, Machined	1893-Present	39			39
	Drinking Glass, Tumbler		3			3
	Bottle Cap, Iron		3			3
	Jar Lid, Metal		2			2
	Bottle Cap, Rubber		2			2
Household/ Structural	Brick			6		6
	Fence Staple		3			3
	Lamp Glass		8			8
	Nail, Cut	1790-1910	70		1	71
	Nail, Wire	1880-Present	2			2
	Nail, Corroded		37	16		53
	Washer		1			1
	Window Glass		1389	34	1	1424
Labor	Buckle, Slide		1			1
	Coal		4	3		7
	Slag		1			1
Miscellaneous	Glass		2			2
	Copper Alloy		1	1		2
	Iron		31	2		33
	Rubber		3			3
Personal	Tobacco Pipe			5		5
	Bead, Biconical		1			1
	Bottle, Medicine	1893-Present	9			9
	Comb, Plastic		1			1
	Pencil	1858-Present	1			1
	Pocket Watch		1			1
Total			**1,943**	**291**	**10**	**2,244**

6.3.7 Test Unit 7

TU 7 was placed atop the east side of the stone rubble of Feature 5 to examine the potential wall foundation and to better understand the structure collapse and abandonment. The west wall of the TU fell on what appeared to be center of the stone rubble with the remaining unit extending to the exterior of the building. TU 7 had three strata (Figure 6-19). Stratum I consisted of large rocks in a matrix of very dark grayish brown (10YR 3/2) silt loam. Stratum I averaged 30 cm (1 ft) in thickness and came down on charcoal and a layer of twisted, metal standing seam roofing. The presence of charcoal atop the sheet metal suggests the building burned after or during collapse. Artifacts from Stratum I included a large number of architectural materials (n=931) and miscellaneous iron fragments (n=161) likely representing fragments of the roofing (Table 6-6). In addition to recovered materials, 5.9 kg of brick were documented from Stratum I. Datable artifacts ranged in date from the late eighteenth through twentieth century.

Stratum II was a dark yellowish brown (10YR 4/4) silty clay loam averaging 8 cm (0.3 ft) in thickness with large foundation rocks. No in-situ stone foundation was found. Artifacts resembled those recovered from Stratum I but were found in lower quantities. The Stratum II assemblage consisted of 78 percent architectural materials and iron fragments (n=175) and datable items ranged from the late eighteenth through twentieth century. Stratum III was a strong brown (7.5YR 4/6) silty clay representing the transition to subsoil. Artifacts from Stratum III were recovered from the upper level and primarily consisted of a low density scatter of window and container glass. The only datable artifacts from Stratum III were two sherds of whiteware. The foundation appears to have originally been placed on top of the soil with no subsurface component. The stacked-stone foundation had become disarticulated with no intact structural feature remaining.

Table 6-6. Artifacts from TU 7

Group	Artifact	Date Range	Strat. I	Strat. II	Strat. III	Total
Clothing	Grommet		1			1
	Shoe/ Boot Sole		1			1
Foodways	Pearlware	1780-Present	3	9		12
	Whiteware	1820-Present	1	6	2	9
	North American, Slip Glazed Stoneware	1805-1920	1	1		2
	White Granite	1840-1930	3			3
	Porcelain, Hard Paste			1		1
	Redware			2		2
	Container Glass, Machined	1893-Present	7	2		9
	Container Glass		178	14	2	194
	Drinking Glass, Stemware				1	1
	Bone		3	1		4
	Shell Casing		9			9
	Bullet, Lead		3	1	1	5
Household/ Structural	Brick		28	3		31
	Lightbulb	1879-Present	1			1
	Mortar		31			31
	Nail, Cut	1790-1910	2			2
	Nail, Corroded		385	8	2	395
	Nail, Wire	1885-Present	2			2
	Window Glass		482	153	17	652
Labor	Charcoal Fragment		24			24
	Coal Fragment		1			1

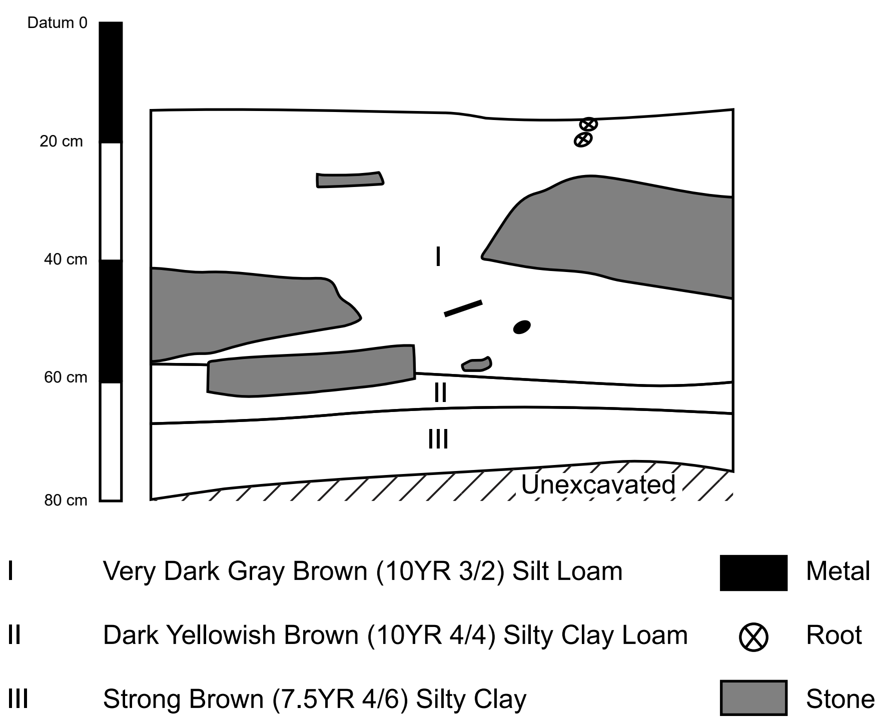


Figure 6-19. TU 7 West Wall Profile

Table 6-6. Artifacts from TU 7 Continued

Group	Artifact	Date Range	Strat. I	Strat. II	Strat. III	Total
Miscellaneous	Rubber Fragment			1		1
	Iron Fragment		161	11		172
Personal	Redware Flower Pot		1	2		3
	White Ball Clay Tobacco Pipe		2			2
	Marble, Glass		1			1
	Ring, Copper Alloy		1			1
	Watering Can		1			1
Total			**1,333**	**224**	**25**	**1,582**

6.3.8 Test Unit 8

TU 8 was placed atop the north berm of Feature 5 in order to determine if the foundation is present. The north half of the unit was atop the crest of the berm and the south half was sloped down the hill toward the interior of Feature 5. The TU included two strata (Figure 6-20). Stratum I documented a dark yellowish brown (10YR 3/6 to 10YR 3/4) silty clay loam averaging 15 cm (0.5 ft) in thickness. This layer was associated with collapse of the building and included 74 percent architectural materials (n=1,152) and a variety of domestic artifacts dating to the late eighteenth to twentieth century (Table 6-7). In addition, 17.7 kg of brick from Stratum I was documented in the field. Stratum II Level 1 was a strong brown (7.5YR 4/6) silty clay loam that graded into a dark yellowish brown (10YR 4/6) silty clay. This stratum appeared to be the soil that was present when the building was erected. It appears that the slope was cut into to form the north wall of the house. Foundation stones would have been placed atop this stratum but are no longer present. As was found in other TUs, the upper level of Stratum II (III in other TUs) contained artifacts likely resulting from roots and other bioturbation at the interface.

Table 6-7. Artifacts from TU 8

Group	Artifact	Date Range	Strat. I	Strat. II	Total
Foodways	Pearlware	1780-1830	8	1	9
	North American, Salt Glazed, Gray/Buff Bodied	1790-1940	1		1
	North American, Albany Slip Glazed	1805-1920		5	5
	Whiteware	1820-Present	2		2
	Ironstone/ Stone China/ White Granite	1842-1930	1		1
	North American, Albany and Bristol Slip Glazed	1890-1920	2	2	4
	Redware		8		8
	Unidentified Refined Earthenware		2		2
	Container Glass, Machined	1892-Present	6		6
	Container Glass		245	4	249
	Bottle Cap		1		1
	Bullet, Lead			1	1
	Bullet Shell Casing		6		6
	Nut Shell		1		1
Household/ Structural	Brick		33	16	49
	Mortar, Lime		7	5	12
	Plaster		156		156
	Nail, Corroded		315	4	319

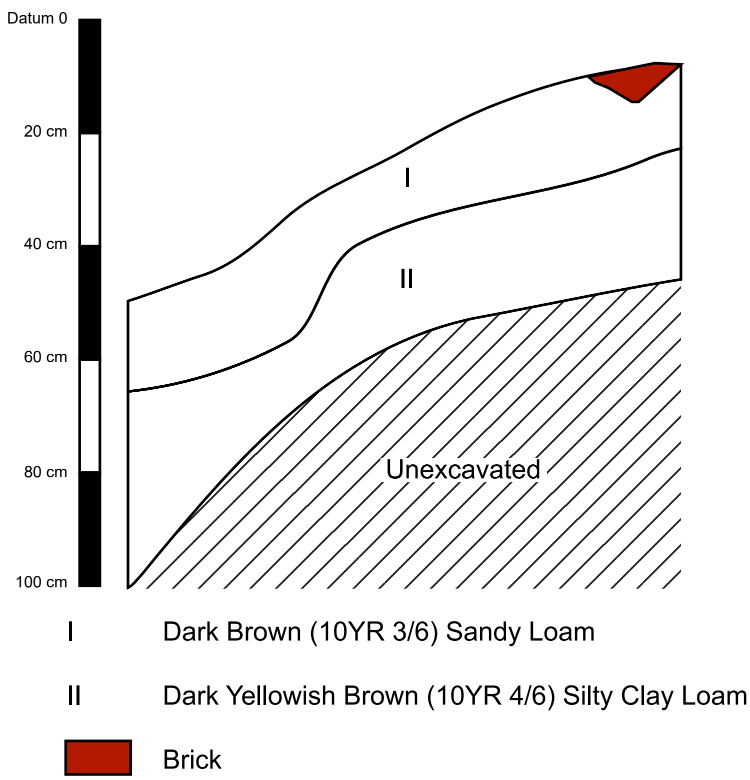


Figure 6-20. TU 8 West Wall Profile

Table 6-7. Artifacts from TU 8 Continued

Group	Artifact	Date Range	Strat. I	Strat. II	Total
Household/ Structural	Nail, Wire	1885-Present	10		10
	Screw			1	1
	Window Glass		631	37	668
Labor	Charcoal Fragment		40		40
	Coal Fragment		1	1	2
Miscellaneous	Iron Fragment		70		70
Personal	Redware Flower Pot		2		2
	White Ball Clay Tobacco Pipe		1		1
Total			**1,549**	**77**	**1,626**

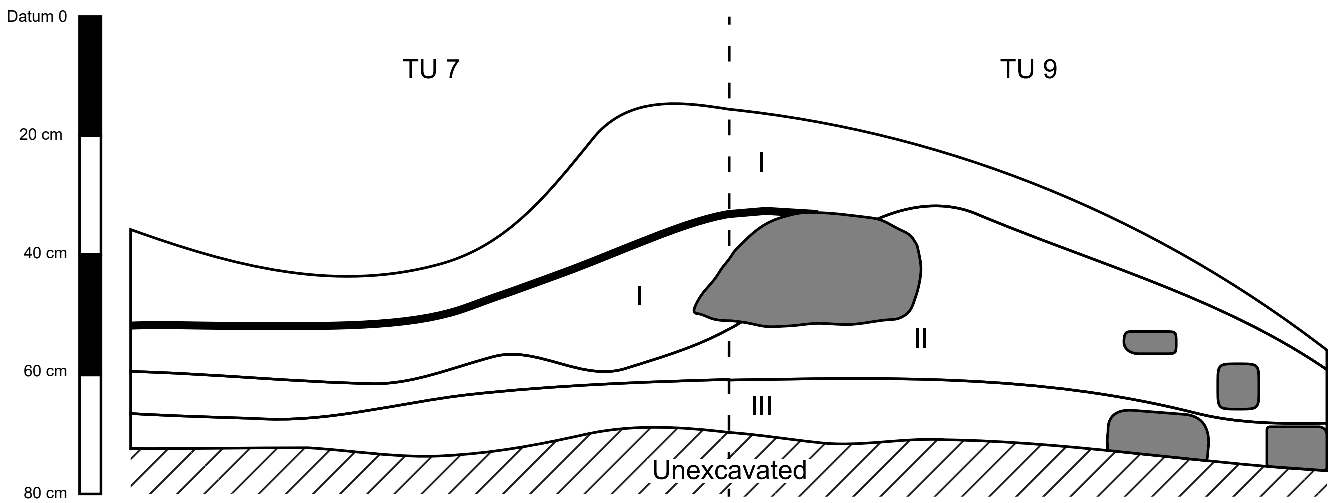
6.3.9 Test Unit 9

TU 9 abutted the west wall of TU 7, with the east wall of TU 9 atop the center of the mound of stone rubble. The TU was placed at this location in order to determine if intact remains of the house foundation were present. TU 9 documented three strata, closely resembling TU 7 (Figure 6-21). Stratum I consisted of large rocks in a matrix of very dark grayish brown (10YR 3/2) silty clay loam. Stratum II was brown (10YR 4/3) mixed with a strong brown (10YR 5/8) silty clay loam with rocks. Strata I and II were somewhat mixed with pockets of Stratum I reappearing below parts of Stratum II. Artifacts from the strata were of similar type and date and the strata are considered together. In total, Strata I and II averaged 34 cm (1.1 ft) in depth. Artifacts ranged in date from the late eighteenth to twentieth century and primarily consisted of architectural materials and fragments of iron roofing (80%, n=647; Table 6-8). In addition to recovered artifacts, 1.9 kg of brick was found in Strata I and II. Stratum III was a strong brown (7.5YR 4/6) silty clay representing the transition to subsoil. Artifacts from Stratum III were recovered from the upper level and primarily consisted of a low density scatter of architectural materials. Datable artifacts from Stratum III included a sherd of pearlware and a sherd of whiteware.

No intact foundation was found in TUs 7 and 9. The stacked-stone foundation had become disarticulated. No subsurface features were found and the foundation stones appear to have originally been placed on top of the soil rather than in a builder's trench.

Table 6-8. Artifacts from TU 9

Group	Artifact	Date Range	Strat. I/II	Strat. III	Total
Foodways	Pearlware	1780-1830	12	1	13
	Refined Earthenware	1770-1900	1		1
	Whiteware	1820-Present	13	1	14
	Ironstone	1842-1930	4		4
	Redware		11		11
	North American, Slip Glazed		1		1
	Container Glass, Machined	1893-Present	4		4
	Container Glass		111	2	113
	Bullet, Lead		1		1
Household/ Structural	Brick		6		6
	Mortar, Lime		11		11
	Nail, Corroded		89	1	90
	Window Glass		460	14	474
Labor	Cinder		1		1
Miscellaneous	Iron Fragment		81	1	82
Personal	Redware Flower Pot		1		1
	White Ball Clay Tobacco Pipe		1		1
Total			**808**	**20**	**828**



I	Very Dark Grayish Brown (10YR 3/2) Silt Clay Loam		Metal
II	Brown (10YR 4/3) Silty Clay Loam mixed with Strong Brown (10YR 5/8)		Stone
III	Strong Brown (7.5YR 5/8) Silty Clay		

Figure 6-21. TU 7 & 9 South Wall Profile

6.4 Artifact Analysis

In total, one prehistoric and 7,089 historic artifacts were recovered from 18CR293 during the Phase II investigations (Table 6-9). These artifacts are in addition to the 224 historic artifacts recovered during the Phase I survey. Most retained artifacts represent structural remains (n=4,875, 69%). An additional 36.3 kilograms (kg) of brick were documented in the field and discarded.

Table 6-9. Functional Groups from 18CR293

Group	Count	Percentage
Clothing	7	0.10%
Foodways	1,693	23.88%
Household/ Structural	4,875	68.76%
Labor	102	1.44%
Miscellaneous	377	5.32%
Personal	35	0.49%
Prehistoric	1	0.01%
Total	**7,090**	**100.00%**

6.4.1 Prehistoric Artifacts

One quartz projectile point fragment was recovered from Stratum II of TU 5. The proximal section was not temporally diagnostic. The prehistoric artifact was found in association with historic artifacts in the area of the historic residence.

6.4.2 Household/ Structural Artifacts

Household/ structural artifacts made up approximately 69 percent of the overall Phase II site assemblage (n=4,875; Table 6-10). This count does not include the 36.3 kg of brick discarded in the field (note: a brick averages 2 kg in weight). The assemblage from the outbuilding areas comprised 84 percent structural artifacts (n=92). Artifacts included 4,859 architectural/ construction materials, nine furnishing/ accessory artifacts, and seven hardware. The furnishings consisted of four leaded glass lamp fragments, four glass lamp chimney fragments, and one lightbulb fragment recovered from the house area. Hardware included a copper alloy tack, three fence staples, an iron hinge, a screw, and a washer.

Table 6-10. Summary of Household/ Structural Artifacts

Subgroup	Material	Artifact	Date Range	Count
Architectural/ Construction	Brick	Brick		134
	Mortar	Mortar		125
	Plaster	Plaster		169
	Glass	Window Glass		3,357
	Iron	Nail, Cut	1790-1900	571
		Nail, Wire	1890-Present	30
		Nail, Indeterminate		472
		Spike		1
Furnishings/ Accessories	Lead Glass	Lamp Glass		4
	Glass	Lamp, Chimney		4
		Lightbulb	20th century	1
Hardware	Copper Alloy	Tack		1
	Iron	Fence Staple		3
		Hinge		1
		Screw		1
		Washer		1
Total				**4,875**

Architectural/ construction artifacts primarily consisted of window glass (n=3,357) representing 69 percent of the artifacts in this functional category. Most of the window glass was recovered from the house area (n=3,338), although 19 fragments were found in TU 1 adjacent to the barn foundation. Window glass was concentrated in TU 6 (n=1,424), excavated in the approximate area of the south wall of the house in an area that lacked significant amounts of foundation stone. The entrance to the house was likely located in this area. Significant amounts of window glass were found in TU 7 (n=652), TU 8 (n=668), and TU 9 (n=474), suggesting windows had been present on all sides of the house.

Retained brick fragments (n=134) weighed 16 kg, and 36.3 kg of brick were discarded in the field. In addition, 125 mortar and 169 plaster fragments were retained. These construction materials were all found in the house area, with TUs 7 and 8, excavated across the east and north remnants of the house foundation, yielding the highest counts. Some of the plaster fragments appear to have been painted.

Of the 1,073 nails, a little over half (n=571) were machine cut, likely dating to the nineteenth century, and 30 were wire, dating to the end of the nineteenth and twentieth century. An additional 472 nails were too rusted to identify the method of manufacture, although it is likely that most of these nails were wire as wire nails tend to corrode more quickly. All cut nails were found in the house area. Indeterminate and wire nails were found in the vicinity of the two barns and spring box. These results suggest that the house on the site were built in the nineteenth century and expanded or modified in the late nineteenth to twentieth century when the outbuildings were added. While the house appeared to have a stacked stone foundation and brick chimney, the large number of nails recovered, including from TUs placed across the remnants of the foundation, suggest most of the house was of frame construction. Most nails, including cut, wire, and indeterminate, were recovered from Stratum I (n=894). Indeterminate and cut nails were found in Stratum II and III, where present. In general, most architectural artifacts were found in Stratum I, which appeared to be associated with the collapse of the building, resulting in a mix of temporal artifacts.

6.4.3 Foodways Artifacts

Foodways artifacts make up approximately 24 percent of the site assemblage (n=1,693). These materials include faunal and floral remains, artifacts related to food procurement, food service and storage items, and general foodways (Table 6-11). General foodways artifacts dominate the assemblage because most artifacts were highly fragmented and therefore their form and specific function could not be determined. The distribution of foodways artifacts from the STPs suggests refuse was discarded downhill from the house, towards the slope to the drainage to the south and east. Foodways artifacts recovered from the outbuilding area (TUs 1 and 2) consisted of bottle glass. Artifacts from the spring box (TU 3) likewise primarily consisted of bottle glass, although three ceramic sherds were also recovered. Most foodways artifacts were recovered from TU 6 on the west side of the house (n=606).

Table 6-11. Summary and Distribution of Foodways Artifacts

		TU								STP	Total
Subgroup	**Class**	**1**	**3**	**4**	**5**	**6**	**7**	**8**	**9**		
Faunal	Fauna					5	4			2	11
Floral	Flora							1			1
General Foodways	Ceramic		2	4	13	168	26	16	39	39	307
	Glass	17	102	15	57	299	200	252	113	59	1,114
Procurement	Lithic					1					1
	Metal					5	14	7	1	1	28
Service	Ceramic				1	21	1	1	1	3	28
	Glass				1	3	1				5
Storage	Ceramic		1	1	21	55	2	15	4	3	102
	Glass		8		2	42	12	3	4	16	87
	Metal					5		1		1	7
	Synthetic					2					2
Total		**17**	**113**	**20**	**95**	**606**	**260**	**296**	**162**	**124**	**1,693**

6.4.3.1 Faunal and Floral

Faunal remains consisted of 11 fragments of mammal bone. The bone included two large mammal bones, eight medium mammal bones, and one indeterminate bone fragment. Two medium mammal rib bone fragments had cut marks. Floral remains consisted of one nutshell; however, the site was surrounded by black walnut trees at the time of the survey, and the nut shell may represent incidental inclusion. Oyster and other mollusk shell was notably lacking.

6.4.3.2 Procurement

The 29 procurement artifacts included a gun flint fragment, nine lead bullets, and 19 shell casings. The bullet casings included small historic copper alloy casings to more modern shotgun shells. Most casings could not be definitively dated. Historic use as well as modern recreational activities may be reflected.

6.4.3.3 Service, Storage, and General Foodways

The service, storage, and general foodways artifacts primarily consisted of glass (n=1,206) and ceramics (n=437). Other artifacts included three crown bottle caps, two pieces of metal canning jar lightning closures (1882-present), two metal screw-top canning jar lids, and two hard rubber liquor bottle caps (c. 1890-1920).

Ceramics

The 437 ceramic fragments included a variety of coarse and refined wares spanning the mid eighteenth through twentieth centuries (Table 6-12; Figures 6-22 and 6-23). The dates of some ceramics with long manufacture ranges (e.g., whiteware) were refined where possible based on decoration. Most diagnostic ceramic sherds date to the early to late nineteenth century. The mean ceramic date is 1848.

Table 6-12. Ceramic Types

Date Range	Ware	Count
1750-1850	Stoneware, Black Basalt	3
1762-1820	Creamware, Plain	2
1770-1900	Refined Earthenware, Slip Decorated	12
1775-1840	Pearlware, Plain	95
1775-1840	Pearlware, Slip Decorated, Banded	2
1780-1815	Stoneware, Castleford	2
1783-1830	Pearlware, Transfer Printed, Blue	2
1790-1940	North American, Salt Glazed, Gray/Buff Bodied	11
1794-Present	Porcelain, Bone China	1
1795-1830	Pearlware, Painted, Polychrome and Earth Tone	35
1805-1920	Stoneware, Albany Slip	12
1809-1831	Pearlware, Edgeware, Neoclassical Straight Lines	4
1820-1859	Whiteware, Transfer Printed, Medium Blue	1
1820-1930	Whiteware, Sponged (General)	1
1820-Present	Whiteware, Plain	112
1830-1940	Rockingham	2
1840-1900	White Granite, Paneled	1
1840-1930	White Granite	8
1842-1930	Ironstone	13
1890-1920	Stoneware, Albany & Bristol Slip	6
1890-Present	Porcelain, Decal	2
1920-Present	Stoneware, Bristol Slip	1
Not datable	Redware	105
	Porcelain	1
	Refined Earthenware	3
Total		**437**

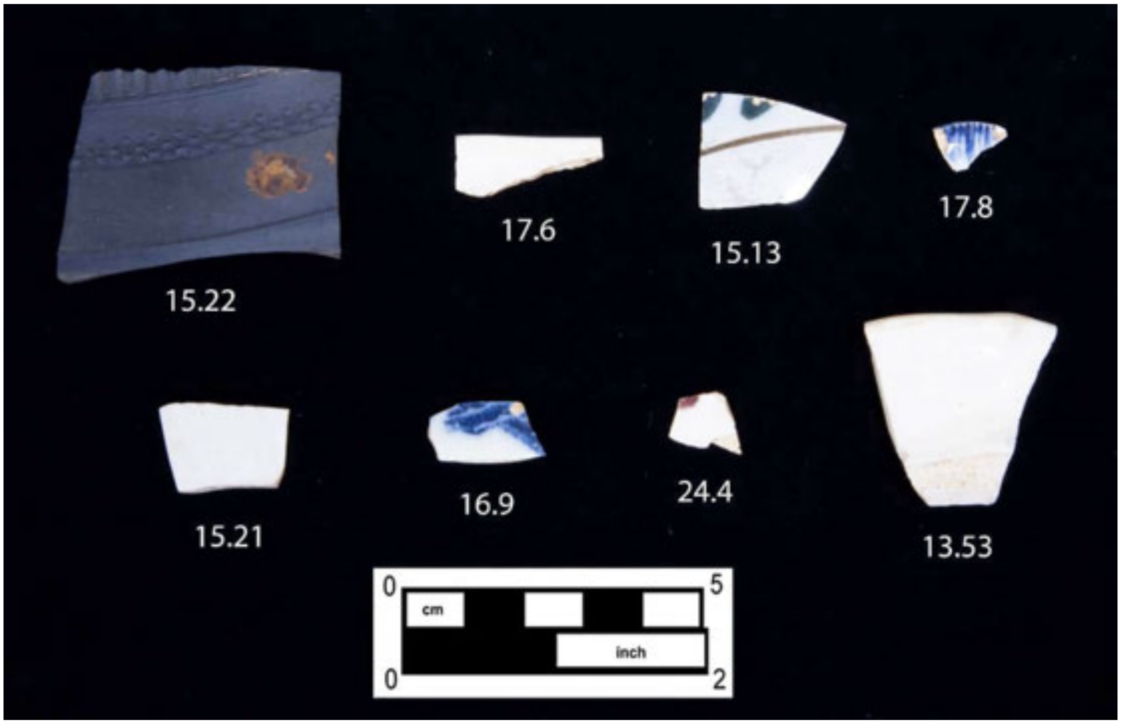


Figure 6-22. Sample of Refined Ceramics
15.22 = Basalt, 17.6 = Creamware, 15.13 and 17.8 = Pearlware, 15.21 = Castleford, 16.9 and 24.4 = Whiteware, 13.53 = White Granite

Figure 6-23. Sample of Utilitarian Ceramics
43.2 and 9.1 = Redware, 15.26 = Salt-Glazed Stoneware Bottle, 25.1 = Albany Slipped Stoneware, 23.19 = Albany/ Bristol Slipped Stoneware

As noted previously, few ceramic sherds were found outside of the immediate vicinity of the house, with two ironstone and one stoneware recovered from the spring box area (TU 3). In the vicinity of the house, no horizontal spatial distinction in ceramic date was present. Most of the ceramic sherds were recovered from TU 6 (n=244) with artifacts spanning the manufacture dates (Table 6-13). Few ceramics were found in TU 5 (n=35) upslope from the back of the house, and it appears refuse had been deposited downslope.

Table 6-13. Distribution of Ceramic Types

Ware	Simplified Date Range	TU							STPs	Total
		3	4	5	6	7	8	9		
Black Basalt	1750-1850				3					3
Bone China	1794-Present								1	1
Creamware	1762-1820		1		1					2
Castelford Stoneware	1780-1815				2					2
Pearlware	1775-1840		3	11	81	12	9	13	9	138
North American, Salt Glazed, Gray/Buff Bodied	1790-1940				10		1			11
North American Stoneware, Albany Slip	1805-1920	1			2	2	5	1	1	12
Whiteware	1820-Present			1	76	9	2	14	12	114
Rockingham	1830-1940				2					2
White Granite	1840-1930				6	3				9
Ironstone/Stone China/White Granite	1842-1930	2					1	4	6	13
North American Stoneware, Albany and Bristol Slip	1890-1920				1		4		1	6
Porcelain, Hard Paste	1890-Present				1				1	2
North American Stoneware, Bristol Slip	Post 1920				1					1
Porcelain						1				1
Redware			1	23	57	2	8	11	14	116
Unidentified Refined Earthenware					1		2	1		4
Total		**3**	**5**	**35**	**244**	**29**	**32**	**44**	**45**	**437**

Ceramics got older with depth to some extent, with Stratum III, where present, containing primarily late eighteenth to mid-nineteenth century artifacts and late nineteenth to twentieth century artifacts primarily recovered from upper levels of Stratum I. However, clear temporal stratification was not present (Table 6-14).

Table 6-14. Stratigraphic Distribution of Datable Ceramics from TUs

Date Range	Ware	Stratum I	Stratum II	Stratum III	Total
1750-1850	Black Basalt	1	2		3
1762-1820	Creamware	1		1	2
1770-1900	Unidentified Refined Earthenware		1		1
1775-1840	Pearlware	16	79	1	92
1780-1815	Castleford Stoneware		2		2
1783-1830	Pearlware, Blue Transfer Print		1		1
1795-1830	Pearlware, Polychrome Painted	4	22	2	28
1805-1920	North American, Slip Glazed	1	6		7
1809-1831	Pearlware, Shell Edged	1	2	1	4
1820-1859	Whiteware, Blue Transfer Print		1		1
1820-1930	Whiteware, Sponged	1			1
1820-Present	Whiteware	13	84	3	100
1830-1940	Rockingham	2			2
1840-1900	White Granite, Paneled	1			1
1840-1930	White Granite	8			8
1842-1930	Ironstone/Stone China/White Granite	3	4		7
1890-1920	North American, Albany and Bristol Slip Glazed	3	2		5
1890-Present	Porcelain, Hard Paste	1			1
1920-Present	North American, Bristol Slip Glazed	1			1
Pre 1870	Redware, Brown Glazed		11		11
Total		**57**	**217**	**8**	**282**

Most ceramic fragments were small, and therefore it was generally not possible to discern vessel forms. Thirty-four percent (n=148) of the ceramics are coarse earthenware, redware, and stoneware more often used for food storage and preparation. Most of the stoneware consisted of nineteenth century American-made types with Albany, Bristol, or a combination of slips. Discernable forms included bottles, storage jars, pans, and indeterminate hollowware vessels.

Sixty-six percent of the assemblage (n=289) are refined wares more often used for food serving and consumption. These include a variety of refined white ceramics and black basalt. Identifiable vessel forms consist primarily of table wares such as plates, bowls, and platters, and tea wares such as cups and saucers. Ironstone, white granite, and Rockingham ceramics, while technically refined wares, were often used for a variety of preparation, serving, and storage functions. Both refined and coarse wares were concentrated in TU 6; remaining TUs in the house area (TUs 5, 7, 8, and 9) included a low-density scatter of refined and coarse wares.

Glass

Like the ceramic fragments, glass from the site was highly fragmented. Glass fragments included 1,198 fragments likely from bottles or jars and eight fragments likely from tableware. Identifiable vessel forms included 25 fragments of milk bottles, nine jar fragments, six fragments of liquor bottles, and three flask fragments. Four milk glass lid liner fragments were also found.

Possible tableware includes six tumbler fragments, including one fragment of a Packer’s tumbler, which would have originally served as a jar containing goods and subsequently used as a drinking glass. One colorless fragment was from a stemware base, and one fragment was from a machine-molded paneled cruet.

Glass fragments with definitive evidence of the method of manufacture were primarily automatic machine-made, dating to the twentieth century (n=69). Six container glass fragments were mouth blown-in-mold, including one base made in a cup-bottom three-piece mold and one dip-molded bottle. These artifacts date to the nineteenth century. Table glass was press-molded. The glass fragments included a range of colors (Table 6-15). While the color of glass is not a definitive dating indicator because any color could have been made at any time, glass color can be used as a supporting indicator because certain colors were more commonly manufactured during certain periods (Lindsey 2019). Olive green glass generally dates to the eighteenth to mid-nineteenth centuries, colorless and aqua glass to the nineteenth to early twentieth centuries, and brown/ amber and green glass to the mid-nineteenth century to the present. Solarized glass indicates manufacture from the late nineteenth to early twentieth century. In general, the high numbers of container glass in comparison to ceramic fragments indicates the site was occupied into the late nineteenth to twentieth century after the advent of mass factory bottle production. Post-occupation use of the park and refuse disposal may also be represented.

Table 6-15. Glass Colors

Color	Count
Amber	416
Aqua	62
Aqua Green	5
Blue, Light	12
Cobalt	12
Colorless	670
Green	1
Olive Green	7
Solarized	1
White, Opaque	17
Yellow	3
Total	**1,206**

Glass fragments were dispersed across the site, with most glass recovered from the house and spring box areas (Table 6-16). While TU 6 contained the highest glass count, it was not as significantly different from the other TUs as was reflected in the ceramic distribution. I.e., while TU 6 yielded approximately 56 percent of the ceramics from the site, TU 6 contained only 28 percent of the site glass. Glass was primarily recovered from surface and Stratum I of the site (n=964, 81%), which is consistent with the artifacts reflecting the later occupation period of the site and potentially post-occupation deposition (Table 6-17).

Table 6-16. Horizontal Distribution of Foodways Glass

	TU									
Object	**1**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**STP**	**Total**
Bottle		8		2	9	4	2	4	7	36
Bottle, Liquor						6				6
Bottle, Milk					25					25
Bottle, Panel									1	1
Container Glass	12	15	10	47	283	165	248	58	7	845
Cruet				1						1
Drinking Glass, Stemware						1				1
Drinking Glass, Tumbler					3				3	6
Flask						2	1			3
Indeterminate	5	87	5	10	16	35	4	55	52	269
Jar					8				1	9
Lid Liner									4	4
Total	**17**	**110**	**15**	**60**	**344**	**213**	**255**	**117**	**75**	**1,206**

Table 6-17. Stratigraphic Distribution of Foodways Glass

	Stratum				
Object	Surface	I	II	III	Total
Bottle	6	25	5		36
Bottle, Liquor		6			6
Bottle, Milk		25			25
Bottle, Panel			1		1
Container Glass		763	79	3	845
Cruet		1			1
Drinking Glass, Stemware				1	1
Drinking Glass, Tumbler		5			5
Drinking Glass, Tumbler, Packer's			1		1
Flask		3			3
Indeterminate	8	126	123	12	269
Jar		9			9
Lid Liner	1	1	2		4
Total	**15**	**964**	**211**	**16**	**1,206**

6.4.4 Miscellaneous Artifacts

Miscellaneous artifacts represent materials of unknown form. This category primarily consisted of small flat iron fragments, potentially from foodways and other cans or metal roofing materials (Table 6-18). Miscellaneous artifacts were concentrated in TU 7 (n=173) and TU 9 (n=82), which included large pieces of metal roofing, suggesting the collected metal fragments primarily consisted of roofing materials.

Table 6-18. Miscellaneous Artifacts

Material	Object	Count
Glass	Stained glass.	2
Copper Alloy	"C" of rounded metal.	1
	Conical object open on both ends	1
Iron	Curved fragment	12
	Curved fragment with a small handle	1
	Flat Fragments.	309
	Conglomerate	22
	Indeterminate corroded objects	6
	Rods	12
	Large, flat circular object	1
	Rectangular bar	3
	Tube rim with internal threading. Possibly part of a hose, pipe, or fixture ring.	1
Lead	Flat circular top attached to a cylindrical hollow body	1
Rubber	Circular rubber cap	3
	Natural rubber handle	1
Slate	Indeterminate slate fragment	1
Total		**377**

6.4.5 Labor Artifacts

Labor artifacts from the site primarily consist of materials associated with heating and/ or cooking (Table 6-19). In addition, a porcelain electrical insulator and utilitarian slide buckle were found. Charcoal was concentrated on the north end of the house (TU 8) in the area suspected to have included the chimney. Coal was scattered across the house area.

Table 6-19. Labor Artifacts

Artifact	Count
Coal Fragment	24
Charcoal Fragment	74
Cinder	1
Slag	1
Iron Slide Buckle	1
Porcelain Insulator	1
Total	**102**

6.4.6 Personal Artifacts

Personal artifacts consisted of items owned or used by individuals. A variety of items were represented, including cosmetic, decorative, medicinal, recreational, and other items (Table 6-20; Figure 6-24). Most artifacts could not be dated, although the glass syringe and tobacco pipe fragments dated to the eighteenth to mid-nineteenth century, the pencil fragment and machined marble date to the mid-nineteenth century to present, and the machine-made medicine bottle dates to the late nineteenth to twentieth century. The decorative ring had been hand made.

Table 6-20. Personal Artifacts

			TU						
Subgroup	**Material**	**Object**	**5**	**6**	**7**	**8**	**9**	**STP**	**Total**
Cosmetic	Plastic	Comb		1					1
Decorative	Common Glass	Bead, Biconical		1					1
	Copper Alloy	Ring			1				1
Medicinal	Common Glass	Bottle, Medicine		9					9
	Non-Lead Glass	Syringe						1	1
Other	Copper Alloy	Pencil		1					1
		Pocket Watch		1					1
Recreational	Coarse Earthenware	Clay Pigeon						1	1
		Flowerpot	1		3	2	1		7
	Common Glass	Marble			1				1
	Copper Alloy	Indeterminate						1	1
	Iron	Watering Can			1				1
	White Ball Clay	Tobacco Pipe		5	2	1	1		9
Total			**1**	**18**	**8**	**3**	**2**	**3**	**35**

Figure 6-24. Sample of Personal Artifacts
18.23 = Ring, 58.13 = Tobacco Pipe Fragment, 13.63 = Plastic Comb, 13.77 = Watch

6.4.7 Clothing Artifacts

Seven clothing artifacts were recovered, including four buttons, a thimble, a grommet and a shoe sole (Table 6-21; Figure 6-25). Datable items dated to the mid-nineteenth to twentieth century.

Table 6-21. Clothing Artifacts

Subgroup	Material	Object	Date Range	TU			STP	Total
				4	6	7		
Fasteners	Common Glass	Button, Shank	1861-1901		1			1
	Porcelain	Prosser Button, 4 Hole	1840-1960		1		1	2
	Rubber	Button			1			1
Manufacture	Copper Alloy	Thimble		1				1
Other	Iron	Grommet				1		1
	Leather	Shoe/Boot Sole				1		1
Total				**1**	**3**	**2**	**1**	**7**

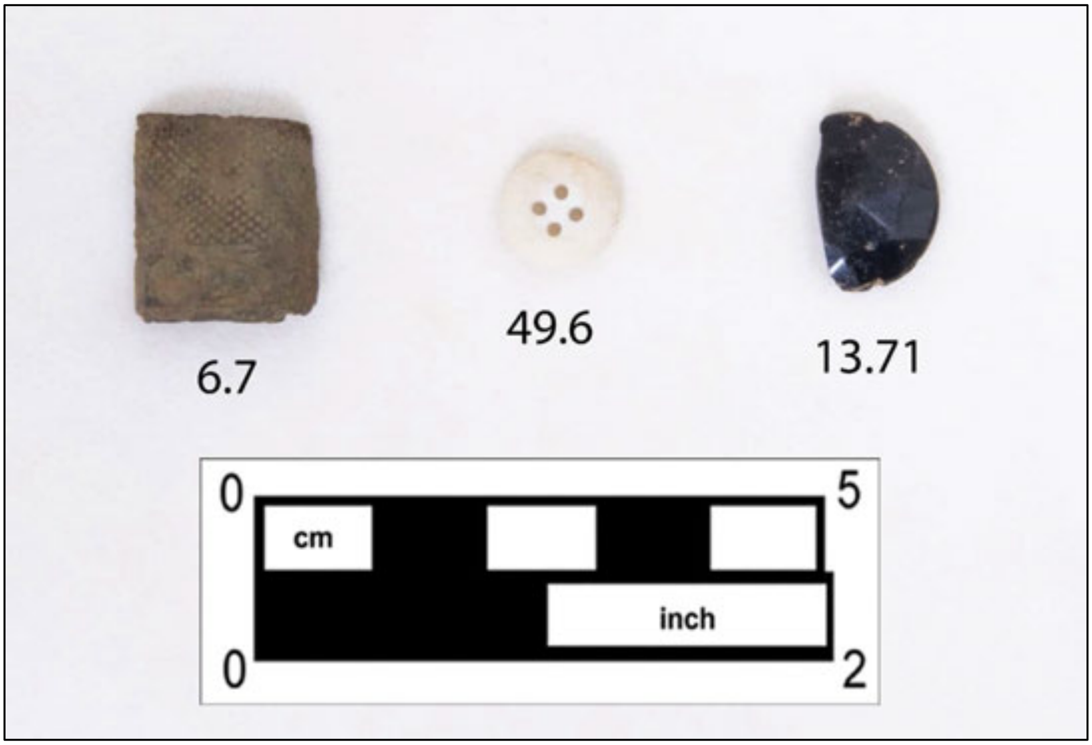


Figure 6-25. Clothing Artifacts
6.7 = Thimble, 49.6 = Prosser Button, 13.71 = Shank Button

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7. Summary and Recommendations

7.1 Summary

AECOM conducted a Phase II archaeological evaluation of 18CR293 as part of the Piney Run Watershed Study at the Piney Run Dam in Carroll County, Maryland. This study was undertaken in support of a concurrent Environmental Assessment and in advance of potential ground disturbing activities associated with the mitigation of design deficiencies identified at the dam. The APE for the archaeological survey is coterminous with the project area and encompasses approximately 20.47 ha (50.58 ac). AECOM identified 18CR293 during Phase I survey of the APE in 2019 and recommended the site potentially eligible for the NRHP (Regan 2020). The site could not be avoided and Phase II evaluation was conducted.

Site 18CR293 represents an early nineteenth to early twentieth century farmstead located in a small, unnamed stream valley near the southern edge of the APE. The archaeological evaluation consisted of the excavation of 22 STPs and 9 TUs. Judgmental STPs were placed in opportunistic locations to test specific landforms and/or features. Remaining STPs were excavated at 5-m intervals in the yard around the house. Three TUs were placed in the outbuilding area, with one TU placed in each of the three outbuildings (stone barn, agricultural building on piers, and the spring box).

The investigation resulted in the recovery of one prehistoric artifact and 7,089 historic artifacts ranging in date from the late eighteenth to twentieth century and the identification of six features. The site includes two loci, including an agricultural complex (Locus A) and a domestic area (Locus B). A small drainage separated the loci. Locus A features included a concrete silo foundation (Feature 1), a large stone barn foundation (Feature 2), a stone and concrete spring box (Feature 3), stone piers that supported an outbuilding (Feature 4), and a stone-paved road (Feature 6). The Locus B feature was the remains of a stone house foundation (Feature 5). No artifact-bearing soil features were found.

Most non-structural artifacts were small fragments, representing casual discard during occupation. The predominance of architectural artifacts in contrast to foodways indicates the site was likely abandoned with personal belongings removed prior to the building demise. The distribution of artifacts suggests that the residence was built in the early nineteenth century and the agricultural buildings were added in the late nineteenth century. While artifacts with manufacture date ranges extending back to the late eighteenth century were found, the predominance of pearlware and whiteware and lack of wrought nails is more indicative of a nineteenth century occupation.

The house appears to have had a stacked fieldstone foundation resting on subsoil. The large number of nails suggests the building had been of frame construction. Remnants of a metal standing seam roof were found to the north and on the east side of the house. The house likely fronted to the south, where significant amounts of window glass were recovered (TU 6). Window glass recovered from all TUs in the house area suggests windows may have been present on all sides. The presence of both cut and wire nails supports the interpretation that the house was built in the nineteenth century and maintained into the twentieth century. No interior features were found, and the house does not appear to have had a cellar. The north end of the house would have been partially below ground level, having been built into the slope. A large scatter of brick and stone rubble to the north of the house suggests that a chimney had been present on the rear of the building. The interior walls were finished with painted plaster. The presence of charcoal in TUs in the house suggests that the house had experienced a fire, although artifacts were not melted or significantly heat damaged, and the charcoal may have resulted from small-scale burning of refuse or clean-out of a hearth or stove.

A review of archival records suggests that the house was not the primary residence of the owners, but rather the home of a field hand, servant, or tenant farmer. No artifacts indicative of ethnicity were recovered. The house was built after 1783 when Samuel Smith patented “Charles Delight Enlarged”. William Patterson repatented the property as “Springfield” in 1827. There is no indication that Smith or Patterson lived on the property. William’s son, George Patterson, did live somewhere on the 1,759-acre property along with his wife and children, up to four free white people presumably working on the farm or mill on the property, and free and enslaved African Americans. The slave census lists up to 48 slaves in George Patterson's household prior to the Civil War. George Patterson was a wealthy farmer, and It is unlikely given the rudimentary construction of the house and its location on a narrow, low landform that the wealthy Patterson family lived at 18CR293.

When George Patterson died in 1869, the land passed to his daughter Florence Patterson Carroll. She died in 1879 and the property passed to her cousin, Frank Brown. Frank Brown sold the property to John Welbourn in 1886. The land changed hands multiple times in quick succession from 1886 through 1904. In 1904, the property was sold to Johnzie Beasman, who built a large Queen Anne-style home less than a mile southeast of 18CR293 and continued to work the farm. Beasman may have added the two stone farm buildings and spring box to support dairy farming, although one or more of the outbuildings may also have been added in the nineteenth century during the Carroll/ Brown ownership. The property passed to Johnzie Beasman's son, Frank, in 1922, who operated the dairy farm. While Frank Beasman continued to own the property, it appears based on aerial photographs that the house at 18CR293 had been abandoned by 1958. Artifacts suggest that the house was abandoned in the early twentieth century, although the barn may have remained in use later into the twentieth century by the Beasman family, who lived to the south.

7.2 NRHP Evaluation and Recommendations

To be eligible for inclusion in the NRHP, resources must meet one of four significance criteria outlined in 36 CFR 60. Properties may have local, regional, or national significance within these four criteria. The criteria are:

(a) Properties that are associated with events that have made a significant contribution to the broad patterns of our history; or
(b) Properties that are associated with the lives of persons significant in our past; or
(c) Properties that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
(d) Properties that have yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting one of the four National Register significance criteria, resources generally must be at least fifty years old, and possess integrity of location, setting, design, materials, workmanship, feeling, or association. Resources that possess integrity are able to convey important aspects of their past.

Site 18CR293 represents a nineteenth to twentieth century farmstead and is not associated with an event important to history (criterion a). The site had been occupied by unknown tenants and is not associated with a significant individual (criterion b). The domestic and agricultural foundations do not embody a distinctive or exceptional example or work of a master (criterion c).

While artifacts and features documented at 18CR293 provide information about the historic farmstead, artifacts were not well stratified. Soil layers were thin and included a mix of artifacts from the long occupation period. Most artifacts, ranging in date from the late eighteenth through twentieth century, were recovered from the upper stratum interpreted as associated with the demise of the building. Artifacts from Stratum II trended older than those from Stratum I, but the presence of small amounts of whiteware and machine-made glass indicates this stratum is also mixed. Investigation in the dwelling showed that the former stacked stone foundation had deteriorated with no intact foundation or subsurface features remaining. While the stone and concrete outbuilding foundations remain intact, artifact deposits in this area were minimal and primarily consisted of machine-made bottle glass and wire nails with limited research value. The site does not have potential to yield significant information about area history and the lives of the people who lived and worked on the site (criterion d) and does not retain a high level of integrity. Site 18CR293 is recommended not eligible for the NRHP.

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Appendix A Qualifications of Investigators

Scott Seibel, MSc, is a Registered Professional Archaeologist (RPA) with over 26 years of experience in cultural resources management who exceeds the Secretary of Interior (SOI) *Professional Qualifications Standards* for Archaeology and History and serves as a Deputy Department Manager for AECOM's Cultural Resources Department. Mr. Seibel has extensive experience in the design, management, and technical execution of cultural resources investigations throughout the United States. An archaeologist and AECOM-certified Project Manager, he routinely manages multi-disciplinary cultural resources projects with diverse project teams for a wide variety of private and public sector clients, and he has direct experience directly conducting and managing Phase I-Phase III cultural resources projects in Virginia and nationwide.

Heather Crowl, MA, RPA, has over 25 years of professional experience in prehistoric and historic archaeology, particularly in the Mid-Atlantic and East Coast regions of the United States. A majority of this experience is in cultural resources management for private, state, and federal compliance projects. She meets the Secretary of the Interior's Professional Qualification Standards for Archaeology (48FR44738-44739) and is a registered professional archaeologist. She received her BA in anthropology from the College of William & Mary in 1994 and MA in anthropology from American University in 2002. Ms. Crowl has extensive experience in the design, management, and technical execution of historical and archaeological investigations. She manages projects, directs archaeological field survey, evaluation, and excavation, and conducts cemetery delineations, artifact analysis, report writing, graphic preparation, and archival research.

Christine Nestleroth, MSc, RPA is a Registered Professional Archaeologist (RPA; #4901) with six years of experience in cultural resources management who exceeds the Secretary of Interior Standards for archaeology and history. She received a MSc in Conflict Archaeology and Heritage from the University of Glasgow in 2021 and a BS in Anthropology from Southern Methodist University in 2017. Ms. Nestleroth has experience in the Mid-Atlantic, Northeast, and Northwest regions of the United States. Most of this experience is in cultural resources management for the National Park Service and National Forest Service on federal compliance projects. Ms. Nestleroth has experience in the design, management, and execution of historical and archaeological investigations. As a Project Archaeologist/Field Director, she conducts monitoring, directs archaeological field survey, evaluation, and excavation, and conducts artifact analysis, report writing, graphic preparation, and archival research.

Sarah Traum, MA, is a senior architectural historian with over 23 years of experience as a cultural resources management professional who exceeds the Secretary of the Interior's (SOI) *Professional Qualifications Standards* for architectural history and history. Ms. Traum has extensive experience in conducting and managing historic architectural resource surveys, conducting historic research, and writing cultural resource surveys, preservation plans, historic structure reports, and National Register of Historic Places nominations. She has worked throughout the Mid-Atlantic and Midwest on projects for a variety of public sector and private clients.

Christina Sabol, MHP, is an architectural historian with over 6 years of experience as a cultural resources management professional who exceeds the Secretary of the Interior's (SOI) *Professional Qualifications Standards* for architectural history. Ms. Sabol has extensive experience in conducting historic architectural resource surveys; researching historic properties and communities; and writing architectural descriptions and historic contexts. At AECOM, she has conducted reconnaissance and intensive-level historic resource surveys, created GIS graphics, and prepared evaluations of significance and analysis of effects for projects on historic resources throughout the Mid-Atlantic.

Appendix B Artifact Catalog

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18CR293 Phase II Artifact Catalog

CatalogID	TUNum	STP	Strat	Artifact Count	Group_Orser	SubGroup_Orser	Material	Object	Ware	ManufactureTechnique
0001.0001	1	-	I	1	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0002.0001	1	-	II	2	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0002.0002	1	-	II	10	Foodways	General Foodways	Non-Lead Glass	Container Glass		Indeterminate
0002.0003	1	-	II	11	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0002.0004	1	-	II	1	Household/ Structural	Architectural/ Construction	Iron	Spike		
0002.0005	1	-	II	29	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0003.0001	1	-	III	1	Foodways	General Foodways	Common Glass	Indeterminate		Mold Blown, Indeterminate
0003.0002	1	-	III	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Mold Blown, Indeterminate
0003.0003	1	-	III	3	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0003.0004	1	-	III	8	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0003.0005	1	-	III	17	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0004.0001	2	-	I	12	Household/ Structural	Architectural/ Construction	Iron	Nail		Wire Wound
0004.0002	2	-	I	13	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0005.0001	3	-	I	2	Foodways	General Foodways	Refined Earthenware	Indeterminate	Ironstone/ Stone China/ White Granite	
0005.0002	3	-	I	1	Foodways	Storage	Stoneware	Vessel, Hollowware	North American, Salt Glazed, Gray/ Buff Bodied	
0005.0003	3	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0005.0004	3	-	I	3	Foodways	Storage	Non-Lead Glass	Bottle		Machined
0005.0005	3	-	I	4	Foodways	Storage	Non-Lead Glass	Bottle		Machined
0005.0006	3	-	I	1	Foodways	Storage	Non-Lead Glass	Bottle		Machined
0005.0007	3	-	I	11	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0005.0008	3	-	I	3	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0005.0009	3	-	I	87	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0005.0010	3	-	I	4	Household/ Structural	Architectural/ Construction	Iron	Nail		Cut, Hand Headed
0005.0011	3	-	I	3	Household/ Structural	Architectural/ Construction	Iron	Nail		Wire Wound
0006.0001	4	-	I	13	Household/ Structural	Architectural/ Construction	Coarse Earthenware	plaster		
0006.0002	4	-	I	9	Household/ Structural	Architectural/ Construction	Iron	Nail		Cut
0006.0003	4	-	I	1	Household/ Structural	Architectural/ Construction	Iron	Nail		Wire Wound
0006.0004	4	-	I	1	Labor	General	Wood	Charcoal		
0006.0005	4	-	I	20	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0006.0006	4	-	I	1	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		

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CatalogID	TUNum	STP	Strat	Artifact Count	Group_Orser	SubGroup_Orser	Material	Object	Ware	ManufactureTechnique
0006.0007	4	-	I	1	Clothing	Manufacture	Copper Alloy	Thimble		Indeterminate
0006.0008	4	-	I	1	Foodways	Storage	Coarse Earthenware	Vessel, Holloware	Redware, Brown Glazed	
0006.0009	4	-	I	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Creamware	
0006.0010	4	-	I	3	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0006.0011	4	-	I	2	Foodways	General Foodways	Common Glass	Container Glass		Machined
0006.0012	4	-	I	2	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0006.0013	4	-	I	2	Foodways	General Foodways	Lead	Container Glass		Indeterminate
0006.0014	4	-	I	2	Foodways	General Foodways	Non-Lead Glass	Container Glass		Indeterminate
0006.0015	4	-	I	2	Foodways	General Foodways	Non-Lead Glass	Container Glass		Indeterminate
0007.0001	4	-	II	2	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0007.0002	4	-	II	12	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0007.0003	4	-	II	6	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0007.0004	4	-	II	2	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0007.0005	4	-	II	68	Household/ Structural	Architectural/ Construction	Composite	Mortar, Lime		
0007.0006	4	-	II	9	Labor	General	Wood	Charcoal Fragment		
0008.0001	4	-	III	1	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0008.0002	4	-	III	2	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0008.0003	4	-	III	1	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0008.0004	4	-	III	2	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0008.0005	4	-	III	3	Household/ Structural	Architectural/ Construction	Composite	Mortar, Lime		
0009.0001	5	-	I	19	Foodways	Storage	Coarse Earthenware	Jar, Storage	Redware, Brown Glazed	
0009.0002	5	-	I	1	Personal	Recreational	Coarse Earthenware	Flower Pot	Redware, Unglazed	
0009.0003	5	-	I	1	Foodways	Service	Refined Earthenware	Vessel, Flatware	Pearlware	
0009.0004	5	-	I	2	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0009.0005	5	-	I	10	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0009.0006	5	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0009.0007	5	-	I	2	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0009.0008	5	-	I	8	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0009.0009	5	-	I	12	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0009.0010	5	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0009.0011	5	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0009.0012	5	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0009.0013	5	-	I	1	Foodways	General Foodways	Lead	Container Glass		Indeterminate
0009.0014	5	-	I	1	Foodways	Service	Non-Lead Glass	Cruet		Machined
0009.0015	5	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Indeterminate
0009.0016	5	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Indeterminate
0009.0017	5	-	I	2	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0009.0018	5	-	I	12	Foodways	General Foodways	Non-Lead Glass	Container Glass		Indeterminate

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CatalogID	TUNum	STP	Strat	Artifact Count	Group_Orser	SubGroup_Orser	Material	Object	Ware	ManufactureTechnique
0009.0019	5	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0010.0001	5	-	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0010.0002	5	-	II	1	Foodways	Storage	Coarse Earthenware	Vessel, Holloware	Redware, Brown Glazed	
0010.0003	5	-	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0010.0004	5	-	II	2	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0010.0005	5	-	II	2	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0010.0006	5	-	II	5	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0010.0007	5	-	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0010.0008	5	-	II	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0010.0009	5	-	II	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0010.0010	5	-	II	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0010.0011	5	-	II	3	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0010.0012	5	-	II	2	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0010.0013	5	-	II	1	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0010.0014	5	-	II	1	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0010.0015	5	-	II	1	Prehistoric	Tools	Quartz	Projectile Point		
0011.0001	5	-	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0011.0002	5	-	II	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0012.0001	5	-	I & II	1	Foodways	Storage	Coarse Earthenware	Vessel, Holloware	Redware, Black Glazed	
0012.0002	5	-	I & II	2	Foodways	Storage	Common Glass	Bottle		Mold Blown, Indeterminate
0012.0003	5	-	I & II	3	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0012.0004	5	-	I & II	1	Foodways	General Foodways	Lead	Indeterminate		Indeterminate
0013.0001	6	-	I	1389	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0013.0002	6	-	I	155	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0013.0003	6	-	I	3	Foodways	General Foodways	Lead	Container Glass		Indeterminate
0013.0004	6	-	I	4	Household/ Structural	Furnishings/ Accessories	Lead	Lamp Glass		Indeterminate
0013.0005	6	-	I	1	Foodways	General Foodways	Lead	Container Glass		Indeterminate
0013.0006	6	-	I	1	Foodways	General Foodways	Lead	Container Glass		Mold Blown, Indeterminate
0013.0007	6	-	I	4	Foodways	Storage	Non-Lead Glass	Bottle, Milk		Mold Blown, Indeterminate
0013.0008	6	-	I	1	Foodways	Storage	Non-Lead Glass	Bottle, Milk		Machined
0013.0009	6	-	I	7	Foodways	Storage	Non-Lead Glass	Bottle, Milk		Machined
0013.0010	6	-	I	3	Foodways	Storage	Non-Lead Glass	Bottle, Milk		Mold Blown, Indeterminate
0013.0011	6	-	I	9	Foodways	Storage	Non-Lead Glass	Bottle, Milk		Machined
0013.0012	6	-	I	13	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0013.0013	6	-	I	1	Foodways	Storage	Non-Lead Glass	Bottle, Milk		Machined
0013.0014	6	-	I	4	Foodways	General Foodways	Non-Lead Glass	Container Glass		Machined
0013.0015	6	-	I	19	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0013.0016	6	-	I	3	Foodways	Service	Non-Lead Glass	Drinking Glass, Tumbler		Pressed
0013.0017	6	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Pressed
0013.0018	6	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Pressed
0013.0019	6	-	I	2	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0013.0020	6	-	I	4	Household/ Structural	Furnishings/ Accessories	Non-Lead Glass	Lamp, Chimney		Indeterminate

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0013.0021	6	-	I	7	Foodways	Storage	Non-Lead Glass	Bottle Closure		Mold Blown, Indeterminate
0013.0022	6	-	I	1	Foodways	Storage	Non-Lead Glass	Bottle Closure		Machined
0013.0023	6	-	I	10	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0013.0024	6	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0013.0025	6	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0013.0026	6	-	I	2	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0013.0027	6	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0013.0028	6	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Pressed
0013.0029	6	-	I	1	Labor	General	Common Glass	Slag		
0013.0030	6	-	I	2	Foodways	General Foodways	Common Glass	Container Glass		mouth blown, general
0013.0031	6	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		mouth blown, general
0013.0032	6	-	I	8	Foodways	Storage	Common Glass	Jar, Unid.		Machined
0013.0033	6	-	I	2	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0013.0034	6	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Pressed
0013.0035	6	-	I	9	Personal	Medicinal	Common Glass	Bottle, Medicine		Machined
0013.0036	6	-	I	1	Foodways	Storage	Common Glass	Bottle		Indeterminate
0013.0037	6	-	I	4	Foodways	General Foodways	Common Glass	Container Glass		Machined
0013.0038	6	-	I	3	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0013.0039	6	-	I	50	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0013.0040	6	-	I	2	Miscellaneous	Unknown	Common Glass	Flat Glass		Indeterminate
0013.0041	6	-	I	1	Personal	Decorative	Common Glass	Bead, Biconical		Pressed
0013.0042	6	-	I	1	Foodways	Storage	Coarse Earthenware	Vessel, Hollowware	Redware, Brown Glazed	
0013.0043	6	-	I	2	Foodways	Storage	Coarse Earthenware	Vessel, Hollowware	Redware, Brown Glazed	
0013.0044	6	-	I	2	Foodways	Storage	Coarse Earthenware	Vessel, Hollowware	Redware, Brown Glazed	
0013.0045	6	-	I	1	Foodways	Storage	Coarse Earthenware	Vessel, Hollowware	Redware, Black Glazed	
0013.0046	6	-	I	1	Foodways	Storage	Stoneware	Vessel, Hollowware	Black Basalt	
0013.0047	6	-	I	2	Foodways	General Foodways	Refined Earthenware	Indeterminate	Rockingham	
0013.0048	6	-	I	1	Foodways	General Foodways	Stoneware	Indeterminate	North American, Salt Glazed, Gray/ Buff Bodied	
0013.0049	6	-	I	1	Foodways	Storage	Stoneware	Vessel, Hollowware	North American, Salt Glazed, Gray/ Buff Bodied	
0013.0050	6	-	I	1	Foodways	Storage	Stoneware	Vessel, Hollowware	North American, Salt Glazed, Gray/ Buff Bodied	
0013.0051	6	-	I	1	Foodways	Storage	Stoneware	Vessel, Hollowware	North American, Slip Glazed	
0013.0052	6	-	I	1	Foodways	Storage	Stoneware	Vessel, Hollowware	North American, Slip Glazed	
0013.0053	6	-	I	1	Foodways	General Foodways	Refined Earthenware	Hollowware	White Granite	
0013.0054	6	-	I	1	Foodways	Service	Refined Earthenware	Plate, Dinner	White Granite	
0013.0055	6	-	I	1	Foodways	Service	Refined Earthenware	Saucer	White Granite	
0013.0056	6	-	I	3	Foodways	General Foodways	Refined Earthenware	Hollowware	White Granite	
0013.0057	6	-	I	10	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0013.0058	6	-	I	1	Foodways	General Foodways	Refined Earthenware	Hollowware	Whiteware	
0013.0059	6	-	I	1	Foodways	General Foodways	Refined Earthenware	Hollowware	Pearlware	
0013.0060	6	-	I	3	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0013.0061	6	-	I	2	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0013.0062	6	-	I	1	Foodways	General Foodways	Porcelain	Hollowware	Porcelain, Hard Paste	

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CatalogID	TUNum	STP	Strat	Artifact Count	Group_Orser	SubGroup_Orser	Material	Object	Ware	ManufactureTechnique
0013.0063	6	-	I	1	Personal	Cosmetic	Plastic	Comb		Molded
0013.0064	6	-	I	1	Miscellaneous	Unknown	Rubber	Indeterminate		Molded
0013.0065	6	-	I	1	Foodways	Storage	Rubber	Cap		Molded
0013.0066	6	-	I	1	Foodways	Storage	Rubber	Cap		Molded
0013.0067	6	-	I	2	Miscellaneous	Unknown	Rubber	Indeterminate		molded
0013.0068	6	-	I	4	Labor	General	Coal	Coal		
0013.0069	6	-	I	1	Clothing	Fasteners	Rubber	Button		Molded
0013.0070	6	-	I	1	Clothing	Fasteners	Porcelain	Button, 4 Holes		Pressed
0013.0071	6	-	I	1	Clothing	Fasteners	Common Glass	Button, Shank		Mold Blown, Indeterminate
0013.0072	6	-	I	1	Foodways	Procurement	Lead	Bullet		
0013.0073	6	-	I	2	Foodways	Procurement	Copper Alloy	Artillery Shell		Molded
0013.0074	6	-	I	1	Foodways	Procurement	Copper Alloy	Artillery Shell		Molded
0013.0075	6	-	I	1	Foodways	Procurement	Steel	Artillery Shell		Molded
0013.0076	6	-	I	1	Personal	Other	Copper Alloy	Pencil		Molded
0013.0077	6	-	I	1	Personal	Other	Copper Alloy	Pocket Watch		Indeterminate
0013.0078	6	-	I	3	Household/ Structural	Hardware	Iron	Fence Staple		Indeterminate
0013.0079	6	-	I	1	Labor	Agricultural	Iron	Buckle, Slide		Indeterminate
0013.0080	6	-	I	1	Miscellaneous	Unknown	Copper Alloy	Indeterminate		Indeterminate
0013.0081	6	-	I	1	Foodways	Storage	Copper Alloy	Jar		Molded
0013.0082	6	-	I	1	Foodways	Storage	Iron	Jar		Molded
0013.0083	6	-	I	2	Foodways	Storage	Iron	bottle, Closure		
0013.0084	6	-	I	1	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate
0013.0085	6	-	I	1	Foodways	Storage	Iron	Bottle Cap		Indeterminate
0013.0086	6	-	I	1	Household/ Structural	Hardware	Iron	Washer		Indeterminate
0013.0087	6	-	I	14	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate
0013.0088	6	-	I	16	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate
0013.0089	6	-	I	37	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0013.0090	6	-	I	2	Household/ Structural	Architectural/ Construction	Iron	Nail, Wire		Wire Wound
0013.0091	6	-	I	23	Household/ Structural	Architectural/ Construction	Iron	Nail, Cut		Cut
0013.0092	6	-	I	15	Household/ Structural	Architectural/ Construction	Iron	Nail, Cut		Cut
0013.0093	6	-	I	32	Household/ Structural	Architectural/ Construction	Iron	Nail, Cut		Cut
0015.0001	6	-	II	1	Foodways	Storage	Coarse Earthenware	Vessel, Hollowware	Redware, Brown Glazed	
0015.0002	6	-	II	14	Foodways	Storage	Coarse Earthenware	Vessel, Hollowware	Redware, Brown Glazed	
0015.0003	6	-	II	9	Foodways	Storage	Coarse Earthenware	Vessel, Hollowware	Redware, Brown Glazed	
0015.0004	6	-	II	2	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0015.0005	6	-	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0015.0006	6	-	II	1	Foodways	Storage	Coarse Earthenware	Vessel, Hollowware	Redware, Brown Glazed	
0015.0007	6	-	II	11	Foodways	Storage	Coarse Earthenware	Pan/ Dish	Redware, Brown Glazed	
0015.0008	6	-	II	4	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Unid.	
0015.0009	6	-	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	

CatalogID	TUNum	STP	Strat	Artifact Count	Group_Orser	SubGroup_Orser	Material	Object	Ware	ManufactureTechnique
0015.0010	6	-	II	1	Foodways	Service	Refined Earthenware	Vessel, Hollowware	Pearlware	
0015.0011	6	-	II	3	Foodways	Service	Refined Earthenware	Vessel, Hollowware	Pearlware	
0015.0012	6	-	II	9	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0015.0013	6	-	II	1	Foodways	Service	Refined Earthenware	Vessel, Hollowware	Pearlware	
0015.0014	6	-	II	2	Foodways	Service	Refined Earthenware	Vessel, Flatware	Pearlware	
0015.0015	6	-	II	1	Foodways	Service	Refined Earthenware	Vessel, Hollowware	Pearlware	
0015.0016	6	-	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0015.0017	6	-	II	40	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0015.0018	6	-	II	5	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0015.0019	6	-	II	51	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0015.0020	6	-	II	1	Foodways	Service	Stoneware	Vessel, Hollowware	White Feldspathic Stoneware, "Castleford"	
0015.0021	6	-	II	1	Foodways	Service	Stoneware	Vessel, Hollowware	White Feldspathic Stoneware, "Castleford"	
0015.0022	6	-	II	1	Foodways	Service	Stoneware	Vessel, Hollowware	Black Basalt	
0015.0023	6	-	II	1	Foodways	General Foodways	Stoneware	Indeterminate	Black Basalt	
0015.0024	6	-	II	4	Foodways	Storage	Stoneware	Vessel, Hollowware	North American, Salt Glazed, Gray/ Buff Bodied	
0015.0025	6	-	II	3	Foodways	Storage	Stoneware	Vessel, Hollowware	North American, Salt Glazed, Gray/ Buff Bodied	
0015.0026	6	-	II	1	Foodways	Storage	Stoneware	Bottle, Unid.	North American, Salt Glazed, Gray/ Buff Bodied	
0015.0027	6	-	II	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0015.0028	6	-	II	1	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0015.0029	6	-	II	1	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0015.0030	6	-	II	2	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0015.0031	6	-	II	10	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0015.0032	6	-	II	5	Personal	Recreational	Refined Earthenware	Tobacco Pipe	White Ball Clay	
0015.0033	6	-	II	31	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0015.0034	6	-	II	8	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0015.0035	6	-	II	1	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0015.0036	6	-	II	3	Labor	General	Coal	Coal Fragment		
0015.0037	6	-	II	1	Miscellaneous	Unknown	Copper Alloy	Indeterminate		
0015.0038	6	-	II	4	Foodways	Faunal	Bone	Bone, Mandible		
0016.0001	6	-	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0016.0002	6	-	II	3	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0016.0003	6	-	II	2	Foodways	General Foodways	Coarse Earthenware	Vessel, Hollowware	Redware, Brown Glazed	
0016.0004	6	-	II	1	Foodways	General Foodways	Coarse Earthenware	Vessel, Hollowware	Redware, Brown Glazed	
0016.0005	6	-	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Unglazed	
0016.0006	6	-	II	6	Foodways	Service	Refined Earthenware	Saucer	Pearlware	
0016.0007	6	-	II	2	Foodways	General Foodways	Refined Earthenware	Vessel, Hollowware	Pearlware	
0016.0008	6	-	II	5	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0016.0009	6	-	II	1	Foodways	General Foodways	Refined Earthenware	Vessel, Hollowware	Whiteware	
0016.0010	6	-	II	8	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	

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CatalogID	TUNum	STP	Strat	Artifact Count	Group_Orser	SubGroup_Orser	Material	Object	Ware	ManufactureTechnique
0016.0011	6	-	II	1	Foodways	General Foodways	Stoneware	Indeterminate	North American, Salt Glazed, Gray/ Buff Bodied	
0016.0012	6	-	II	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0016.0013	6	-	II	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0016.0014	6	-	II	3	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0016.0015	6	-	II	5	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0016.0016	6	-	II	8	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0016.0017	6	-	II	2	Miscellaneous	Unknown	Iron	Indeterminate		
0016.0018	6	-	II	1	Foodways	Faunal	Bone	Bone, Mandible		
0016.0019	6	-	II	1	Foodways	Procurement	Flint, English	Gun Flint		
0017.0001	6	-	III	2	Foodways	General Foodways	Non-Lead Glass	Container Glass		Indeterminate
0017.0002	6	-	III	1	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0017.0003	6	-	III	1	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0017.0004	6	-	III	1	Household/ Structural	Architectural/ Construction	Iron	Nail		Cut
0017.0005	6	-	III	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Unidentified Refined Earthenware	
0017.0006	6	-	III	1	Foodways	Service	Refined Earthenware	Plate	Creamware	
0017.0007	6	-	III	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0017.0008	6	-	III	1	Foodways	Service	Refined Earthenware	Plate	Pearlware	
0017.0009	6	-	III	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0018.0001	7	-	I	397	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0018.0002	7	-	I	188	Household/ Structural	Architectural/ Construction	Iron	Nail		Cut
0018.0003	7	-	I	180	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0018.0004	7	-	I	134	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate
0018.0005	7	-	I	3	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate
0018.0006	7	-	I	1	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate
0018.0007	7	-	I	1	Personal	Recreational	Iron	Watering Can		Indeterminate
0018.0008	7	-	I	31	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Mortar		
0018.0009	7	-	I	26	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0018.0010	7	-	I	2	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0018.0011	7	-	I	1	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate
0018.0012	7	-	I	2	Household/ Structural	Architectural/ Construction	Iron	Nail, Wire		Wire Wound
0018.0013	7	-	I	5	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0018.0014	7	-	I	8	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate

CatalogID	TUNum	STP	Strat	Artifact Count	Group_Orser	SubGroup_Orser	Material	Object	Ware	ManufactureTechnique
0018.0015	7	-	I	1	Clothing	Other	Iron	Grommet		Indeterminate
0018.0016	7	-	I	1	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate
0018.0017	7	-	I	11	Labor	General	Wood	Charcoal Fragment		
0018.0018	7	-	I	1	Labor	General	Coal	Coal Fragment		
0018.0019	7	-	I	1	Foodways	Procurement	Copper Alloy	Shotgun Shell Casing		Indeterminate
0018.0020	7	-	I	7	Foodways	Procurement	Copper Alloy	Rimfire casing		Indeterminate
0018.0021	7	-	I	1	Foodways	Procurement	Copper Alloy	Rimfire casing		Indeterminate
0018.0022	7	-	I	1	Household/ Structural	Furnishings/ Accessories	Non-Lead Glass	Lightbulb		
0018.0023	7	-	I	1	Personal	Decorative	Copper Alloy	Ring		Hand Wrought
0018.0024	7	-	I	1	Personal	Recreational	Common Glass	Marble		Machined
0018.0025	7	-	I	2	Foodways	Faunal	Bone	Bone, Rib		
0018.0026	7	-	I	1	Foodways	Faunal	Bone	Bone		
0018.0027	7	-	I	2	Personal	Recreational	Refined Earthenware	Pipe, Smoking	White ball clay	Molded
0018.0028	7	-	I	1	Personal	Recreational	Coarse Earthenware	Flower Pot	Redware, Unglazed	
0018.0029	7	-	I	3	Foodways	General Foodways	Refined Earthenware	Indeterminate	white Granite	
0018.0030	7	-	I	2	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0018.0031	7	-	I	2	Foodways	General Foodways	Common Glass	Container Glass		Mouth Blown, Unid.
0018.0032	7	-	I	7	Foodways	General Foodways	Milk Glass	Container Glass		Indeterminate
0018.0033	7	-	I	60	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0018.0034	7	-	I	3	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0018.0035	7	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0018.0036	7	-	I	2	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0018.0037	7	-	I	5	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0018.0038	7	-	I	6	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0018.0039	7	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0018.0040	7	-	I	1	Foodways	Storage	Common Glass	Bottle, Liquor		Mold Blown, Indeterminate
0018.0041	7	-	I	2	Foodways	Storage	Common Glass	Bottle, Liquor		Mold Blown, Indeterminate
0018.0042	7	-	I	2	Foodways	Storage	Common Glass	Bottle, Liquor		Mold Blown, Indeterminate
0018.0043	7	-	I	1	Foodways	Storage	Common Glass	Bottle, Liquor		Machined
0018.0044	7	-	I	2	Foodways	Storage	Common Glass	Bottle		Machined
0018.0045	7	-	I	2	Foodways	Storage	Common Glass	Flask		Machined
0018.0046	7	-	I	1	Foodways	General Foodways	Lead	Container Glass		Indeterminate
0018.0047	7	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Cup-Bottom Mold
0018.0048	7	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0018.0049	7	-	I	51	Foodways	General Foodways	Non-Lead Glass	Container Glass		Indeterminate
0020.0001	7	-	I	1	Foodways	Storage	Stoneware	Vessel, Hollowware	North American, Salt Glazed, Brown Bodied	
0020.0002	7	-	I	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0020.0003	7	-	I	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0020.0004	7	-	I	1	Foodways	Storage	Common Glass	Bottle, Unid.		Machined
0020.0005	7	-	I	19	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0020.0006	7	-	I	12	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0020.0007	7	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0020.0008	7	-	I	2	Foodways	Procurement	White Metal	Bullet		
0020.0009	7	-	I	1	Foodways	Procurement	White Metal	Bullet		
0020.0010	7	-	I	1	Clothing	Other	Leather	Shoe/ Boot Sole		

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0020.0011	7	-	I	1	Foodways	General Foodways	Milk Glass	Indeterminate		Indeterminate
0020.0012	7	-	I	85	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0020.0013	7	-	I	2	Household/ Structural	Architectural/ Construction	Iron	Nail		Cut
0020.0014	7	-	I	12	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0020.0015	7	-	I	2	Miscellaneous	Unknown	Iron	Indeterminate		
0020.0016	7	-	I	11	Miscellaneous	Unknown	Iron	Indeterminate		
0020.0017	7	-	I	13	Labor	General	Wood	Charcoal Fragment		
0021.0001	7	-	II	1	Foodways	Storage	Coarse Earthenware	Vessel, Hollowware	Redware, Brown Glazed	
0021.0002	7	-	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Unid.	
0021.0003	7	-	II	1	Personal	Recreational	Coarse Earthenware	Flower Pot	Redware, Unglazed	
0021.0004	7	-	II	1	Personal	Recreational	Coarse Earthenware	Flower Pot	Redware, Unglazed	
0021.0005	7	-	II	1	Foodways	Service	Refined Earthenware	Vessel, Hollowware	Pearlware	
0021.0006	7	-	II	8	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0021.0007	7	-	II	6	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0021.0008	7	-	II	1	Foodways	General Foodways	Stoneware	Indeterminate	North American, Salt Glazed, Gray/ Buff Bodied	
0021.0009	7	-	II	1	Foodways	General Foodways	Porcelain	Indeterminate	Porcelain, Hard Paste	
0021.0010	7	-	II	4	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0021.0011	7	-	II	1	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0021.0012	7	-	II	1	Foodways	General Foodways	Milk Glass	Indeterminate		Indeterminate
0021.0013	7	-	II	1	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0021.0014	7	-	II	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0021.0015	7	-	II	3	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0021.0016	7	-	II	1	Foodways	Storage	Non-Lead Glass	Bottle, Unid.		Machined
0021.0017	7	-	II	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Machined
0021.0018	7	-	II	2	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0021.0019	7	-	II	10	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0021.0020	7	-	II	1	Miscellaneous	Unknown	Rubber	Indetermina		
0021.0021	7	-	II	1	Foodways	Procurement	White Metal	Bullet		
0021.0022	7	-	II	1	Foodways	Faunal	Bone	Bone, Long Bone		
0021.0023	7	-	II	3	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0021.0024	7	-	II	153	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0021.0025	7	-	II	8	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0021.0026	7	-	II	7	Miscellaneous	Unknown	Iron	Indeterminate		
0021.0027	7	-	II	4	Miscellaneous	Unknown	Iron	Indeterminate		
0022.0001	7	-	III	2	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0022.0002	7	-	III	1	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0022.0003	7	-	III	1	Foodways	Service	Lead	Drinking Glass, Stemware		Indeterminate
0022.0004	7	-	III	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0022.0005	7	-	III	1	Foodways	Procurement	White Metal	Bullet		

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0022.0006	7	-	III	2	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0022.0007	7	-	III	17	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0023.0001	8	-	I	8	Foodways	General Foodways	Non-Lead Glass	Container Glass		Indeterminate
0023.0002	8	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0023.0003	8	-	I	1	Foodways	Storage	Non-Lead Glass	Bottle		Indeterminate
0023.0004	8	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Mouth
0023.0005	8	-	I	1	Foodways	Storage	Common Glass	Bottle		Mold Blown, Indeterminate
0023.0006	8	-	I	4	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0023.0007	8	-	I	2	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0023.0008	8	-	I	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Unidentified Refined Earthenware	
0023.0009	8	-	I	1	Foodways	General Foodways	Refined Earthenware	Holloware	Unidentified Refined Earthenware	
0023.0010	8	-	I	1	Foodways	Storage	Coarse Earthenware	Vessel, Holloware	Redware, Brown Glazed	
0023.0011	8	-	I	1	Foodways	Storage	Stoneware	Vessel, Holloware	North American, Salt Glazed, Gray/ Buff Bodied	
0023.0012	8	-	I	1	Personal	Recreational	Refined Earthenware	Pipe, Smoking	white Ball Clay	Molded
0023.0013	8	-	I	2	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0023.0014	8	-	I	3	Household/ Structural	Architectural/ Construction	Iron	Nail, Wire		Wire Wound
0023.0015	8	-	I	1	Foodways	Storage	Iron	Bottle Cap		Indeterminate
0023.0016	8	-	I	3	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0023.0017	8	-	I	3	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate
0023.0018	8	-	I	1	Labor	General	Coal	Coal Fragment		
0023.0019	8	-	I	2	Foodways	Storage	Stoneware	Vessel, Holloware	North American, Slip Glazed	
0023.0020	8	-	I	156	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Plaster		
0023.0021	8	-	I	155	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0023.0022	8	-	I	106	Household/ Structural	Architectural/ Construction	Iron	Nail		Cut
0023.0023	8	-	I	2	Household/ Structural	Architectural/ Construction	Iron	Nail		Cut
0023.0024	8	-	I	2	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate
0023.0025	8	-	I	31	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0023.0026	8	-	I	38	Labor	General	Wood	Charcoal Fragment		
0023.0027	8	-	I	3	Foodways	Storage	Coarse Earthenware	Vessel, Holloware	Redware, Unglazed	
0023.0028	8	-	I	1	Foodways	Floral	Nut Shell	Nut		
0024.0001	8	-	I	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Unid.	
0024.0002	8	-	I	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0024.0003	8	-	I	1	Foodways	Storage	Coarse Earthenware	Vessel, Holloware	Redware, Colorless Glaze	

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CatalogID	TUNum	STP	Strat	Artifact Count	Group_Orser	SubGroup_Orser	Material	Object	Ware	ManufactureTechnique
0024.0004	8	-	I	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0024.0005	8	-	I	12	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0024.0006	8	-	I	3	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0024.0007	8	-	I	7	Household/ Structural	Architectural/ Construction	Composite	Mortar, Lime		
0025.0001	8	-	II	4	Foodways	Storage	Stoneware	Vessel, Hollowware	North American, Salt Glazed, Gray/ Buff Bodied	
0025.0002	8	-	II	2	Foodways	Storage	Stoneware	Vessel, Hollowware	North American, Salt Glazed, Gray/ Buff Bodied	
0025.0003	8	-	II	1	Foodways	Storage	Refined Earthenware	Vessel, Hollowware	Pearlware	
0025.0004	8	-	II	4	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0025.0005	8	-	II	1	Foodways	Procurement	White Metal	Bullet		
0025.0006	8	-	II	4	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0025.0007	8	-	II	2	Household/ Structural	Architectural/ Construction	Composite	Mortar, Lime		
0025.0008	8	-	II	35	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0026.0001		-JUD 01	I	1	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0026.0002		-JUD 01	I	1	Miscellaneous	Unknown	Lead	Indeterminate		
0026.0003		-JUD 01	I	5	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0026.0004		-JUD 01	I	2	Miscellaneous	Unknown	Iron	Indeterminate		
0027.0001		-JUD 02	I	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0028.0001		-JUD 03	I	1	Foodways	Storage	Coarse Earthenware	Vessel, Hollowware	Redware, Black Glazed	
0028.0002		-JUD 03	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0028.0003		-JUD 03	I	2	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0028.0004		-JUD 03	I	4	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0028.0005		-JUD 03	I	1	Foodways	Faunal	Bone	Bone, Long Bone		
0029.0001		-JUD 17	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Ironstone/ Stone China/ White Granite	
0029.0002		-JUD 17	II	1	Foodways	Storage	Non-Lead Glass	Drinking Glass, Tumbler, Packer's		Pressed
0029.0003		-JUD 17	II	1	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0030.0001		-JUD 19	II	1	Foodways	Service	Porcelain	Vessel, Hollowware	Porcelain, Hard Paste	
0031.0001		-Surface		1	Foodways	Storage	Stoneware	Vessel, Hollowware	North American, Salt Glazed, Gray/ Buff Bodied	
0031.0002		-Surface		1	Foodways	Storage	Non-Lead Glass	Bottle, Unid.		Mold Blown, Indeterminate
0031.0003		-Surface		1	Foodways	Storage	Common Glass	Bottle, Unid.		Mold Blown, Indeterminate
0032.0001		-Surface		5	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0032.0002		-Surface		1	Foodways	Storage	Non-Lead Glass	Bottle, Unid.		Machined

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0032.0003		-Surface		1	Foodways	Storage	Non-Lead Glass	Bottle, Unid.		Machined
0032.0004		-Surface		1	Foodways	Storage	Non-Lead Glass	Bottle, Unid.		Machined
0032.0005		-Surface		1	Foodways	Storage	Non-Lead Glass	Bottle, Unid.		Machined
0032.0006		-Surface		3	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0032.0007		-Surface		1	Foodways	Storage	Common Glass	Lid Liner		Pressed
0032.0008		-Surface		3	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0032.0009		-Surface		1	Household/ Structural	Hardware	Iron	Hinge		
0033.0001	8	-	I	459	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0033.0002	8	-	I	188	Household/ Structural	Architectural/ Construction	Iron	Nail		Cut
0033.0003	8	-	I	9	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0033.0004	8	-	I	7	Household/ Structural	Architectural/ Construction	Iron	Nail		Machined
0033.0005	8	-	I	4	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0033.0006	8	-	I	59	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate
0033.0007	8	-	I	6	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate
0033.0008	8	-	I	135	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0033.0009	8	-	I	6	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0033.0010	8	-	I	6	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0033.0011	8	-	I	9	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0033.0012	8	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0033.0013	8	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0033.0014	8	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Machined
0033.0015	8	-	I	3	Foodways	General Foodways	Common Glass	Container Glass		Machined
0033.0016	8	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0033.0017	8	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0033.0018	8	-	I	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0033.0019	8	-	I	5	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0033.0020	8	-	I	3	Foodways	General Foodways	Milk Glass	Container Glass		Indeterminate
0033.0021	8	-	I	2	Personal	Recreational	Coarse Earthenware	Flower Pot	Redware, Unglazed	
0033.0022	8	-	I	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0033.0023	8	-	I	4	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0033.0024	8	-	I	1	Foodways	Service	Refined Earthenware	Teaware, General	Pearlware	
0033.0025	8	-	I	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Ironstone/ Stone China/ White Granite	
0033.0026	8	-	I	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0033.0027	8	-	I	1	Foodways	General Foodways	Refined Earthenware	Hollowware	Pearlware	
0033.0028	8	-	I	2	Labor	General	Wood	Charcoal		
0033.0029	8	-	I	6	Foodways	Procurement	Copper Alloy	Bullet Shell Casing		Indeterminate
0033.0030	8	-	I	52	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0033.0031	8	-	I	7	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate

CatalogID	TUNum	STP	Strat	Artifact Count	Group_Orser	SubGroup_Orser	Material	Object	Ware	ManufactureTechnique
0033.0032	8	-	I	1	Foodways	Storage	Non-Lead Glass	Flask		Mold Blown, Indeterminate
0033.0033	8	-	I	2	Foodways	General Foodways	Non-Lead Glass	Container Glass		Machined
0033.0034	8	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Machined
0033.0035	8	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0033.0036	8	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0033.0037	8	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0033.0038	8	-	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0034.0001		-4	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Ironstone/ Stone China/ White Granite	
0034.0002		-4	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0034.0003		-4	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0034.0004		-4	II	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0034.0005		-4	II	2	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0034.0006		-4	II	4	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0034.0007		-4	II	1	Miscellaneous	Unknown	Slate	Indeterminate		
0034.0008		-4	II	1	Labor	General	Coal	Coal Fragment		
0034.0009		-4	II	1	Foodways	Faunal	Bone	Bone		
0035.0001		-5	II	1	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate
0035.0002		-5	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0036.0001		-6	II	2	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0036.0002		-6	II	2	Foodways	General Foodways	Lead	Indeterminate		Indeterminate
0036.0003		-6	II	2	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0036.0004		-6	II	7	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0036.0005		-6	II	2	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0036.0006		-6	II	1	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0036.0007		-6	II	1	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0037.0001		-7	II	1	Foodways	General Foodways	Coarse Earthenware	Vessel, Holloware	Redware, Brown Glazed	
0037.0002		-7	II	2	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0037.0003		-7	II	2	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0037.0004		-7	II	1	Foodways	Storage	Milk Glass	Lid Liner		Pressed
0037.0005		-7	II	3	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0038.0001		-8	I	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0038.0002		-8	I	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0038.0003		-8	I	3	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0038.0004		-8	I	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0038.0005		-8	I	1	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0039.0001		-8	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0039.0002		-8	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0040.0001	8	-	II	1	Household/ Structural	Hardware	Iron	Screw		

18CR293 Phase II Artifact Catalog

CatalogID	TUNum	STP	Strat	Artifact Count	Group_Orser	SubGroup_Orser	Material	Object	Ware	ManufactureTechnique
0040.0002	8	-	II	1	Foodways	General Foodways	Stoneware	Indeterminate	North American, Salt Glazed, Gray/ Buff Bodied	
0040.0003	8	-	II	2	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0040.0004	8	-	II	3	Household/ Structural	Architectural/ Construction	Composite	Mortar, Lime		
0040.0005	8	-	II	16	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0040.0006	8	-	II	1	Labor	General	Coal	Coal Fragment		
0041.0001		-9	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0041.0002		-9	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0041.0003		-9	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0041.0004		-9	II	1	Foodways	Service	Refined Earthenware	Vessel, Flatware	Ironstone/ Stone China/ White Granite	
0041.0005		-9	II	1	Foodways	General Foodways	Porcelain	Indeterminate	Bone China	
0041.0006		-9	II	1	Foodways	General Foodways	Common Glass	Indeterminate		Mold Blown, Indeterminate
0041.0007		-9	II	1	Foodways	General Foodways	Common Glass	Indeterminate		Mold Blown, Indeterminate
0041.0008		-9	II	1	Foodways	Storage	Milk Glass	Lid Liner		Pressed
0041.0009		-9	II	3	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0041.0010		-9	II	14	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0041.0011		-9	II	1	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0041.0012		-9	II	1	Miscellaneous	Unknown	Iron	Indeterminate		
0042.0001		-10	I	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0042.0002		-10	I	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0042.0003		-10	I	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0042.0004		-10	I	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0042.0005		-10	I	3	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0042.0006		-10	I	3	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0042.0007		-10	I	4	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0042.0008		-10	I	1	Personal	Recreational	Coarse Earthenware	Clay Pigeon	Unidentified Coarse Earthenware	
0043.0001		-10	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0043.0002		-10	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0043.0003		-10	II	3	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0043.0004		-10	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Unid.	
0043.0005		-10	II	1	Foodways	General Foodways	Refined Earthenware	Vessel, Hollowware	Pearlware	
0043.0006		-10	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0044.0001		-15	I	1	Foodways	Procurement	White Metal	Bullet		
0044.0002		-15	I	1	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0045.0001		-16	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate

18CR293 Phase II Artifact Catalog

CatalogID	TUNum	STP	Strat	Artifact Count	Group_Orser	SubGroup_Orser	Material	Object	Ware	ManufactureTechnique
0045.0002		-16	I	3	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0045.0003		-16	I	1	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0046.0001		-16	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0047.0001		-20	I	18	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0047.0002		-20	I	1	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0047.0003		-20	I	1	Miscellaneous	Unknown	Iron	Indeterminate		Indeterminate
0048.0001		-20	I	1	Foodways	Storage	Aluminum	Bottle Cap		
0048.0002		-20	I	1	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0048.0003		-20	I	1	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0049.0001		-21	I	1	Foodways	General Foodways	Coarse Earthenware	Vessel, Hollowware	Redware, Brown Glazed	
0049.0002		-21	I	1	Foodways	General Foodways	Refined Earthenware	Vessel, Hollowware	Pearlware	
0049.0003		-21	I	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0049.0004		-21	I	1	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0049.0005		-21	I	3	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0049.0006		-21	I	1	Clothing	Fasteners	Porcelain	Button, 4 Holes		Pressed
0049.0007		-21	I	1	Household/ Structural	Hardware	Copper Alloy	Tack		
0049.0008		-21	I	1	Labor	General	Coal	Coal Fragment		
0049.0009		-21	I	10	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0049.0010		-21	I	7	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0050.0001		-22	I	4	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0050.0002		-22	I	1	Foodways	Service	Refined Earthenware	Vessel, Flatware	Pearlware	
0050.0003		-22	I	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0050.0004		-22	I	1	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0050.0005		-22	I	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Indeterminate
0050.0006		-22	I	1	Foodways	Storage	Non-Lead Glass	Jar		Mold Blown, Indeterminate
0050.0007		-22	I	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Pressed
0051.0001		-22	II	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Mold Blown, Indeterminate
0052.0001		-13	I	1	Personal	Medicinal	Non-Lead Glass	Syringe		Pressed
0052.0002		-13	I	2	Labor	General	Coal	Coal Fragment		
0052.0003		-13	I	8	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0052.0004		-13	I	12	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0052.0005		-13	I	1	Household/ Structural	Architectural/ Construction	Iron	Nail		Cut
0052.0006		-13	I	1	Labor	Industrial	Porcelain	Insulator	Porcelain, American	
0053.0001		-13	II	2	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0053.0002		-13	II	6	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		

CatalogID	TUNum	STP	Strat	Artifact Count	Group_Orser	SubGroup_Orser	Material	Object	Ware	ManufactureTechnique
0053.0003		-13	II	4	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0053.0004		-13	II	10	Labor	General	Charcoal	Coal Fragment		
0053.0005		-13	II	2	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0053.0006		-13	II	1	Miscellaneous	Unknown	Iron	Indeterminate		
0054.0001		-11	I	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0054.0002		-11	I	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0055.0001		-12	I	1	Personal	Recreational	Copper Alloy	Indeterminate		
0055.0002		-12	I	1	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0056.0001		-14	I	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Ironstone/ Stone China/ White Granite	
0056.0002		-14	I	2	Foodways	General Foodways	Refined Earthenware	Indeterminate	Ironstone/ Stone China/ White Granite	
0056.0003		-14	I	1	Foodways	Storage	Stoneware	Vessel, Holloware	North American, Salt Glazed, Gray/ Buff Bodied	
0056.0004		-14	I	1	Foodways	Storage	Common Glass	Bottle, Unid.		Dip Mold
0056.0005		-14	I	1	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0056.0006		-14	I	2	Foodways	Storage	Non-Lead Glass	Drinking Glass, Tumbler		Pressed
0056.0007		-14	I	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Mold Blown, Indeterminate
0056.0008		-14	I	6	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0056.0009		-14	I	1	Foodways	Storage	Milk Glass	Lid Liner		Pressed
0056.0010		-14	I	11	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0056.0011		-14	I	3	Miscellaneous	Unknown	Iron	Indeterminate		
0057.0001		-14	II	1	Foodways	Storage	Common Glass	Bottle, Panel		Indeterminate
0057.0002		-14	II	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Mold Blown, Indeterminate
0057.0003		-14	II	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0057.0004		-14	II	1	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0057.0005		-14	II	1	Miscellaneous	Unknown	Iron	Indeterminate		
0058.0001	9	-	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0058.0002	9	-	II	3	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0058.0003	9	-	II	1	Personal	Recreational	Coarse Earthenware	Flower Pot	Redware, Unglazed	
0058.0004	9	-	II	2	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0058.0005	9	-	II	7	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0058.0006	9	-	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0058.0007	9	-	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0058.0008	9	-	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0058.0009	9	-	II	3	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0058.0010	9	-	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Unidentified Refined Earthenware	
0058.0011	9	-	II	2	Foodways	General Foodways	Refined Earthenware	Indeterminate	Ironstone/ Stone China/ White Granite	
0058.0012	9	-	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Ironstone/ Stone China/ White Granite	

CatalogID	TUNum	STP	Strat	Artifact Count	Group_Orser	SubGroup_Orser	Material	Object	Ware	ManufactureTechnique
0058.0013	9	-	II	1	Personal	Recreational	Refined Earthenware	Tobacco Pipe	White Ball Clay	
0058.0014	9	-	II	1	Foodways	Storage	Common Glass	Bottle, Unid.		Mold Blown, Indeterminate
0058.0015	9	-	II	1	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0058.0016	9	-	II	3	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0058.0017	9	-	II	2	Foodways	General Foodways	Milk Glass	Indeterminate		Indeterminate
0058.0018	9	-	II	1	Foodways	Storage	Common Glass	Bottle, Unid.		Machined
0058.0019	9	-	II	1	Foodways	Storage	Common Glass	Bottle, Unid.		Machined
0058.0020	9	-	II	2	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0058.0021	9	-	II	3	Foodways	General Foodways	Common Glass	Container Glass		Mold Blown, Indeterminate
0058.0022	9	-	II	49	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0058.0023	9	-	II	2	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0058.0024	9	-	II	1	Foodways	General Foodways	Lead	Indeterminate		Indeterminate
0058.0025	9	-	II	1	Foodways	General Foodways	Lead	Indeterminate		Indeterminate
0058.0026	9	-	II	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0058.0027	9	-	II	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Machined
0058.0028	9	-	II	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate
0058.0029	9	-	II	26	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0058.0030	9	-	II	343	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0058.0031	9	-	II	1	Foodways	Procurement	White Metal	Bullet		
0058.0032	9	-	II	1	Labor	General	Wood	Cinder		
0058.0033	9	-	II	6	Household/ Structural	Architectural/ Construction	Coarse Earthenware	Brick		
0058.0034	9	-	II	11	Household/ Structural	Architectural/ Construction	Composite	Mortar, Lime		
0058.0035	9	-	II	77	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0058.0036	9	-	II	3	Miscellaneous	Unknown	Iron	Indeterminate		
0058.0037	9	-	II	76	Miscellaneous	Unknown	Iron	Indeterminate		
0059.0001	9	-	II	1	Foodways	Storage	Coarse Earthenware	Vessel, Holloware	Redware, Black Glazed	
0059.0002	9	-	II	1	Foodways	Storage	Coarse Earthenware	Vessel, Holloware	Redware, Brown Glazed	
0059.0003	9	-	II	1	Foodways	Storage	Coarse Earthenware	Vessel, Holloware	Redware, Brown Glazed	
0059.0004	9	-	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0059.0005	9	-	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0059.0006	9	-	II	1	Foodways	General Foodways	Coarse Earthenware	Indeterminate	Redware, Brown Glazed	
0059.0007	9	-	II	1	Foodways	Storage	Coarse Earthenware	Vessel, Holloware	Redware, Brown Glazed	
0059.0008	9	-	II	9	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0059.0009	9	-	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Pearlware	
0059.0010	9	-	II	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Ironstone/ Stone China/ White Granite	
0059.0011	9	-	II	1	Foodways	General Foodways	Stoneware	Indeterminate	North American, Salt Glazed, Gray/ Buff Bodied	
0059.0012	9	-	II	1	Foodways	Storage	Common Glass	Bottle		Machined
0059.0013	9	-	II	1	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0059.0014	9	-	II	1	Foodways	General Foodways	Common Glass	Container Glass		Indeterminate
0059.0015	9	-	II	1	Foodways	General Foodways	Lead	Indeterminate		Indeterminate
0059.0016	9	-	II	1	Foodways	General Foodways	Non-Lead Glass	Container Glass		Mold Blown, Indeterminate

18CR293 Phase II Artifact Catalog

CatalogID	TUNum	STP	Strat	Artifact Count	Group_Orser	SubGroup_Orser	Material	Object	Ware	ManufactureTechnique
0059.0017	9	-	II	14	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Mold Blown, Indeterminate
0059.0018	9	-	II	2	Miscellaneous	Unknown	Iron	Indeterminate		
0059.0019	9	-	II	12	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0059.0020	9	-	II	117	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0060.0001	9	-	III	1	Foodways	Service	Refined Earthenware	Saucer	Pearlware	
0060.0002	9	-	III	1	Foodways	General Foodways	Refined Earthenware	Indeterminate	Whiteware	
0060.0003	9	-	III	1	Foodways	General Foodways	Common Glass	Indeterminate		Indeterminate
0060.0004	9	-	III	1	Foodways	General Foodways	Non-Lead Glass	Indeterminate		Indeterminate
0060.0005	9	-	III	14	Household/ Structural	Architectural/ Construction	Common Glass	Window Glass		
0060.0006	9	-	III	1	Household/ Structural	Architectural/ Construction	Iron	Nail		Indeterminate
0060.0007	9	-	III	1	Miscellaneous	Unknown	Iron	Indeterminate		

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Appendix F Evaluation of Potential Rehabilitation Projects and Population-at-Risk Worksheets

EVALUATION OF POTENTIAL REHABILITATION PROJECTS							
STATE	MD	DAM	Piney Run Dam	BY	AECOM	DATE	7/26/2021
YEAR BUILT	1974	DESIGN HAZARD CLASS	H	DRAINAGE AREA	10.6	mi^2	
WORK PLAN DATE	5/1/1968	CURRENT HAZARD CLASS	H	DAM HEIGHT	73	ft	
sht 1 of 5	CONSEQUENCES OF DAM FAILURE (ver. 2013-02)			NID ID	MD00139		

POTENTIAL DAM FAILURE:				
Total Failure Index			132	A
POTENTIAL LOSS OF LIFE:				
Maximum Population-at-Risk [PAR]		(number)	768	B
Total Risk Index			3,421	C
POTENTIAL LOSS OF PROPERTY:				
Identify major community affected by breach and rate impact as High (H), Medium (M), Low (L) or None(blank)				
Community	Sykesville, Marriotsville, Woodstock, Ellicott City, Elkridge	(H,M,L,-)	H	D
Number of homes, businesses, major buildings		(number)	181	E
POTENTIAL LIFELINE DISRUPTION:				
Water supply, identify community disrupted by dam failure, and estimate number/amount				
Municipal sole source	N/A Users	(number)	0	F
Supplemental source	Not currenlty, but potential future source Users	(number)	6,500	G
Irrigation water	N/A Storage	(Ac-Ft)	0	H
POTENTIAL INFRASTRUCTURE DISRUPTION:				
Transportation system crossings, identify major crossing rendered unusable by dam failure, and estimate number				
Major/Interstate	MD 32 Roads	(number)	1	I
Secondary/County	County Roads, CSX Freight Rail Line Roads	(number)	45	J
POTENTIAL ADVERSE IMPACTS ON THE ENVIRONMENT:				
Describe impacts and rate each as High (H), Medium (M), Low (L), or None (blank)				
Threatened & endangered species		(H,M,L,-)	L	K
Sensitive riparian areas		(H,M,L,-)	L	L
Contaminated reservoir sediment	N/A	(H,M,L,-)	-	M
Wetland and wildlife habitat	Freshwater Emergent, Freshwater Forested/Shrub	(H,M,L,-)	L	N
Other	Trout habitat	(H,M,L,-)	M	O
POTENTIAL ADVERSE SOCIAL IMPACTS:				
Describe impacts and rate each as High (H), Medium (M), Low (L) or None(blank)				
Known cultural resources	Warfield Complex	(H,M,L,-)	M	P
Historic preservation issues	Warfield Complex	(H,M,L,-)	M	Q
Socially disadvantaged community	N/A	(H,M,L,-)	-	R
POTENTIAL ADVERSE ECONOMIC IMPACTS:				
Average annual benefits attributed to this dam, updated workplan value		($)	1.26M	S
Changes in benefits since workplan; Increase(I), No change(NC), Decrease(D)		(I,NC,D)	NC	T
Low income families impacted		(number)	0	U
INPUT BY STATE DAM SAFETY AGENCY:				
State dam safety order issued for repair, modification, removal issued, Yes(Y), No(N)		(Y,N)	N	V
State Dam Safety Agency Priority, High(H), Medium(M), Low(L), None(blank)		(H,M,L,-)	H	W
OTHER CONSIDERATIONS:				
Identify any other considerations and rate as High(H), Medium(M), Low(L) or None(blank)				
		(H,M,L,-)	-	X
		(H,M,L,-)	-	Y

EVALUATION OF POTENTIAL REHABILITATION PROJECTS

STATE	MD	**DAM**	Piney Run Dam	**BY**	AECOM	**DATE**	7/26/2021

sht 2 of 5 — **FAILURE & RISK INDEXES** — ver 2013-02

Adopted from Bureau of Reclamation "Risk Based Profile System"
see: http://www.usbr.gov/dsis/risk/rbpsdocumentation.pdf

LIFE LOSS:

Population-at-Risk [PAR], see NRCS dams inventory definition (number of people)

Estimate PAR for static loading failure; typically assume water at or above invert of the lowest open channel auxiliary spillway	160	A
Estimate PAR for hydrologic loading failure; typically assume water at or above invert of the lowest open channel auxiliary spillway	768	B
Estimate PAR for seismic loading failure; typically assume water at or above invert of the lowest non-gated spillway (sunny day failure)	121	C

Fatality Rates [FR] from dam breach
Adopted from BuRec "A Procedure for Estimating Loss of Life Caused by Dam Failure" DSO-99-06
see: http://www.usbr.gov/research/dam_safety/documents/dso-99-06.pdf
Flood Severity/Lethality [DV] is the average depth [D] times velocity [V] across flood plain (ft2/sec)
DV= (breach discharge - bank full discharge) / breach floodplain width
Warning Time [T] between failure warning and flood wave at population (minutes)
Flood Severity Understanding [U] of the warning issuer of the likely flooding magnitude

Scenario	Breach Discharge (cfs)	Bankfull Discharge (cfs)	Breach Floodplain Width (ft)	DV (ft2/sec)	Warning Time, T (minutes)	Understanding, U (N/A or Vague)
Static	115,836	175	1100	105	57	Vague
Hydrologic	224,711	175	1300	173	36	Vague
Seismic	80,099	175	1100	73	58	Vague

For DV≥50	T≤60	U=vague	FR=0.04
	T>60		FR=0.03
For DV<50	T≤60	U=vague	FR=0.007
	T>60		FR=0.0003

Estimate FR for static loading failure scenario	0.04	D
Estimate FR for hydrologic loading failure scenario	0.04	E
Estimate FR for seismic loading failure scenario	0.04	F

Scenario	Load Factor	Response Factor	Failure Index	Fatality Rate	PAR	Risk Index
Static	1	25	25	0.04	160	160
Hydrologic	*	*	106	0.04	768	3,256
Seismic	0.15	7	1	0.04	121	5
		TOTAL=	132		TOTAL=	3,421

EVALUATION OF POTENTIAL REHABILITATION PROJECTS			
STATE: MD	DAM: Piney Run Dam	BY: AECOM	DATE: 7/26/2021
sht 3 of 5	STATIC FAILURE INDEX		ver 2013-02

PRINCIPAL SPILLWAY SYSTEM (60 points max):	(total points) 10		A
Downstream filter or filter zone around conduit (yes=0 or no=10)		0	B
Conduit trench deep (>2d) and narrow (<3d) and steep sideslope (<2:1) (no=0 or yes=10)		0	C
Principal spillway system (inlet, pipe, or outlet) in deteriorated condition (no=0 or yes=10)		0	D
Conduit has seepage cutoff collars or other compaction adverse features (no=0 or yes=10)		10	E
Conduit contains open joints, open cracks, steady seepage (no=0 or yes=10)		0	F
Conduit founded on competent bedrock (yes=0 or no=10)		0	G
Reservoir control gate located at outlet of conduit (no=0 or yes=10)		0	H
RESERVOIR FILLING HISTORY (75 points max):	(total points) 5		I
Reservoir has filled to x% of effective height (earth spillway crest minus original streambed)		100	J
(<50%=75 or 51-75%=50 or 76-90%=25 or 91-95%=10 or 96-100%=5 or >100%=0)		5	K
SEEPAGE AND DEFORMATION (85 points max):	(total points)		L
Seepage carrying fines, or seepage increases with reservoir elevation increases, or sinkholes/jugholes exist in embankment (no=0 or yes=80)		0	M
Large amounts of seepage (no=0 or yes=6)		0	N
Visible and significant slope movement or sloughing (no=0 or yes=6)		0	O
Longitudinal or transverse embankment cracking greater than one foot in depth (no=0 or yes=6)		0	P
Sinkholes/depressions within two times effective height of the dam, either face (no=0 or yes=6)		0	Q
Poor top of dam condition, eroded, trees, rodent holes, settlement (no=0 or yes=6)		0	R
Abnormally wet areas at downstream toe/groin of embankment (no=0 or yes=6)		0	S
Inadequate slope protection against erosion by rainfall or waves (no=0 or yes=6)		0	T
FOUNDATION GEOLOGY (41 points max):	(total points) 6		U
Highly fractures rock under core (no=0 or treated=3 or untreated=30)		3	V
Karst terrain and soluble rock (gypsum or limestone) (no=0 or treated=3 or untreated=30)		0	W
Collapsible soils (no=0 or treated=3 or untreated=30)		0	X
Significant stress relief fractures in abutments (no=0 or treated=3 or untreated=30)		0	Y
History of underground mining under embankment area (no=0 or treated=3 or untreated=30)		0	Z
Coarse grained and highly permeable soils (no=0 or yes=3)		0	AA
Presence of weak layers/conditions diminishing embankment stability (no=0 or yes=3)		0	AB
Erodible soils (sandy/silty materials) or weakly cemented rock (no=0 or yes=3)		3	AC
Reservoir area prone to landslides that could cause overtopping (no=0 or yes=3)		0	AD
EMBANKMENT DESIGN AND CONSTRUCTION (24 points max):	(total points) 4		AE
Filters for core or foundation or incompatibility between zones (no=4 or yes=0)		0	AF
Embankment or foundation drainage system (yes=0 or no=4)		0	AG
Erodible core material (sands, silts, dispersive clays) (no=0 or yes=4)		4	AH
Incomplete or no foundation cutoff of shallow permeable layers (no=0 or yes=4)		0	AI
Poorly placed earthfill, inadequate density (no=0 or yes=4)		0	AJ
Gate features to drain reservoir (yes=0 or no=4)		0	AK
EMBANKMENT MONITORING (15 points max):	(total points)		AL
Instruments (except surficial survey points) installed at dam (yes=0 or no=4)		0	AM
Installed instruments routinely read and evaluated (yes=0 or no=4)		0	AN
Visual inspection of dam by engineer less often than yearly (no=0 or yes=4)		0	AO
Good physical/visual access to downstream groin/toe for inspection (yes=0 or no=4)		0	AP
STATIC FAILURE INDEX: A+I+L+U+AE+AL		25	AQ

EVALUATION OF POTENTIAL REHABILITATION PROJECTS							
STATE	MD	**DAM**	Piney Run Dam	**BY**	AECOM	**DATE**	7/26/2021
sht 4 of 5	**HYDROLOGIC FAILURE INDEX**					ver 2013-02	
HYDROLOGIC LOADING:							
Total Spillway Capacity (PS&ES) for 6hr storm [Pfb], Work Plan Tbl 3 (rainfall inches)						24.2	A
Obtained from Work Plan Tbl 3, or dams inventory data, or computer routings							
100 year, 6hr rainfall [P100] (inches)						5.3	B
Probable Maximum Precipitation [PMP] (inches)						26.3	C
if Pfb <=	P100	=	5.29	enter	40		
if Pfb =	P100+0.2(PMP-P100)	=	9.49	enter	25		
if Pfb =	P100+0.4(PMP-P100)	=	13.69	enter	15		
if Pfb =	P100+0.6(PMP-P100)	=	17.90	enter	7		
if Pfb =	P100+0.8(PMP-P100)	=	22.10	enter	3		
if Pfb =>	PMP	=	26.30	enter	1		
Enter interpolated value						2	D
HYDROLOGIC UNCERTAINTY:							
Drainage Area [DA] (square miles)						10.6	E
DA<10 enter 1.5 ; 10<DA<20 enter 1.4 ; 20<DA<50 enter 1.3 ; DA=>50 enter 1.2						1.4	F
PIPE SPILLWAY PLUGGING:							
Pipe Diameter [D] (inches)						36	G
D<12 enter 1.1; 12<=D<24 enter 1.0; 24<=D enter 0.9						0.9	H
Riser & trash rack type:							
Non-standardized inlet enter 1.1, Open Top riser enter 1.0; Covered or Baffle Top enter 0.9						0.9	I
EARTH SPILLWAY FLOW:							
Earth spillway flow depth [Des] from top of dam to spillway crest (feet)(10' max)						10.0	J
DAM EROSION RESISTANCE:							
Non-plastic (PI<10) fill enter 2.0 ; Plastic core enter 1.7 ; Overtopping armoring enter 0.8						2.0	K
Vegetal Cover Factor [Cf], see SITES or AH667						0.9	L
http://www.pswcrl.ars.usda.gov/ah667/ah667.htm							
Cf <0.4 enter 1.1; Cf < 0.7 enter 1.0; Cf<1.0 enter 0.9; larger Cf enter 0.8						0.9	M
EARTH SPILLWAY EROSION RESISTANCE:							
Low, can be excavated with hand tools, enter 2.0							
PI>10 and SPT blows<8, PI<10 and SPT blows>8, Kh<0.10, seismic velocity<2000fps							
Moderate, can be excavated with construction equipment, easy ripping, enter 1.2							
PI>10 and SPT blows>8, PI<10 and SPT blows>30, Kh<10, seismic velocity<7000fps							
High, very hard ripping, requires drilling and blasting, enter 0.2							
moderately hard rock, Kh>10, seismic velocity>7000fps						2	N
Vegetal Cover Factor [Cf], see SITES or AH667						0.9	O
Cf <0.4 enter 1.1; Cf < 0.7 enter 1.0; Cf<1.0 enter 0.9; larger Cf enter 0.8						0.9	P
HYDROLOGIC FAILURE INDEX:							
dam overtopping breach: (2)(D)(F)(H)(I)(K)(M)						8	Q
earth spillway breach: (D+5J)(F)(H)(I)(N)(P)						106	R
larger of (2)(D)(F)(H)(I)(K)(M) or (D+5J)(F)(H)(I)(N)(P) but less than 300						106	S

EVALUATION OF POTENTIAL REHABILITATION PROJECTS									
STATE	MD	**DAM**	Piney Run Dam	**BY**	AECOM	**DATE**	7/26/2021		
sht 5 of 5	**SEISMIC FAILURE INDEX**						ver 2013-02		
SEISMIC LOADING:									
Latitude (degrees.decimal)							39.388	A	
Longitude (degrees.decimal)							76.976	B	
See "http://earthquake.usgs.gov/hazards/products/conterminous/2008/maps/" (MAP LINK)									
PGA [peak ground acceleration] for 2% chance in 50 years, see NSHM maps (%g)							19.00	C	
if PGA is less than 10% g, enter 0									
if PGA is between 10% g and 19% g, enter 0.15									
if PGA is between 20% g and 39% g, enter 0.30									
if PGA is between 40% g and 59% g, enter 0.65									
if PGA is greater than 60% g, enter 1.0							0.15	D	
FOUNDATION LIQUEFACTION:									
Select the following foundation conditions which best represents the site									
Loose alluvium, lacustrine, loess materials, enter 10									
Bedrock, glacial till, highly clayey materials, enter 5							5	E	
EMBANKMENT FREEBOARD FOR FOUNDATION LIQUEFACTION:									
Dam height (ft)							73	F	
Freeboard - Elevation difference from top of dam to assumed pool surface (ft)							17.5	G	
Freeboard percent of dam height (%)							24	H	
if Freeboard is less than 25% of dam height, enter 10									
if Freeboard is 25% to 50% of dam height, enter 5									
if Freeboard is more than 50% of dam height, enter 1							10	I	
EMBANKMENT FREEBOARD FOR EMBANKMENT CRACKING:									
Freeboard is less than or equal to 15 feet (no=0 or yes=1)							0	J	
EMBANKMENT CRACKING:									
Embankment contains self-healing filter zones (no=4 or yes=0)							0	K	
SEISMIC FAILURE INDEX:									
IF E=10, L=(D)(E)(I) ; IF E=5, L=(D)(E)(J+1)(K+1)); but less than 100							1	L	
	State Conservation Engineer's Signature								
	concurring with technical content of sheets 2 thru 5								

COMPUTATION OF POPULATION AT RISK (PAR) DURING DAM FAILURE

STATE	Maryland		BY	AECOM	DATE	7/26/21
DAM	Piney Run		CHECKED BY		DATE	
YEAR BUILT	1974	DESIGN HAZARD CLASS	H	DRAINAGE AREA	10.60	mi^2
WORK PLAN DATE	5/1/1968	CURRENT HAZARD CLASS	H	DAM HEIGHT	73	ft
sht 1 of 3	STATIC FAILURE SCENARIO (ver. 2013-01)				NID ID	MD00139

Structures (Elevated) Impacted by Potential Breach	Number of Structures			PAR per Exposure with Inundation Depths >=2.0 Ft.	PAR
	Inundation Depth Above Natural Ground		Total		
	<2.0 Ft	>=2.0 Ft.			
Mobile Homes	0	0		3	
Seasonal Use RV's	0	0		2	
Other	0	0			

Structures (With Foundations) Impacted by Potential Breach	Number of Structures			PAR per Exposure with Inundation Depths >=1.0 Ft.	PAR
	Inundation Depth Above Natural Ground		Total		
	<1.0 Ft	>=1.0 Ft.			
Homes	0	14	14	3	42
Seasonal Use Homes and Cabins	0	0		1.5	
Duplexes	0	0		5	
Apartments	0	0			
Commercial Buildings	0	13	13	4	52
Schools (In Use)	0	0			
Schools (Not in Use)	0	0			
Hospitals	0	0			
Church	0	1	1	25	25

Highways and Railroads	Number of Roads, Highways and Railways			PAR per Exposure with Inundation Depths >=1.0 Ft.	PAR
	Road Overflow Depth		Total		
	<1.0 Ft	>=1.0 Ft.			
Main Local Roads and Minor State Highways					
County Roads		16	16	2	32
Minor State Roads		1	1	2	2
Major State and Minor Federal Highways					
MD 32 (Sykesville Road)		1	1	4	4
				4	
Major Federal and Interstate Highways					
				8	
				8	
Railroads					
CSX		1	1	3	3
				20	
TOTAL NUMBER OF PEOPLE AT RISK (PAR)					**160**

COMPUTATION OF POPULATION AT RISK (PAR) DURING DAM FAILURE

STATE	Maryland		BY	AECOM	DATE	7/26/21
DAM	Piney Run		CHECKED BY		DATE	
YEAR BUILT	1974	DESIGN HAZARD CLASS	H	DRAINAGE AREA	10.60	mi^2
WORK PLAN DATE	5/1/1968	CURRENT HAZARD CLASS	H	DAM HEIGHT	73	ft
sht 3 of 3	SEISMIC FAILURE SCENARIO (ver. 2013-01)				NID ID	MD00139

Structures (Elevated) Impacted by Potential Breach	Number of Structures: Inundation Depth Above Natural Ground <2.0 Ft	Number of Structures: Inundation Depth Above Natural Ground >=2.0 Ft.	Total	PAR per Exposure with Inundation Depths >=2.0 Ft.	PAR
Mobile Homes	0	0		3	
Seasonal Use RV's	0	0		2	
Other	0	0			

Structures (With Foundations) Impacted by Potential Breach	Number of Structures: Inundation Depth Above Natural Ground <1.0 Ft	Number of Structures: Inundation Depth Above Natural Ground >=1.0 Ft.	Total	PAR per Exposure with Inundation Depths >=1.0 Ft.	PAR
Homes	0	14	14	3	42
Seasonal Use Homes and Cabins	0	0		1.5	
Duplexes	0	0		5	
Apartments	0	0			
Commercial Buildings	0	12	12	4	48
Schools (In Use)	0	0			
Schools (Not in Use)	0	0			
Hospitals	0	0			
Other	0	0			

Highways and Railroads	Number of Roads, Highways and Railways: Road Overflow Depth <1.0 Ft	Number of Roads, Highways and Railways: Road Overflow Depth >=1.0 Ft.	Total	PAR per Exposure with Inundation Depths >=1.0 Ft.	PAR
Main Local Roads and Minor State Highways					
County Roads		11	11	2	22
Minor State Roads		1	1	2	2
Major State and Minor Federal Highways					
MD 32 (Sykesville Road)		1	1	4	4
				4	
Major Federal and Interstate Highways					
				8	
				8	
Railroads					
CSX		1	1	3	3
				20	
TOTAL NUMBER OF PEOPLE AT RISK (PAR)					**121**

COMPUTATION OF POPULATION AT RISK (PAR) DURING DAM FAILURE

STATE	Maryland		BY	AECOM	DATE	7/26/21
DAM	Piney Run		CHECKED BY		DATE	
YEAR BUILT	1974	DESIGN HAZARD CLASS	H	DRAINAGE AREA	10.60	mi^2
WORK PLAN DATE	5/1/1968	CURRENT HAZARD CLASS	H	DAM HEIGHT	73	ft
sht 2 of 3	**HYDROLOGIC FAILURE SCENARIO (ver. 2013-01)**				NID ID	MD00139

Structures (Elevated) Impacted by Potential Breach	Number of Structures			PAR per Exposure with Inundation Depths >=2.0 Ft.	PAR
	Inundation Depth Above Natural Ground		Total		
	<2.0 Ft	>=2.0 Ft.			
Mobile Homes	0	0		3	
Seasonal Use RV's	0	0		2	
Other	0	0			
Structures (With Foundations) Impacted by Potential Breach	**Number of Structures**			**PAR per Exposure with Inundation Depths >=1.0 Ft.**	**PAR**
	Inundation Depth Above Natural Ground		**Total**		
	<1.0 Ft	**>=1.0 Ft.**			
Homes	5	53	58	3	159
Seasonal Use Homes and Cabins	0	0		1.5	
Duplexes	0	0		5	
Apartments	0	2	2	25	50
Commercial Buildings	6	81	87	5	405
Schools (In Use)	0	0			
Townhomes	1	14	15	2	28
Church	0	1	1	25	25
Uninhabited Buildings (e.g. Sheds)	0	30	30	0	0
Highways and Railroads	**Number of Roads, Highways and Railways**			**PAR per Exposure with Inundation Depths >=1.0 Ft.**	**PAR**
	Road Overflow Depth		**Total**		
	<1.0 Ft	**>=1.0 Ft.**			
Main Local Roads and Minor State Highways					
County Roads		38	38	2	76
Minor State Roads		3	3	2	6
Major State and Minor Federal Highways					
MD 32 (Sykesville Road)		1	1	4	4
US 1 (Washington Boulevard)		1	1	4	4
Major Federal and Interstate Highways					
Interstate 895 (Harbor Tunnel Thruway)		1	1	8	8
				8	
Railroads					
CSX		1	1	3	3
				20	
TOTAL NUMBER OF PEOPLE AT RISK (PAR)					**768**