



DRAFT ENVIRONMENTAL ASSESSMENT FOR  
NETL'S PROPOSED ENERGY  
CONVERSION TECHNOLOGY CENTER  
IN MORGANTOWN, WEST VIRGINIA



March 2019

DOE/EA-2066D



U.S. DEPARTMENT OF  
**ENERGY**

**NATIONAL ENERGY  
TECHNOLOGY LABORATORY**





**Responsible Agency:** U.S. Department of Energy

**Title:** NETL's Proposed Energy Conversion Technology Center in Morgantown, West Virginia

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**Abstract:**

The National Energy Technology Laboratory (NETL) proposes to construct and make operational an approximately 16,800-ft<sup>2</sup> Energy Conversion Technology Center (ECTC), which would serve as a multi-use, high-pressure experimental combustion facility that would add unique capabilities not currently present at NETL or any other national laboratory. This facility would allow NETL to expand its study of critical combustion issues, perform concept testing and model validation, and would include turbomachinery and a materials laboratory. The facility would support research in advanced energy systems and advanced materials, which would enhance NETL's core competencies related to chemical and materials engineering and energy systems. Potential users external to NETL, both public and private, will benefit from these unique high-pressure and high-temperature capabilities.

This draft Environmental Assessment (EA) was prepared according to the requirements of the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321 et seq.) and its implementing regulations found in Title 40, Code of Federal Regulations (CFR), Parts 1500-1508 (Council on Environmental Quality) and Title 10, CFR, Part 1021 (Department of Energy). This draft EA analyzes the resource areas most likely to be impacted by the proposed action, including soils, vegetation and wildlife, water resources, air quality, greenhouse gases (GHGs), noise and vibration, aesthetics and visual resources, health and safety, as well as cumulative effects, including construction/operational-related impacts. All potential impacts were assessed to have no, negligible, or minor impacts.

**Public Participation:**

The U.S. Department of Energy (DOE) encourages public participation in the NEPA process. The draft EA was released for public review and comment on March 28, 2019. A Notice of Availability was placed in *The Dominion Post* on March 28, 29, and 30, 2019. The draft EA is available for public review during the comment period at the Morgantown Public Library, located at 373 Spruce Street, Morgantown, West Virginia. The draft EA is also posted on NETL's website at <https://www.netl.doe.gov/node/6939>. The public is invited to provide oral,

written, or email comments on the draft EA to DOE by the close of the 30-day comment period on April 28, 2019. Copies of the draft EA were also distributed to federal and state resource agencies. Comments received by the close of the comment period will be considered in preparing the Final EA for the proposed DOE action.

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## List of Acronyms and Abbreviations

AWG	American Wire Gauge	MARS	Military Affiliate Radio Station
CEQ	Council on Environmental Quality	METC	Morgantown Energy Technology Center
CFR	Code of Federal Regulations	MRT	Mon River Trail
CH <sub>4</sub>	Methane	MT	Metric Ton
CNA	Conditions Not Allowable	MUB	Morgantown Utility Board
CO	Carbon Monoxide	MV	Medium Voltage
CO <sub>2</sub>	Carbon Dioxide	N <sub>2</sub> O	Nitrous Oxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent	NAAQS	National Ambient Air Quality Standards
COR	Contracting Officer's Representative	NCO	NEPA Compliance Officer
CSARS	Construction Safety and Analysis Review System	NEPA	National Environmental Policy Act
CX	Categorical Exclusion	NESHAP	National Emission Standards for Hazardous Air Pollutants
DOE	U.S. Department of Energy	NETL	National Energy Technology Laboratory
EA	Environmental Assessment	NMDSG	Naval Material Data Systems Group
ECOS	Environmental Conservation Online System	NO <sub>x</sub>	Nitrogen Oxide
ECTC	Energy Conversion Technology Center	NPDES	National Pollutant Discharge Elimination System
EPA	U.S. Environmental Protection Agency	NRHP	National Register of Historic Places
ES&H	Environmental Safety and Health	O <sub>2</sub>	Oxygen
FEMA	Federal Emergency Management Agency	OHSAS	Occupational Health and Safety Assessment Series
FETC	Federal Energy Technology Center	PETC	Pittsburg Energy Technology Center
FIRM	Flood Insurance Rate Map	PFCs	Perfluorocarbons
GHG	Greenhouse Gas	PM	Particulate Matter
gsf	Gross Square Foot	psf	Pounds Per Square Foot
H <sub>2</sub>	Hydrogen	psi	Pounds Per Square Inch
HFCs	Hydrofluorocarbons	PVL	Performance Verification Laboratory
HUD	U.S. Department of Housing and Urban Development	R&D	Research and Development
HVAC	Heating, Ventilation, and Air Conditioning	RCRA	Resource Conservation and Recovery Act
IMC	International Mechanical Code	SARS	Safety Analysis and Review System
IPCC	Intergovernmental Panel on Climate Change	scfh	Standard Cubic Feet Per Hour
ISO	International Organization for Standardization	sCO <sub>2</sub>	Supercritical Carbon Dioxide
IT	Information Technology		
kVA	Kilovolt-Ampere		

SF <sub>6</sub>	Sulfur Hexafluoride	USACE	U.S. Army Corps of Engineers
SHPO	State Historic Preservation Office	USDA	U.S. Department of Agriculture
SOS3	Site Operations Services 3	USFWS	U.S. Department of Interior, Fish and Wildlife Service
THHN	Thermoplastic, High Heat, Nylon	WVDEP	West Virginia Department of Environmental Protection
TMDL	Total Maximum Daily Load		
TSCA	Toxic Substances Control Act		

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## Executive Summary

The U.S. Department of Energy (DOE) prepared this draft environmental assessment (EA) to evaluate the potential environmental impacts that would occur as a result of construction and operation of the proposed Energy Conversion Technology Center (ECTC), located at the National Energy Technology Laboratory's (NETL) Morgantown, West Virginia, site. This project would include the construction of an approximately 16,800-ft<sup>2</sup>, one-story building with four adjoining test cells (three two-story and one three-story high-bay areas), an adjoining laser lab, fabrication and instrumentation areas, and administrative areas. The test cells would be constructed of reinforced, cast-in-place concrete, and the remainder of the building would be conventional steel framing and masonry construction. Two potential sites were initially considered for this facility within the NETL-Morgantown site: the B-20, or Performance Verification Laboratory (PVL) site, is located at the southeastern edge of the site, while the B-42, or Navy site, is located at the northwestern edge of the site. Both sites were initially considered, but the PVL site was quickly eliminated due to cost and geotechnical issues (Preliminary Design Report - U.S. DOE, NETL, 2016). Therefore, the B-42 site was ultimately selected as the location for future construction of the ECTC.

This EA has been prepared to satisfy the requirements of the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321 *et seq.*) and its implementing regulations found in Title 40, Code of Federal Regulations (CFR), Parts 1500-1508 (Council on Environmental Quality [CEQ]) and Title 10, CFR, Part 1021 (Department of Energy).

This EA evaluates 18 resource areas for potential impacts associated with the selected location of the ECTC, along with the No-Action Alternative. After preliminary evaluation, DOE determined that there would be no impacts for five resource areas: land use, geology and topography, floodplains, community services, and parks and recreation. Therefore, these five resource areas were not evaluated in detail in the EA and were not given further consideration. It was also determined that the No-Action Alternative would have no impacts on all resource areas, as the ECTC would not be constructed or operated under the No-Action Alternative.

The EA evaluated the remaining 13 resource areas in more detail. Construction activities associated with the proposed ECTC would have negligible impacts on cultural resources and minor adverse impacts on soils, vegetation and wildlife, water resources, air quality and greenhouse gases (GHGs), construction-related noise and vibration, and aesthetics and visual resources. These adverse effects would be largely short-term and last only through the duration of construction activities. These effects would be controlled to the greatest extent possible to minimize their impact. Minor beneficial impacts to socio-economics would also occur through the creation of approximately 24 temporary construction jobs. Operation of the ECTC at the Navy site would result in minor adverse noise impacts and negligible to minor impacts on regulated waste.



## **1.0 Introduction**

This Environmental Assessment (EA) addresses the potential environmental impacts of a proposed project, the Energy Conversion Technology Center (ECTC), which would be located at the National Energy Technology Laboratory's (NETL) Morgantown, West Virginia, site. This project would include the construction of an approximately 16,800-ft<sup>2</sup>, one-story building comprised of four test cells (three two-story and one three-story high-bay areas), an adjoining laser lab, fabrication and instrumentation areas, and administrative areas. The area of the blast-resistant test cells would be constructed of reinforced, cast-in-place concrete and the remainder of the building will be conventional steel framing and masonry construction.

The analyses contained in this EA are based on the information assembled and presented in the U.S. Department of Energy (DOE)/EA-1837, EA for the Performance Verification Laboratory (PVL) (January 2011); "Environmental Assessment for the Proposed Antenna Relocations at the Naval Material Data Systems Group (NMDSG) Facilities, Morgantown, West Virginia," prepared for Chesapeake Division Naval Facilities Engineering Command (March 1992); DOE's Cultural Resource Management Plan for Morgantown Energy Technology Center (May 1993); personal interviews with NETL officials; correspondence with regulatory agencies; and a review of published literature.

### **1.1 Background**

Since 1954, the federally owned and operated laboratory complex in Morgantown, West Virginia, has engaged in fossil energy-related research under the U.S. Bureau of Mines and, later, DOE. In 1996, the DOE fossil energy research centers in Pittsburgh, Pennsylvania, and Morgantown, West Virginia, merged under single management to become the Federal Energy Technology Center (FETC). In 1999, the FETC was elevated to national laboratory status and renamed the National Energy Technology Laboratory, becoming DOE's 15th national laboratory. NETL has laboratories in Morgantown, West Virginia; Pittsburgh, Pennsylvania; and Albany, Oregon. More than 1,100 employees work at NETL; roughly 40 percent are federal employees and 60 percent are site-support contractors.

### **1.2 Purpose and Need for DOE Action**

The proposed ECTC would be a multi-use, high-pressure experimental combustion facility that would add unique capabilities not currently present at NETL or any other national laboratory. NETL has available property and infrastructure to support the construction of such a facility. The construction and operation of this facility would allow NETL to expand its study of critical combustion issues, such as ignition, flame-holding, injector design, wall cooling, combustion dynamics, and high-pressure chemistry effects. The facility would be used to perform concept testing and model validation in the areas of oxy-combustion, supercritical carbon dioxide (sCO<sub>2</sub>) recuperators, and pressure gain combustion, and would include turbomachinery and a materials lab. The facility would support research in advanced energy systems and advanced materials, which would enhance NETL's core competencies related to chemical and materials engineering and energy systems. Additionally, the data generated through use of this facility would facilitate the design and operation of larger, commercial combustors for power generation. Potential users

external to NETL, both public and private, will benefit from these unique high-pressure and high-temperature capabilities. Once NETL receives adequate funding to construct the ECTC, NETL intends to make critical in-roads in fossil energy combustion that will enhance power plant efficiencies.

## **2.0 DOE's Proposed Action**

Two alternative locations were initially considered for siting the ECTC within the NETL-Morgantown site (Figures 1 to 3). The B-20 (or PVL) site located at the southeastern edge of the campus has an occupied building (Quonset hut). The B-42 (or Navy) site, formerly leased and utilized by the U.S. Navy, is located along the northwestern edge of the campus.

Shallow foundations can be used to support the proposed ECTC annex at the both sites. For the Navy site, the design team utilized a Subsurface Investigation Report prepared by James Engineering (June 1991), which states that the foundation for the building can be designed for an allowable bearing pressure of 2,000 pounds per square foot (psf) on undisturbed soils. Based on this allowable bearing pressure, the wall foundations at the test cells are required to be 12 feet wide, 2 feet deep continuous footings reinforced with (12) #7 bars, continuous, and #7 bars at 12 inches on center, transverse, and bottom. For the remainder of the building, wall footings are required to be 3 feet, 6 inches wide, 1 foot deep with (4) #6 bars, longitudinal, and #6 bars at 12 inches on center, transverse, and bottom. (U.S. DOE, NETL, 2016).

For the B-20 site, the design team utilized a Geotechnical Engineering Investigation prepared by Gateway Engineers (November 2010) that states the foundations for the building can be designed for an allowable bearing pressure of 3,000 psf. Due to the fact half of the site will overlie carbonaceous bedrock and half will encounter colluvial soil, subgrade over excavation and replacement will be required. The entire building footprint plus a 5-foot wide perimeter strip is required to be excavated to a flat horizontal plane extending to a depth of two feet below the lowest footing bearing elevation or utility trench excavation. All exposed carbonaceous soil or bedrock on the horizontal surface should be cleaned and sealed. (U.S. DOE, NETL, 2016).

NETL executive management selected the Navy site as the best location to house the ECTC due to a number of factors, including an estimated \$550,000 cost advantage, greater flexibility for future expansion, initiating development of the north end of the site, and greater potential to hide peripheral equipment and piping. Geotechnical considerations revealed favorable foundation conditions at the former Navy site as well (see Figure 1).

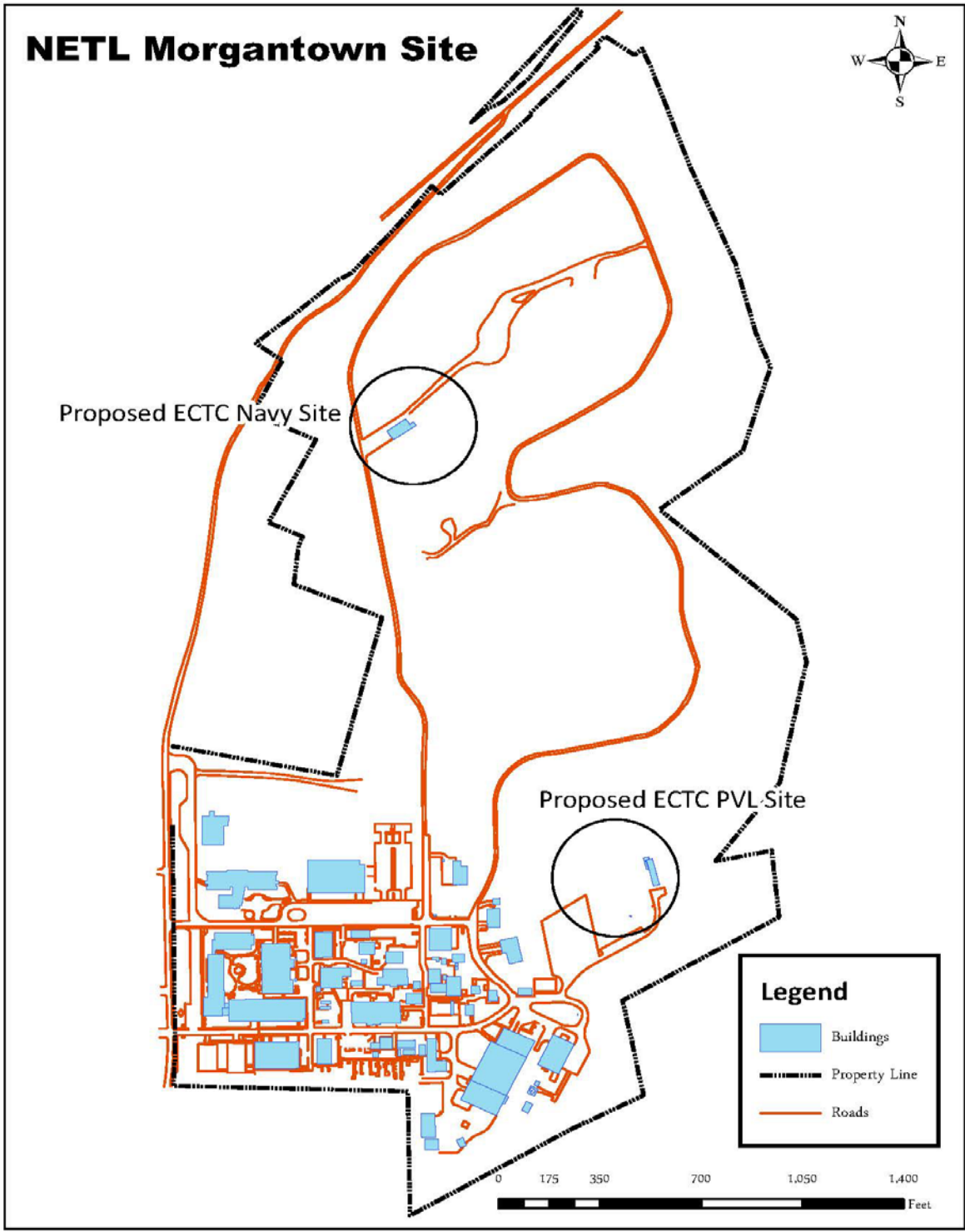


Figure 1. Proposed Navy and B-20/PVL Sites

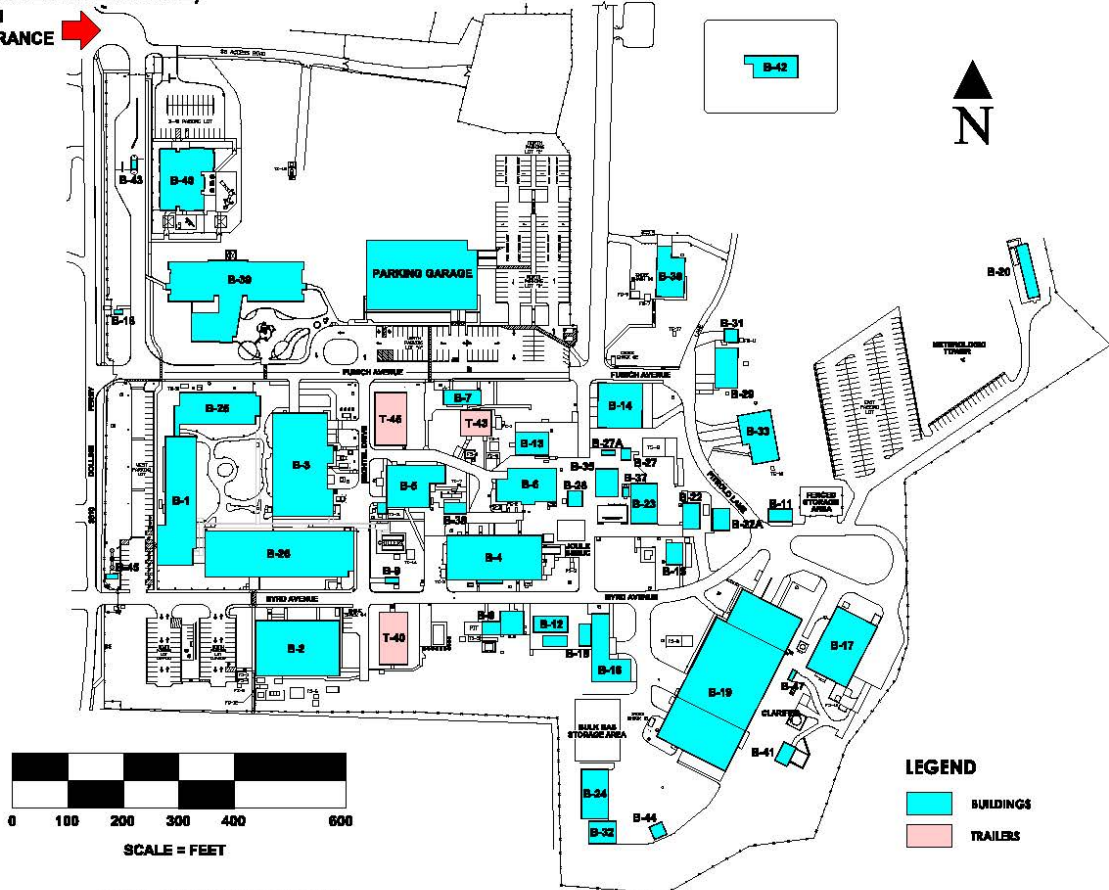
# FACILITY MAP

Morgantown



(3610 COLLINS FERRY ROAD)

MAIN ENTRANCE



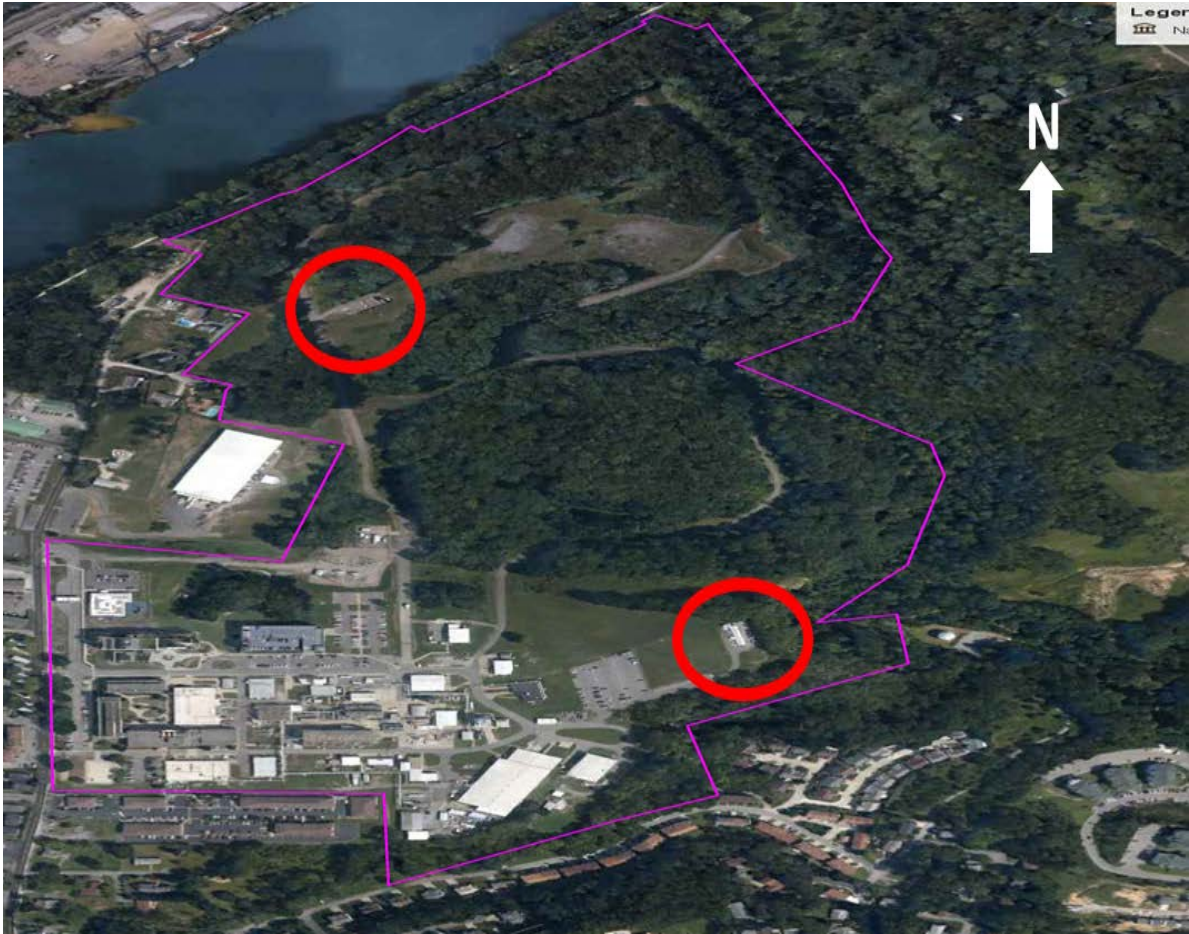
## NETL-MGN BUILDINGS

- |       |   |       |   |
|-------|---|-------|---|
| B-1   | ADMINISTRATIVE OFFICES                              | B-27  | DYNAMIC TEST UNIT                                 |
| B-2   | COMPUTATIONAL SCIENCES & ENGINEERING                | B-27A | VALVE TEST CONTROL ROOM                           |
| B-3   | GENERAL PURPOSE FACILITY                            | B-28  | PDU CONTROL ROOM                                  |
| B-4   | ENERGY SYSTEMS INNOVATION                           | B-29  | FACILITY OFFICE MAINTENANCE AREA                  |
| B-5   | BOILER PLANT  | B-31  | GROUNDS MAINTENANCE STORAGE                       |
| B-6   | APPLIED THERMAL SCIENCES                            | B-32  | NON-HAZARDOUS WASTE HOLDING FACILITY              |
| B-7   | SECURITY  | B-33  | NON-RADIOACTIVE HAZARDOUS CHEMICAL WASTE FACILITY |
| B-8   | PUMPHOUSE / COMPRESSOR FACILITY                     | B-35  | TEMPORARY EQUIPMENT STORAGE BUILDING              |
| B-9   | NETL OHU AMBULANCE GARAGE                           | B-36  | SITE MAINTENANCE FACILITY/MOTOR POOL              |
| B-11  | STORAGE   | B-38  | REVERSE OSMOSIS BUILDING                          |
| B-12  | EXTREME DRILLING LAB                                | B-39  | TECHNOLOGY SUPPORT FACILITY                       |
| B-13  | R&D PROJECTS FACILITY                               | B-40  | CHILD CARE FACILITY                               |
| B-14  | GENERAL PURPOSE LABORATORY                          | B-41  | PH CONTROL BUILDING                               |
| B-15  | RESEARCH DATA CENTER                                | B-44  | BULK SALT STORAGE SHED                            |
| B-16  | CHEMICAL & GAS STORAGE                              | B-45  | SOUTH HEATED ENCLOSURE                            |
| B-17  | GEOMATERIALS CHARACTERIZATION, ANALYTICS & MODELING | B-46  | NORTH HEATED ENCLOSURE                            |
| B-18  | MODULAR GAS CLEANUP RIG FACILITY                    | B-47  | B-17 HEATED ENCLOSURE                             |
| B-19  | WAREHOUSE, RECEIVING & MACHINE SHOP                 | B-48  | JOULE   |
| B-20  | OFFICES   | B-49  | SIMULATION BASED ENGINEERING USER CENTER          |
| B-22  | FUNDAMENTAL FLUIDIZATION RESEARCH PROJECT           | B-50  | SBEUC ELECTRICAL SHED                             |
| B-22A | GENERAL PURPOSE LABORATORY                          | ES2   |   |
| B-23  | STORAGE   | T-40  | OFFICES   |
| B-24  | STORAGE   | T-43  | OFFICES   |
| B-25  | GENERAL PURPOSE LABORATORY                          | T-45  | OFFICES   |
| B-26  | ADMINISTRATIVE OFFICES                              |       |   |

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Figure 2. Morgantown Facility Map





**Figure 3. Aerial Photo of Morgantown Facility, with Potential Project Sites (B-20 and Navy Building)**

Construction of the ECTC would take place in two phases. Phase I includes the renovation of office space in B-42 for science, engineering, and technical staff, and would support hosting of collaborating scientists. Phase II of the ECTC development project would involve construction of test bays for high-pressure operations, laser diagnostics, instrumentation labs, and gas compression and storage capabilities. This Phase II construction would support a range of advanced combustion and power generation testing. The proposed new construction for the ECTC is referred to as the ECTC annex.

The Navy site's B-42 is undergoing extensive interior renovations, which began with mold remediation in July 2017. The mold remediation effort included removal of all mold-contaminated materials and heating, ventilation, and air condition (HVAC), as well as cleaning and remediation of remaining surfaces. A Categorical Exclusion (CX) to cover these activities was signed by an NETL National Environmental Policy Act (NEPA) Compliance Officer (NCO) on July 14, 2017. Work began in the summer of 2018 on interior renovations and utility upgrades, including a new natural gas line, new electric and communication service, and new sanitary sewer line, which are being made in the vicinity of B-42 to support the ECTC annex. A second CX was signed by an NETL NCO on July 9, 2018, to cover the B-42/ECTC interior and exterior renovations and partial utility upgrades. The annex will be constructed sometime in the future as funding becomes available.

This EA analyzes and assesses the potential environmental impacts from the construction of the proposed ECTC annex to be built in association with the B-42 building at the Navy site, as well as the operation of the completed ECTC facility. Appendix B contains the site drawings submitted in association with the B-42 renovation that illustrate the location of utility upgrades and parking lot expansion.

Concept drawings of the exterior and interior of the ECTC facility, as proposed in the Preliminary Design Report (U.S. DOE, NETL, 2016), are shown in Figure 4a, Figure 4b, and Figure 5. The proposed ECTC facility is described in the report as including:

- Test Cell, three @ 750 sf each
- Test Cell, one @ 1,200 sf
- Test Cell Control Room(s) with ability to operate more than one test cell simultaneously
- Fabrication Shop
- Instrumentation Lab
- Process Equipment Room
- Offices, 15
- Conference Room for 20 people
- Lobby/Reception Area
- Employee Breakroom
- Restrooms
- Mechanical Equipment Room

*Note: These features may change based on funding and evolving mission requirements*

The ECTC specialty requirements, as described in the Preliminary Design Report (U.S. DOE, NETL, 2016), include:

- Carbon Dioxide @ 700 pounds per square inch (psi) and 6,000 psi
- Compressed Air @ 700 psi @ 900°F and 6,000 psi
- Hydrogen @ 700 psi
- Natural Gas @ 700 psi and 6,000 psi
- Nitrogen @ 6,000 psi
- Oxygen @ 6,000 psi
- Process Cooling Water
- Test Cells to be blast resistant

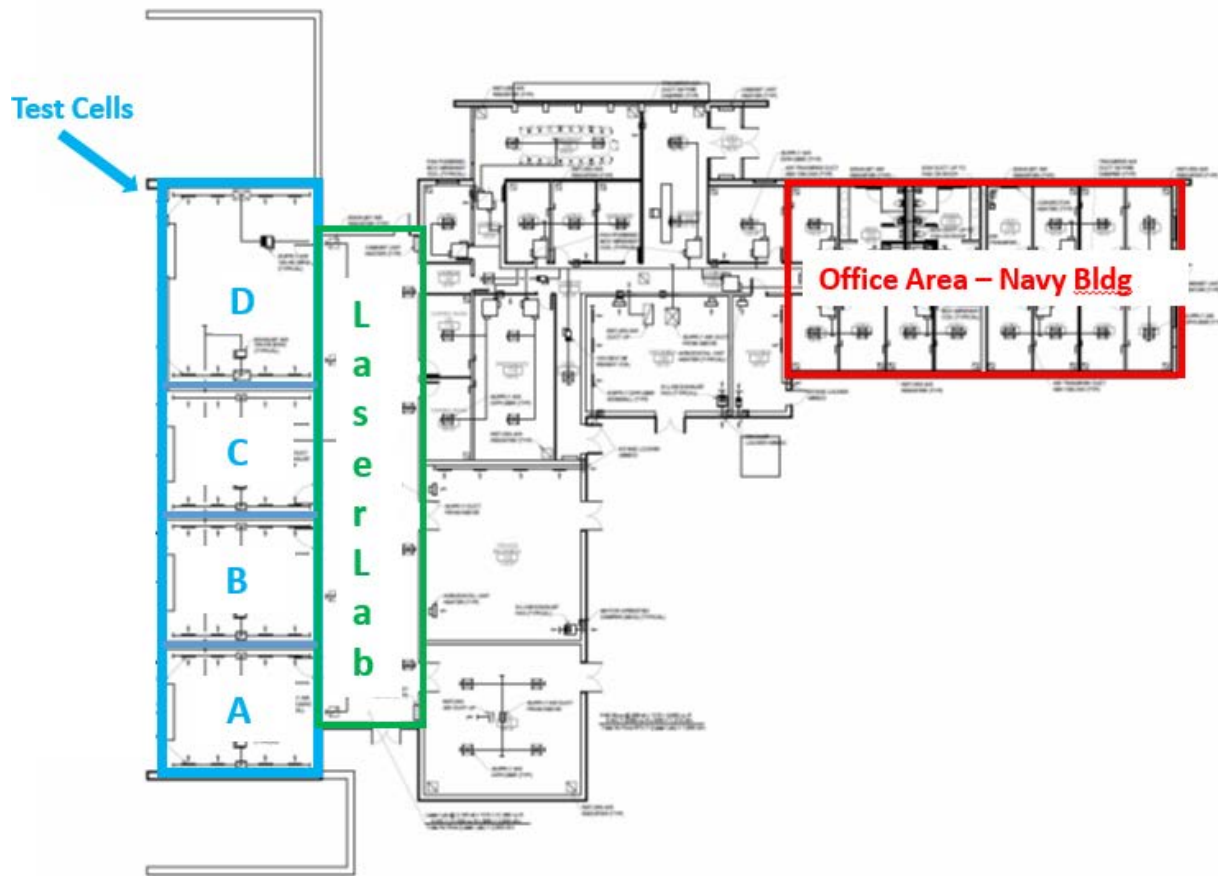
*Note: Again, these features may change based on funding and evolving mission requirements*



**Figure 4a. Modified Existing Navy Building Shown in White**



**Figure 4b. High Bay Building Addition Shown in White**



**Figure 5. Concept Drawing of Interior of Proposed ECTC**

(The area outlined in red shows the existing Navy building. The top of the drawing generally represents the southern face of the site; the bottom of the drawing generally represents the northern face of the site.)

## 2.1 Structural Systems

The following information regarding structural systems of the proposed ECTC annex was provided in the Preliminary Design Report (U.S. DOE, NETL, 2016):

The construction of the four test cells would consist of cast-in-place concrete walls and roof, with a concrete slab on grade. An assumed static pressure of 7 psi (1,000 psf) was used as an initial design parameter for the test lab structure. Based on this assumed pressure, the typical interior and exterior wall construction would consist of 30-inch thick concrete walls reinforced with #8 bars at 6 inches on center, top, and bottom within the span direction, and #5 bars at 12 inches on center within the transverse direction. The lowest level would be supported by a concrete slab on grade with a thickness of 8 inches.

The construction of the remainder of the ECTC annex, which will occur at a later date, would consist of a 1.5-inch galvanized steel roof deck supported by a combination of wide flange steel beams and steel joist roof framing. For initial design purposes, the weight of the steel wide flange beams and steel joist roof framing was based on 7 psf of roof area. These roof members



would be supported by exterior and interior load-bearing walls and structural steel columns, as required. The lowest level would be supported by a concrete slab on grade with a thickness of 4 to 6 inches, depending on loading conditions and user requirements.

Shallow foundations can be used to support the proposed ECTC annex at the Navy site. The design team utilized a Subsurface Investigation Report prepared by James Engineering (June 1991), which states that the foundation for the building can be designed for an allowable bearing pressure of 2,000 psf on undisturbed soils. Based on this allowable bearing pressure, the wall foundations at the test cells are required to be 12 feet wide, 2 feet deep continuous footings reinforced with (12) #7 bars, continuous, and #7 bars at 12 inches on center, transverse, and bottom. For the remainder of the building, wall footings are required to be 3 feet, 6 inches wide, 1 foot deep with (4) #6 bars, longitudinal, and #6 bars at 12 inches on center, transverse, and bottom.

## **2.2 Facility Operation**

It is anticipated that experimental testing would occur between the hours of 6 a.m. and 6 p.m., with standard test duration and associated increased decibel readings lasting approximately one hour.

## **2.3 National Environmental Policy Act and Related Regulations**

This draft EA was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code 4321 *et seq.*) and its implementing regulations found in Title 40, CFR, Parts 1500-1508 (CEQ), and Title 10, CFR, Part 1021 (Department of Energy).

The draft EA evaluated the potential individual and cumulative impacts of the proposed project at the B-42 (Navy) site located within the NETL-Morgantown site. An alternative location, the B-20 or PVL site located at the eastern edge of the campus, is steeper and would require more site preparation and grading along with having worsened geotechnical bearing capacities. The B-42 site has better geotechnical characteristics and less overall earthwork requirements resulting in an approximate saving of \$550,000 over the B-20 site. No other action alternatives were analyzed. For purposes of comparison, this EA also evaluated the impacts that could occur if the ECTC facility was not constructed (the No-Action Alternative). This assumption allowed DOE to compare the impacts of an alternative in which the project occurred with one in which it would not.

## **2.4 No-Action Alternative**

Under the No-Action Alternative, NETL would not construct or operate the ECTC facility at the Morgantown, West Virginia, site. Conditions at the NETL-Morgantown site would remain as they are at present. Therefore, there would be no impacts to the human or natural environment if the ECTC was not constructed. NETL would not be able to further research in advanced energy systems and advanced materials science in the power generation industry.

### 3.0 Environmental Resources Not Carried Forward

Section 4.0 of this draft EA describes the affected environment and examines the potential environmental impacts of the proposed project, associated actions, and the No-Action Alternative for the following resource areas:

- Soils
- Vegetation and Wildlife
- Wetlands
- Cultural Resources
- Water Resources
- Air Quality and Greenhouse Gases (GHGs)
- Socio-Economics
- Utilities
- Noise and Vibration
- Aesthetics and Visual Resources
- Regulated Waste
- Traffic
- Public and Occupational Health and Safety

The focus of the detailed analysis in Section 4.0 is on those resources that have the potential to be significantly impacted, be controversial, or typically interest the public. DOE determined that there would be no impacts or the potential impacts would be negligible for the following resource areas: Land Use, Geology and Topography, Floodplains, Community Services, and Parks and Recreation. Table 1 lists these resource areas and the rationale for no further detailed evaluation. Therefore, DOE determined that further analysis was unnecessary for these resources. In terms of the No-Action Alternative, the potential impacts listed in Table 1 would not occur because the proposed project would not proceed.

**Table 1. Environmental Resource Areas with No or Negligible Impacts**

Resource Area	Rationale
<p style="text-align: center;"><b>Land Use</b></p>	<p>The NETL-Morgantown site is situated on a 132-acre parcel located in Monongalia County, West Virginia. A portion of this tract (46 acres) was first developed in the 1950s as the U.S. Bureau of Mines Appalachian Experiment Station. The facility was later recommissioned as the DOE/Morgantown Energy Technology Center (METC). The FETC was launched in 1996 through the unification of METC and the Pittsburgh Energy Technology Center (PETC). In 1999, the Secretary of Energy designated FETC as DOE’s 15th national laboratory, creating the present National Energy Technology Laboratory. Construction and operation of the ECTC facility will take place entirely onsite and would represent an extension of current energy research activities. Since no change in land use would occur and no impacts are anticipated, this resource was not analyzed further.</p>
<p style="text-align: center;"><b>Geology and Topography</b></p>	<p>The NETL-Morgantown facility is located in the Appalachian Plateau physiographic province. The province is northeast highland underlain by nearly horizontal Paleozoic sedimentary strata. The topography of the facility is generally level to slightly rolling.</p> <p>Bedrock underlying the NETL-Morgantown facility consists of the Pennsylvanian Conemaugh group. This unit is made up of cyclic sequences of red and gray shale, siltstone, and sandstone with</p>

Resource Area	Rationale
<p><b>Geology and Topography (con't.)</b></p>	<p>thin limestone and minor coals. Major coal seams mark the top and bottom of this unit. Alluvial deposits of Quaternary age reach significant thickness over bedrock in more low-lying areas. These unconsolidated sediments are made up of sand, gravel, silt, and clay deposited by the Monongahela River (Cardwell et al., 1968). On steeper slopes, unconsolidated deposits are thinner and are made up of predominantly of weathered bedrock material.</p> <p>No significant changes in topography would occur as a result of implementation of the proposed action. Because negligible impacts to geology and topography are anticipated, this resource was not analyzed further.</p>
<p><b>Floodplains</b></p>	<p>The 100-year floodplain is the elevation that becomes inundated by rising waters and has a one percent chance of flooding every year. A review of the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) was conducted on the North Morgantown area in order to determine any impacts to the floodplains and/or flood hazards. The FIRM community panel number used was: 54041 0001D (U.S. DOE, NETL, 2002).</p> <p>The NETL facility is located in Zone X on the FIRM. Zone X signifies areas are determined to be outside the 500-year floodplain. For this reason, any construction on the site would not impact either the 100- or 500-year floodplain. Also, because NETL is located in Zone X, the elevation of the property is not prone to flood hazards and has no impacts to floodplains; therefore, this resource was not analyzed further.</p>
<p><b>Community Services</b></p>	<p>No effects to community services of the city of Morgantown or Monongalia County are expected to occur due to the construction of the proposed action at the NETL-Morgantown site. There would be a temporary increase of construction workers and deliveries during the construction period; however, this increase is temporary and negligible and would not affect community services such as law enforcement, fire protection, medical care, schools, family support services, shopping, or recreation facilities.</p> <p>Operation of the ECTC facility at NETL-Morgantown would require no additional facility operations staff and would therefore cause no increase in demand for community services. There would be no impact to the public service infrastructure, local emergency services, healthcare services, or school systems, including Suncrest Elementary School located across from the site on Collins Ferry Road. Because no impacts are anticipated, this resource was not analyzed further.</p>
<p><b>Parks and Recreation</b></p>	<p>There are no county or regional parks in the proximity of the project area. The only county/regional or state park in Monongalia County is Chestnut Ridge Park, which is located adjacent to Coopers Rock State Forest. Chestnut Ridge Park is located approximately eight miles from the NETL site.</p> <p>The city of Morgantown has 9 neighborhood parks, 2 dog parks, and 14 athletic facilities, none of which are located near the project area.</p> <p>Star City leases the section of the Mon River Trail (MRT) that bisects Star City's corporate limits from the MRT Conservancy. The MRT extends upstream and downstream along the Monongahela River and at one point is approximately 900 feet from the project area. However, the project activities would not impact the MRT.</p> <p>Because no impacts are anticipated to recreational areas, this resource was not analyzed further.</p>

### 3.1 Summary of Environmental Consequences

Table 2 provides a summary of the socio-economic, environmental, and cultural impacts of the No-Action Alternative and the proposed project. The term “none” refers to impacts that will not occur as a result of this project. The term “negligible” applies to those impacts so small or unimportant to be not worth further consideration. “Minor” impacts are of lesser or limited

significance.

**Table 2. Summary of Socio-Economic, Environmental, and Cultural Impacts**

Impact Area	No-Action Alternative		Proposed Project	
	Construction	Operations	Construction	Operations
Land Use	None	None	None	None
Geology and Topography	None	None	None	None
Floodplains	None	None	None	None
Community Services	None	None	None	None
Parks and Recreation	None	None	None	None
Soils	None	None	Minor	Negligible
Vegetation and Wildlife	None	None	Minor	Negligible
Wetlands	None	None	Negligible (if avoided)	Negligible
Cultural Resources	None	None	Negligible	Negligible
Water Resources	None	None	Minor	Negligible
Air Quality and GHGs	None	None	Minor	Negligible
Socio-Economics	None	None	Minor (Beneficial)	Negligible
Utilities	None	None	Negligible	Negligible
Noise and Vibration	None	None	Minor	Minor
Aesthetics and Visual Resources	None	None	Minor	Negligible
Regulated Waste	None	None	Negligible	Negligible/Minor
Traffic	None	None	Negligible	Negligible
Public and Occupational Health and Safety	None	None	Negligible	Negligible

## 4.0 Affected Environment and Environmental Consequences

Much of the information presented in this EA was originally developed in association with the “Environmental Assessment for the Proposed Antenna Relocations at the Naval Material Data Systems Group (NMDSG) Facilities, Morgantown, West Virginia” (Ecology and Environment, Inc., 1992). Information has been updated where appropriate.

### 4.1 Soils

#### Affected Environment

Soils occurring at the NETL-Morgantown facility include Urban Land-Monongahela complex, Culleoka-Westmoreland silt loam, Holly silt loam, and Monongahela silt loam.

The Urban Land-Monongahela complex consists of areas covered by urban structures and underlain by Monongahela silt loam. This complex underlies the developed portions of the NETL-Morgantown facility at the southern end of the site. The complex is gently sloping (3 to 15 percent) to strongly sloping (greater than 25 percent) and moderately well drained.

Culleoka-Westmoreland silt loam is found in the southeastern portion of the site and is located

on the steeper areas in the north end of the property. Culleoka-Westmoreland soils are well-drained silt loams occurring on ridgetops, benches, and hillsides with slopes ranging from 15 to 65 percent. Depth to bedrock in these areas ranges from 20 to 70 inches below ground surface. Major limitations for urban use of this soil include slope, slip hazard, and shallow depth to bedrock.

Holly silt loam is found in the floodplain of West Run. This alluvial soil is nearly level, deep, and poorly drained.

Monongahela silt loam underlies the Navy site. This soil is moderately well drained, with slopes ranging from 8 to 15 percent. Areas of this soil have a seasonally high-water table from approximately 1.5 to 3 feet below the surface. Slope, the shallow depth to the water table, and moderately low to low permeability are the main limits of this soil for urban use. The erosion hazard of the soil is severe in unprotected areas. Monongahela silt loam development limitations are moderate to severe due to slope, wetness, and frost action (U.S. Department of Agriculture [USDA], 1982).

Based on communication with NETL site Environmental Safety and Health (ES&H) personnel, there are no areas of potential soil contamination concern in the proposed locations for the ECTC facility.

## **Environmental Consequences**

### ***Proposed Annex Construction***

Soil impacts would be limited primarily to disturbance of soils during construction of the new Navy building addition. Impacts on unconsolidated deposits and soils include compaction by vehicular traffic and construction equipment, and potential erosion and consequent sedimentation of surface waters. The proposed action would result in short-term loss of productivity on approximately three acres of the native soil and a permanent loss of less than 1.5 acres. This includes areas of soils that were disturbed as part of the prior B-42 renovation activities.

Activities such as grading, excavating, and ditching would create the potential for erosion and sedimentation of surface waters. Erosion-control techniques consistent with good construction practices would be required to reduce impacts associated with soil erosion. Such impacts would be minimized by maintaining or establishing plant cover at the construction site, providing for proper diversion of water, installing straw bales and/or silt fences, mulching, and temporary seeding. In addition, the limitations of the soil type occurring at the proposed location, including wetness and frost action, would be considered in the design of roadways and proposed structures.

Access roads will also be needed for the Navy site, creating additional areas of soil disturbance.

## ***Proposed Facility Operations***

Project operations would create no additional significant soil impacts once the entire facility and possible associated access roads have been constructed.

## **4.2 Vegetation and Wildlife**

### **Vegetation**

#### **Affected Environment**

The NETL-Morgantown facility is located in Monongalia County, West Virginia, at the edge of the unglaciated Appalachian Plateau and Allegheny Mountain physiographic provinces (West Virginia Geological and Economic Survey website). Native vegetation in the region is primarily deciduous and evergreen forest covering roughly 62 percent of the 234,000 total acres in Monongalia County (Griffith and Widmann, 2003). Major forest cover-types in the county include oak/hickory, northern hardwoods, oak/pine, Virginia pine, and elm/ash/maple. Of these, the oak-hickory cover-type is the most abundant in West Virginia, comprising 71 percent of the forest land area. Most of this woodland has been previously logged and is in its second or third rotation since settlement.

The remaining 38 percent of the unforested land area supports primarily agricultural cover-types and urban areas. Such areas are typically located in the more level hill tops and valleys (USDA, 1982).

The vegetation existing within the 54 acres of developable land at the NETL-Morgantown site is typical of the vegetation types that are common to Monongalia County. The site is composed of a mosaic of vegetation cover-types, representing the whole range of successional series from open maintained grassland to mature deciduous forest. Four distinct cover-types were identified during an ecological field survey conducted in association with the EA prepared for the Proposed Antenna Relocations at the NMDSG Facilities, Morgantown, West Virginia (Ecology and Environment, Inc., 1992). While expected successional changes have occurred with time impacting specific coverage areas, because there has been no major site disturbance in the interim, these generalized findings as to site ecology remain relevant. Cover-types are as follows:

#### **Mowed Herbaceous Cover**

This cover-type occupies areas that are maintained by the NETL-Morgantown facility in low-growing herbaceous vegetation. These areas are generally adjacent to the site access roads, along a natural gas pipeline right-of-way, a power transmission lines right-of-way, and on a level knoll in the center of the site. Dominant plant species in this cover-type consist of grasses, miscellaneous weedy forbs, and scattered pioneer tree and shrub seedlings. Identification of all dominant species could not be made conclusively due to recent mowing. However, some species were identifiable, such as broomsedge (*Andropogon* sp.), quackgrass (*Agropyron repens*), and timothy grass (*Phleum pretense*).

## **Early Successional Woodland**

This cover-type, which occupies the area in the vicinity of the Navy site that is not currently wooded, is composed primarily of pioneer plant species that have invaded abandoned previously maintained grassy areas and agricultural land. This land is not disturbed by routine mowing. The community is dominated by sapling to pole-sized black locust (*Robinia pseudoacacia*), black cherry (*Prunus serotina*), green ash (*Fraxinus pennsylvanica*), and staghorn sumac (*Rhus typhina*). Dominant understory species include miscellaneous goldenrods (*Solidago* sp.), broomsedge (*Andropogon* sp.), deer tongue (*Panicum clandestinum*), and greenbrier (*Smilax* sp.). Scattered throughout this cover-type are small patches of bigtooth aspen (*Populus grandidentata*) and American elm (*Ulmus americana*).

This cover-type can be characterized as an immature black locust-dominated community, as described by the Society of American foresters (Eyre, 1980), or as an early successional mixed central hardwood community, as described by Burns (1983).

## **Mixed Central Hardwood**

This cover-type is an intermediate-aged mixed central hardwood community dominated by pole-to sawtimber-sized black oak (*Quercus velutina*), white oak (*Quercus alba*), sourwood (*Oxydendron arborea*), black cherry, bigtooth aspen, and tulip poplar (*Liriodendron tulipifera*). Dominant understory species include flowering dogwood (*Cornus florida*), black raspberry (*Rubus allegheniensis*), spicebush (*Lindera benzoin*), and sourwood and American elm saplings.

## **Mixed Northern Hardwood**

This cover-type is located on the steep side slopes along the northwest and northeast boundaries of the NETL-Morgantown property. These slopes overlook the Monongahela River and West Run, respectively. Relatively cool and moist conditions occurring on these north-facing slopes have allowed for the development of a species-rich, sawtimber-sized mixed northern hardwood community. Dominant species include sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), white oak, northern red oak (*Quercus rubra*), bitternut hickory (*Carya cordiformis*), black cherry, sycamore (*Platanus occidentalis*), and black walnut (*Juglans nigra*). A rich understory dominated by spicebush, raspberry, and seedlings and saplings of the overstory species is also present.

## **Environmental Consequences**

### ***Proposed Annex Construction***

Construction of the proposed ECTC annex would result in both long- and short-term minor impacts to terrestrial ecosystems. Vegetation will be cleared from approximately 3 acres of the site as part of the proposed action and prior B-42 renovation activities, although less than 1.5 acres of this loss would be permanent.

Vegetation currently occupying this area is mainly of the maintained herbaceous type and early successional woodland. However, less than two acres of the area to be cleared for construction is comprised of mixed central hardwood.

### ***Proposed Facility Operations***

Following construction, the site would be revegetated with a low-growing herbaceous community (grass dominated) and permanently maintained in a low condition by mowing.

## **Wildlife**

### **Affected Environment**

The species of wildlife inhabiting an area is largely dependent upon the types of habitat present and the availability of food, water, and nesting/escape cover. The variety of cover-types, plant community composition, and ease of availability of water from West Run and the Monongahela River make the NETL-Morgantown site suitable for numerous wildlife species.

In the open herbaceous areas of the site, common wildlife species are primarily small mammals and songbirds. Numerous songbirds, including common grackle (*Quiscalus quiscula*), tufted titmouse (*Parus bicolor*), and black-capped chickadee (*Parus atricapillus*), have been observed. Mammals likely to occur in open idle areas include the meadow mouse (*Zapus hudsonius*), meadow vole (*Microtus pennsylvanicus*), deer mouse (*Peromyscus maniculatus*), shrew (*Sorex* spp.), and cottontail rabbit (*Sylvilagus floridanus*).

Early successional woodland vegetation provides foraging, nesting, and escape cover habitat for many species of wildlife. Common species that utilize such idle lands include whitetail deer (*Odocoileus virginianus*), cottontail rabbit, eastern fox squirrel (*Sciurus niger*), ring-necked pheasant (*Phasianus colenicus*), numerous small songbird species such as warblers (*Denroica* spp.) and thrushes (*Cathorus* spp.), and larger predatory birds such as red-tailed hawk (*Circus cyaneus*). Ruffed grouse (*Bonasa umbellus*), bobtail quail (*Colinus virginianus*), and wild turkey (*Meleagris gallopavo*) also utilize early successional woodland vegetation.

The mixed central hardwood and mixed northern hardwood forest types provide desirable habitat for numerous wildlife species. Oaks and hickories produce large seed crops at 2- to 10-year intervals that are consumed by such species as whitetail deer, ruffed grouse, bobwhite quail, wild turkey, squirrels, and numerous songbirds. Oaks, cherry, and tulip poplar also provide palatable browse for deer and nesting cover for songbirds. Mature stands often contain den cavities for cavity-nesting birds and mammals.

## **Environmental Consequences**

### ***Proposed Annex Construction***

Construction of the proposed facility would have minor short- and long-term impacts on wildlife habitat, causing localized adverse impacts on wildlife populations. During construction, the



clearing and grading of the site would result in a loss of vegetative cover that could cause limited mortality to less-mobile forms of wildlife, such as small rodents, which are unable to escape the construction area. In addition, the general disturbance of the site resulting from construction activities would likely cause the temporary displacement of most wildlife from the immediate vicinity of the construction zone and adjacent areas.

### ***Proposed Facility Operations***

Following construction, displaced species are expected to resume their normal habits consistent with the availability of post-construction habitats. These habitats would be converted from early successional woodland and mixed central hardwood vegetation to maintained herbaceous cover as a result of construction activities. This would preclude the use of this area for some wildlife species, but certain others, such as deer, rodents, and some songbirds, would continue to derive benefit from this area. Most species intolerant of open conditions would be able to find suitable undeveloped habitat, which is generally found in abundance adjacent to the ECTC facility.

As no known locations of wildlife species of concern or significant wildlife habitats occur in the project area, no significant adverse impacts to such resources would occur.

### **Threatened and Endangered Species**

#### **Affected Environment**

There are six threatened or endangered species known or believed to exist in Monongalia County, West Virginia (U.S. Fish and Wildlife Service [USFWS], Environmental Conservation Online System [ECOS] website). The threatened species include a bird (red knot [*Calidris canutus rufa*]), a mammal (northern long-eared bat [*Myotis septentrionalis*]), and a snail (flat-spined three-toothed snail [*Triodopsis platysayoides*]). The endangered species include a clam (snuffbox mussel [*Epioblasma triquetra*]), a flowering plant (running buffalo clover [*Trifolium stoloniferum*]), and a mammal (Indiana bat [*Myotis sodalists*]).

The Navy site includes a pre-existing building (B-42) and is a previously disturbed site that is not expected to provide habitat for any of the threatened or endangered species. No sightings have been reported on the NETL-Morgantown site. The USFWS was consulted for information concerning rare, threatened, and endangered species for a proposed project at the B-20 (PVL) site in a letter dated September 29, 2010 (Appendix C). No response was received from USFWS. The West Virginia Division of Natural Resources (WVDNR) was consulted for an adjacent NETL project in 2002 and reported no rare, threatened, or endangered species were known to inhabit the area (DOE, 2002). This draft EA was sent to the USFWS for its review and concurrence with DOE's determination that the proposed project would not affect federally listed species or critical habitat.

## **Environmental Consequences**

### ***Proposed Annex Construction***

A copy of this draft EA was sent to the USFWS for its review and concurrence; however, the Navy site is not expected to contain threatened or endangered species.

### ***Proposed Facility Operations***

It is anticipated that operation of the ECTC facility on NETL property would not affect threatened or endangered species, as no species of special concern are known to occur in the proposed project area. In addition, all activity would be conducted indoors or in the immediate vicinity of the facility, not in surrounding undeveloped areas.

## **4.3 Wetlands**

### **Affected Environment**

In October 1994, NETL engaged a certified wetland consultant (Terradon Corporation) to conduct an investigation to define the extent of any jurisdictional wetlands on the Morgantown site (1994, Terradon Corporation, Wetland Investigation). The results of this investigation identified a potential wetland area approximately 7,772 ft<sup>2</sup> (0.18 acre) in size. However, a jurisdictional determination of the wetland boundaries has not been determined by the U.S. Army Corps of Engineers (USACE), which regulates wetlands and waters of the United States. The wetland area is approximately 100 feet away from the southeast corner of the existing Navy building (Figure 6).

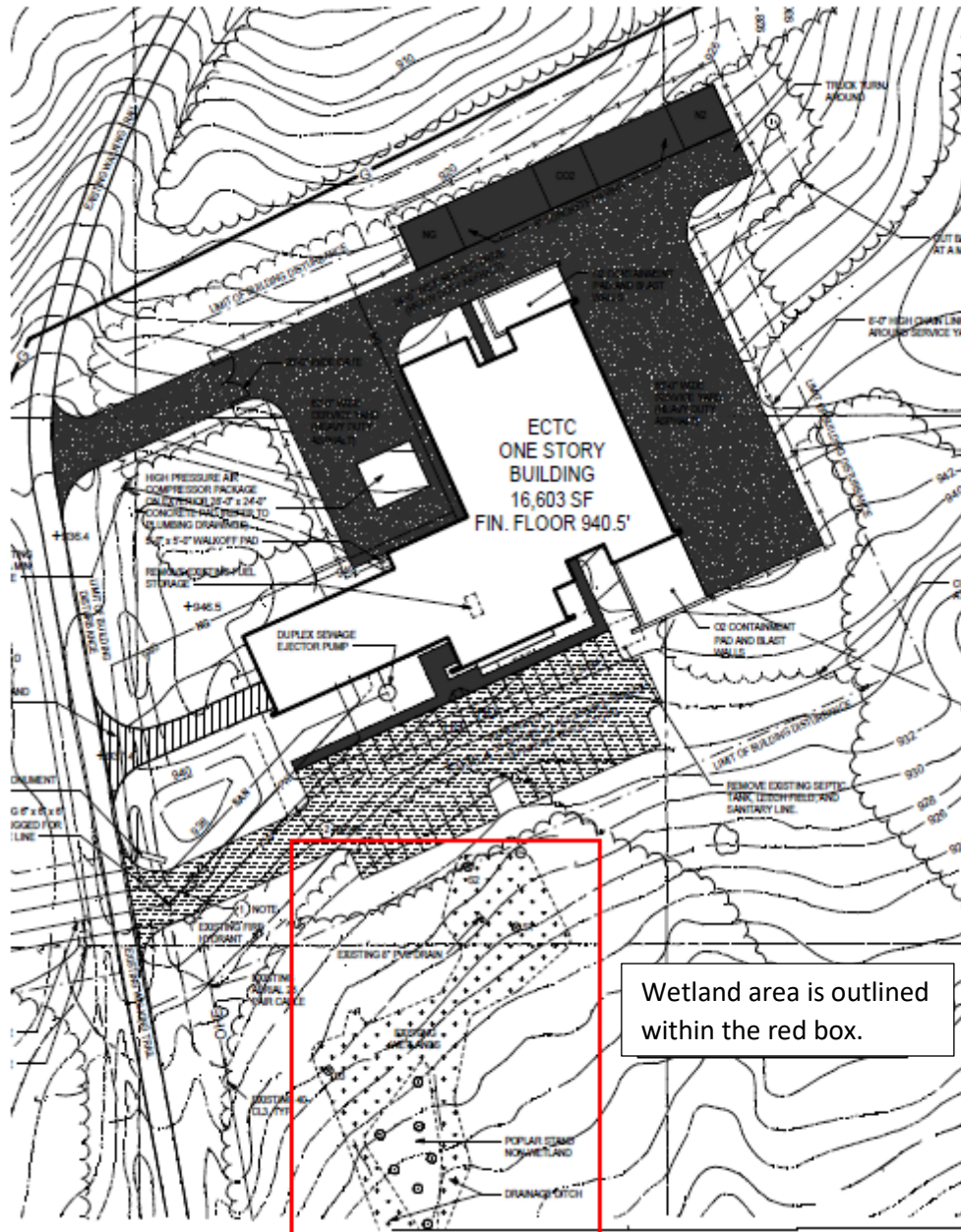


Figure 6. Wetlands Located to South of Proposed ETC, Based on 15-Percent Design Drawing

## Environmental Consequences

### *Proposed Annex Construction*

NETL plans to implement the recommendations made in the West Virginia Department of Environmental Protection's Erosion and Sediment Best Practices Manual (2006, Revised 2016), which states that wetland areas shall be protected during construction through consideration and use of the following: (1) disturbed areas within 200 feet of waterbodies and wetlands must use non-phosphorus fertilizer; and (2) erosion control, including slit fence, shall be used to prevent

debris, soil, and other related material from entering the designated area. In so doing, the site's wetlands would be avoided and/or protected from erosion and sedimentation resulting from construction of the ECTC annex, and therefore a Section 404 Clean Water Act Permit (via the USACE) would not be required.

### ***Proposed Facility Operations***

Operation of the ECTC facility on NETL property would not significantly affect the delineated wetland area because all activity would be conducted in the interior of the facility and in the immediate vicinity of the exterior of the building, which does not infringe on the wetlands area located approximately 100 feet to the south. Deliveries to the ECTC facility would also not disturb the wetlands area.

## **4.4 Cultural Resources**

### **Affected Environment**

In 1992, an EA was completed by the Chesapeake Division Naval Facilities Engineering Command for construction of the Navy facility (Building B-42 and associated antennas) that was to be used by the Navy for the NMDSG Military Affiliate Radio Station (MARS). In association with the EA for construction of the B-42 Navy facility, Ecology and Environment, Inc. (1992) completed a Phase IA/B cultural resource investigation for the proposed relocation of the MARS facility. The investigation identified a stone foundation, a 20th-century cinderblock/concrete foundation, and a concrete pad within the northern portion of the NETL-Morgantown property during Phase I archaeological investigations. Subsurface testing of the parcel identified two clusters of historic artifacts: shovel tests produced non-diagnostic materials in one sampling area, and kitchen, household, and architectural materials that dated from the 19th century to modern times in a second area. The study concluded that the soil deposits lacked integrity and, therefore, the site was not eligible for nomination to the National Register of Historic Places (NRHP). To date, the site has not been listed formally with the West Virginia Division of Culture and History.

In 1993, the West Virginia Division of Culture and History determined that despite differing interpretations, the site with potential cultural significance was to be avoided for the MARS facility. As a result, there would be no effect to the resource and construction of the Navy facility proceeded.

The West Virginia Division of Culture and History – State Historic Preservation Office (SHPO) was notified of the proposed ECTC project at the NETL-Morgantown site via phone call and follow-up email on April 27, 2017 (Appendix C), and with a formal consultation letter sent on June 1, 2017 (Appendix C). Susan Pierce, Deputy State Historic Preservation Officer, West Virginia SHPO, responded and requested that the two previously identified archeological sites (identified as 46MG90 and 46MG91) undergo National Register evaluations prior to initiating construction activities. In addition, West Virginia SHPO requested that photographs be submitted for consideration of possible architectural resources located within sight of B-42, which may be eligible for inclusion in the NRHP. To comply with these requests, a Phase II work plan for site 46MG90 (the site where construction activities would occur) was completed

and subsequently approved by West Virginia SHPO on December 15, 2017 for Archaeological Resources (Appendix C) and on December 19, 2017 for Architectural Resources (Appendix C).

The Phase II archeological and historic documentation research investigations were completed in March 2018. The archeological investigations for site 46MG90 encompassed an approximately 30- by 45-meter area on a knoll north of B-42. Field investigation methods included the excavation of five 1- by 1-meter test units concentrated north and east of the B-42 site to focus on areas where artifacts were recovered during the Phase I survey. A total of 57 ceramic, glass, and metal artifacts were recovered as a result of the field investigation in this area. These artifacts were identified as historic domestic and architectural items dating from the mid-19th through the mid-20th century. A pedestrian reconnaissance was also conducted over the area east of B-42, where a concrete and cinderblock foundation and concrete pad were identified during the Phase I survey. A single shovel test probe was excavated in this area, although no remains of either the foundation or concrete pad were observed. It is likely that these features were removed as part of the relocation of the MARS facility. The technical report documenting the results of the Phase II investigations was completed in April 2018. Based on the results of the Phase II investigations, site 46MG90 was recommended in this report as not eligible for nomination to the NRHP. This report was provided to West Virginia SHPO on April 19, 2018 (Appendix C), and West Virginia SHPO concurred with this recommendation in a letter to NETL received on May 23, 2018 (Appendix C).

The West Virginia SHPO was also provided with the results of a viewshed analysis (including maps, photos, and detailed projects plans) on July 13, 2018 (Appendix C) to comply with their request to review the possible impacts of the proposed ECTC project on architectural resources. The recommendation from this viewshed analysis was that no historic-age buildings identified within the viewshed of the proposed project are eligible for listing on the NRHP. The West Virginia SHPO concurred with this recommendation in a letter to NETL received on August 8, 2018 (Appendix C), noting that the undertaking would have no effect on historic architectural resources.

Documentation related to correspondence with the West Virginia SHPO, including consultation letters, the Phase II work plan, Phase II Report, photos, and viewshed analysis, is provided in Appendix C. A copy of this draft EA was sent to the West Virginia SHPO for review and comment.

There are no federally recognized tribes located within the State of West Virginia. However, the Catawba Indian Nation, Osage Nation, and Delaware Nation, Oklahoma, were identified as the federally recognized Native American tribes with possible interests in Monongalia County, West Virginia (Tribal Directory Assistance Tool Version 3.0, HUD.GOV). Copies of this draft EA were sent to these tribes for review and comment.

## **Environmental Consequences**

### ***Proposed Annex Construction***

The construction of the ECTC annex as an extension to the existing Navy building appears to

impact the area identified in the Phase I study (Figure 6); therefore, the West Virginia SHPO requested a Phase II investigation prior to construction to expand the existing facility in a letter dated June 21, 2017 (Appendix C). The results of this investigation indicated that there is no significant archival information or cultural artifacts in the vicinity of the Navy building, and thus the site is not eligible for nomination to the NRHP. West Virginia SHPO has concurred with this recommendation. A viewshed analysis also recommended that no historic-age buildings identified within the viewshed of the proposed project are eligible for the NRHP. West Virginia SHPO has also concurred with this recommendation in a letter dated August 8, 2018 (Appendix C).

### ***Proposed Facility Operations***

Operation of the ECTC facility on NETL property would have no significant effect on cultural resources since no additional land disturbance would occur.

## **4.5 Water Resources**

### **Potable Water**

#### **Affected Environment**

The main source of potable water for the NETL-Morgantown site is from the city of Morgantown municipal water supply system, via the Morgantown Utility Board (MUB). The prime source of this drinking water comes from the Monongahela River via intakes to the water treatment plant in Morgantown. These intakes are located several river miles upstream from the proposed site. A secondary source of water for the city is the Cobun Creek Reservoir located south of Morgantown. The reservoir is only used during dry periods or when problems arise with the Monongahela River source. No known uses of groundwater as a potable water source have been identified at the NETL-Morgantown site.

#### **Environmental Consequences**

##### ***Proposed Annex Construction***

The proposed construction of the ECTC annex would have no significant effect on the potable water resources of the area because the entire area is supplied by municipal water derived from intakes on the Monongahela River and the Cobun Creek Reservoir located several miles upstream from the site. No groundwater drinking sources exist in the area, and the hydrological isolation of the area would preclude any disturbances to nearby groundwater resources.

##### ***Proposed Facility Operations***

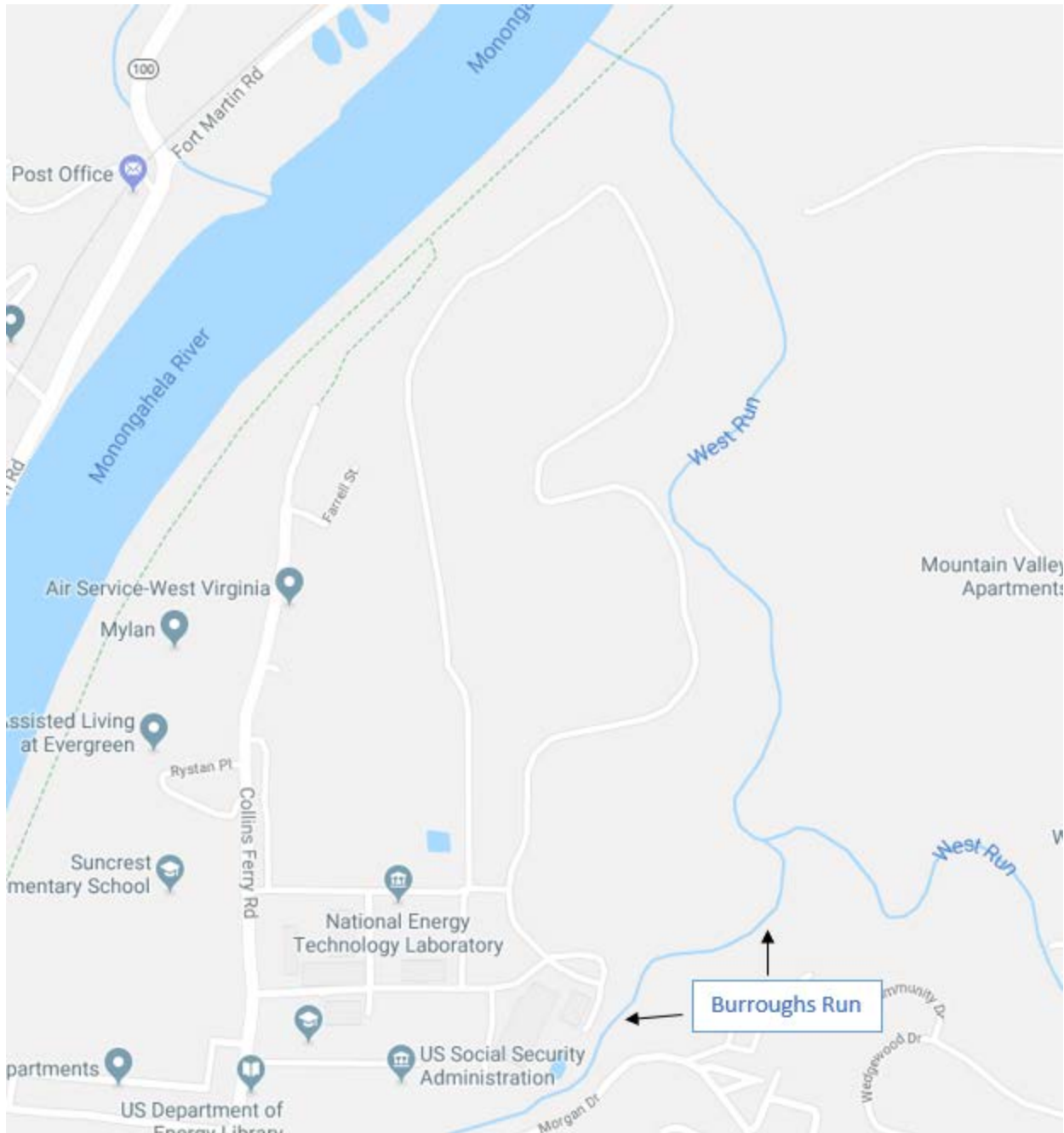
The proposed operation of the ECTC facility would have no significant effect on the potable water resources of the area because the entire area is adequately supplied by municipal water derived from intakes on the Monongahela River and the Cobun Creek Reservoir located several miles upstream from the site. No groundwater drinking water sources exist in the area, and the

hydrological isolation of the area would preclude any disturbances to nearby groundwater resources. The water usage of the ECTC facility is expected to be similar to the water usage of NETL-Morgantown's B-25, and there is no knowledge of any historic potable water shortages at the NETL-Morgantown site (NETL Facility Operations and support personnel). NETL has also established objectives to reduce potable water usage across all three sites. In particular, to address the goals of Executive Order (E.O.) 13693 of March 19, 2015, Planning for Federal Sustainability in the Next Decade, NETL set an objective to reduce water consumption intensity based on a baseline of 23.3 gallons per gross square foot (gal/gsf) by 2 percent annually through FY 2020. NETL's overall FY 2017 potable water intensity was 10.2 gal/gsf, which represents a 56.2 percent decrease in water consumption, based on the 23.3 gal/gsf baseline (NETL 2017 Annual Site Environmental Report).

## **Surface Water**

### **Affected Environment**

The NETL-Morgantown site is located completely within the Monongahela River drainage basin. The site is bordered to the west by the Monongahela River and to the north and east by West Run, a small tributary to the Monongahela. Burroughs Run, a tributary to West Run, is also located south and east of the site (Figure 7). The Monongahela River, which is formed at Fairmont (West Virginia) by the West Fork River and the Tygart Valley River, is used extensively for commercial transportation and recreation. The river and overall Monongahela watershed water quality has historically been degraded along its course due to coal-mining activities, industrial use, discharge from polluted tributaries, defective septic systems, non-point agricultural resources, and most recently activities related to Marcellus and Utica Shale drilling. West Run is currently listed as impaired with conditions not allowable (CNA)-biological contamination on West Virginia's approved 2016 Integrated Water Quality Monitoring and Assessment Report. This same report lists the upper Monongahela River as currently impaired with fecal coliform contamination. However, significant progress has been made in improving the water quality of the watershed to be in compliance with the Federal Water Pollution Control Act Amendments of 1972, the Clean Water Act of 1977, and the Water Quality Act of 1987, as implemented by the West Virginia Department of Environmental Protection (WVDEP). In particular, West Run had Total Maximum Daily Loads (TMDLs) developed in 2014 for aluminum, fecal coliform, iron, and pH contamination, and a TMDL for the current CNA-biological contamination is projected to be developed no later than 2022. The Monongahela River had a TMDL developed in 2002 for aluminum contamination, and tributaries to the Monongahela River as a whole had other TMDLs developed in 2002 for metals contamination, such as iron and manganese. A TMDL for the current fecal coliform contamination in the Monongahela River is currently in development (2016 West Virginia Integrated Water Quality Monitoring and Assessment report; Metals and pH TMDLs for the Monongahela River Watershed, West Virginia).



**Figure 7. Location of Burroughs Run, West Run, and the Monongahela River**

At the NETL-Morgantown site, the river flows in a northeasterly direction and forms the northwest boundary of the site. The nearest construction of the proposed facility would be approximately 400 feet from the river bank. The 100-year floodplain of the Monongahela River does not extend much beyond the main channel of the river due to the extremely steep banks in the area. No components of the ECTC would be situated within the 100-year floodplain of the Monongahela River. West Run flows in a northerly direction and forms the eastern and northern boundary of the NETL-Morgantown property. The 100-year floodplain boundary of West Run extends only 60 feet onto the NETL property due to the steep banks. The proposed ECTC facility



would not be situated within the 100-year floodplain of West Run.

## **Environmental Consequences**

### ***Proposed Annex Construction***

The proposed construction of the ECTC annex would have negligible impacts on the surface water resources of the area. Temporary seeding, best management practices, and erosion and sedimentation control measures would be in place throughout construction to minimize any degradation in the water quality and composition of the stormwater runoff from the site. Vegetated areas between the construction area and the receiving waters would also help to mitigate any siltation problems.

NETL would follow WVDEP's requirements of the West Virginia National Pollutant Discharge Elimination System (NPDES) Stormwater Program regarding construction stormwater permitting. The WV NPDES Stormwater Program requires operators of construction sites that disturb one acre of land or greater, including smaller sites that are part of a larger common plan of development, to obtain authorization to discharge stormwater under an NPDES Construction Stormwater General Permit (WVDEP Website). NETL would therefore need to obtain a WVDEP Stormwater Construction Permit before any soil disturbance may occur, and would need to follow any necessary best management practices or other requirements imposed by the permit.

NETL would also continue to comply with the MUB, Article 929, Stormwater Management and Surface Water Discharge Control, including the need for a Stormwater Erosion and Sediment Permit (Article 929, Stormwater Management and Surface Water Discharge Control). Stormwater retention ponds are not likely to be required during construction activities (NETL Facility Operations support personnel) and are not included in any current design documents but if required, they will be placed to ensure they do not impact wetlands in close proximity to the ECTC facility.

### ***Proposed Facility Operations***

During regular operation of the facility, the limited stormwater collected would be controlled through a stormwater drainage system ultimately discharging to West Run. Due to the small area of stormwater collection and the low-quality water found in West Run, no significant impact from stormwater is expected in the receiving waters. Stormwater retention ponds will not be required during ECTC operational activities (NETL Facility Operations support personnel) and are not noted in any current design documents.

## **Groundwater**

### **Affected Environment**

Bedrock beneath NETL is part of the Conemaugh Group. The Conemaugh Group consists of fractured shales, siltstones, and sandstones, with a few thin limestone and coalbeds. Two aquifers

of the Conemaugh Group, the Morgantown Sandstone and the Grafton Sandstone, outcrop around the NETL site. Wells nearest NETL facilities have yields of 0.1 liters per second (1.6 gallons per minute) or less (NETL Groundwater Protection Plan, 2016). Immediately beneath the project site, and overlying the Morgantown Sandstone, is the Clarksburg Shale.

Overlying the bedrock and underlying most of NETL are alternating layers of unconsolidated Lake Monongahela sediments (clay, silt, and sand), including three water-bearing clayey sand layers (NETL Groundwater Protection Plan, 2016). Locally, water within these sand layers flows toward the surface streams.

The West Virginia State Health Department has not labeled NETL as a wellhead protection area (DOE, METC, Environmental Baseline Characterization, 1993). A wellhead protection area is defined by section 1428 of the Safe Drinking Water Act (42 U.S.C. 300f-300j-9) as “the surface and subsurface area surrounding a water well or well field, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or well field.”

## **Environmental Consequences**

### ***Proposed Annex Construction***

The use of hazardous materials during construction (i.e., fuel, cement curing aids, sealants, and fill used from other areas) could, if not properly handled, cause direct impacts to groundwater sources. Because the NETL site is not labeled as a wellhead protection area and does not provide an important recharge area for water wells, the risks of impact to humans using groundwater would be minimal.

The quantity of groundwater recharge at the project site would also be impacted. Groundwater recharge would decrease due to an increased impervious area over the project site soil. Decreased infiltration could be caused by the compaction effect of heavy machinery and/or materials used during construction. However, this increase in impervious area would have a low impact on the quantity of groundwater being recharged onsite due to the relatively small footprint of the site.

### ***Proposed Facility Operations***

The operation of the proposed NETL facility would not significantly affect groundwater within the project area. The new building would decrease the infiltration rate of rainwater. This impact would be considered low, however, because the new facility would cover a relatively small recharge area.

## 4.6 Air Quality and Greenhouse Gases

### Affected Environment

#### National Ambient Air Quality Standards

A review of air quality for the general project site was completed utilizing the National Ambient Air Quality Standards (NAAQS) database, maintained by the U.S. Environmental Protection Agency (EPA). The NAAQS database was created in August 1999 and lists whether a specific area is currently meeting or in attainment for air quality parameters. The NETL facility is located in Morgantown, West Virginia, in Monongalia County, an area currently in attainment for all six principal (or criteria) air pollutants, which include ozone, carbon monoxide (CO), particulate matter (PM-10 and PM-2.5), sulfur dioxide, nitrogen dioxide, and lead (EPA Green Book website, February 2017 and August 2018).

#### National Emission Standards for Hazardous Air Pollutants

The Morgantown site is not currently regulated under the National Emission Standards for Hazardous Air Pollutants (NESHAP) Program. The site does not emit more than 10 tons per year of any single designated toxic air pollutant or more than 25 tons per year in aggregate of all toxic air pollutants, which would otherwise qualify it as a major source requiring regulation under the Clean Air Act for listed toxic air pollutants. The Morgantown site does not perform nuclear program work and does not have radiological emissions, which would be covered by NESHAP. The Morgantown site estimates its air emissions in quarterly and annual air emission inventories to analyze the cumulative effect of all projects and facilities. Table 3 displays the 2017 Air Emissions Inventory for the Morgantown site (NETL 2017 Annual Site Environmental Report).

**Table 3. 2017 Air Emissions Inventory – Morgantown**

<b>Pollutant</b>	<b>Estimated Emissions (lbs./yr.)</b>
Aldehydes	0.014
Benzene	0.00004
Carbon Dioxide	3,048
Carbon Monoxide	6.00
Chlorine	0.0000002
Ethylbenzene	0.0003
Formaldehyde	0.021
Nitrogen Oxide	4.50
Particulate Matter (PM), Condensable	0.15
PM, Filterable	0.12
PM, Total	0.52
PM, PM10, Filterable	0.02
PM, Total	0.30
Sulfur Dioxide	0.04
Sulfur Oxides	0.03
Toluene	0.0002
TOC	0.024
VOC	0.70
Xylene, Mixed Isomers	0.0001

## **Greenhouse Gases**

GHGs trap heat in the atmosphere and have been associated with global climate change (EPA, 2013b). The Intergovernmental Panel on Climate Change (IPCC) states that multiple lines of evidence point to continued climate change and that human activities (particularly those resulting in increasing levels of GHGs) are a significant contributing factor to this change (IPCC, 2013). The six key GHGs are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). The burning of fossil fuels, including diesel, gasoline, and natural gas, emit CO<sub>2</sub> and CH<sub>4</sub>. GHG emissions resulting from the construction and operation of the ECTC would be included in NETL's site-wide accounting, which is reported in its yearly Annual Site Environmental Report, the annual Site Sustainability Report, and also tracked as part of the International Organization for Standardization (ISO) 14001/Occupational Health and Safety Assessment Series (OHSAS) 18001 certification efforts. NETL has also set objectives for the FY 2019 *ES&H Management Plan (EMP) Addressing GHG Emissions* supporting E.O. 13693 to reduce Scope 1 and 2 GHG emissions by 40 percent by FY 2025, using an FY 2008 baseline of 27,100 metric tons (MT) carbon dioxide equivalent (CO<sub>2</sub>e), reduce Scope 3 GHG emissions by 40 percent by FY2025, using an FY 2008 baseline of 6,452 MT CO<sub>2</sub>e; and annually monitor and track Scope 3 greenhouse gas emissions associated with employee commuting and required travel and training. Carbon dioxide emissions as a result of overall electricity and natural gas usage at NETL-Morgantown are estimated to be approximately 25.6 million pounds of CO<sub>2</sub>e in FY 2017 (NETL Facility Operations support personnel and NETL 2017 Annual Site Environmental Report).

## **Environmental Consequences**

### ***Proposed Annex Construction***

During construction, the project would have two temporary effects on air quality: an increase in emissions by heavy construction equipment and an increase in dust by construction activities. This project would require the use of material-handling and earth-moving equipment. Dust and exhaust particulate emissions from heavy equipment operations would temporarily degrade air quality in the immediate construction zone. The increase in air particulates would be minimized by the performance of the work in compliance with the requirements of the Air Pollution Control Act (Act 245-1972, as amended); West Virginia Title 45 Legislative Rule, Series 17 – To Prevent and Control Particulate Matter, Air Pollution from Materials Handling, Preparation, Storage, and Other Sources of Fugitive Particulate Matter; and all other applicable state and local regulations. Mitigation measures would include best management practices, such as applying water to exposed surfaces or stockpiles of dirt when windy or dry conditions promote problematic fugitive dust emissions.

Particulate matter in the form of fugitive dust is not expected to have a significant effect offsite. The area averages 160 days per year of precipitation and the disturbed area would be limited to approximately two acres. There is a high probability that the disturbed area would receive natural moisture on a regular basis to help control emissions naturally. Areas such as cut slopes and fill zones would be re-vegetated, using seed and mulch. The size and scope of this construction project would not be expected to generate fugitive dust or PM in amounts that would be noticed

outside the construction zone itself. Construction traffic is expected to emit negligible amounts of PM. A comparison of emission studies conducted on projects with higher vehicular traffic per day than that projected for construction of the ECTC facility showed that the PM emissions were well below the threshold emissions. The construction activities associated with the proposed annex would have a minor impact on GHG production at the NETL site due to the use of heavy construction machinery and the increased traffic flow that is anticipated. The construction of the proposed ECTC annex is estimated to produce 625,636 kilograms (kg) (25.6 MT) of CO<sub>2</sub> by completion. This estimate was arrived at using a proposed construction period of 15 months and derived estimates for equipment, working days, and diesel consumption (including truck deliveries). The CO<sub>2</sub> emission associated with the transportation of 24 construction employees is estimated to be 82,909 kg (82.9 MT) of CO<sub>2</sub>. All calculations are shown in Appendix E.

### ***Proposed Facility Operations***

The ECTC would become the hub for NETL combustion activities. Combustion work currently being conducted in Building-6 on the Morgantown site would move to the new facility. The maximum potential to emit for B-6 is currently limited by the available air and natural gas supplies with an upper limit of 10,000 standard cubic feet per hour (scfh) of natural gas. The new ECTC would be limited by the facility natural gas compressor, which would be designed for a max output of 7,000 scfh. The maximum potential to emit for the new facility would be 30 percent less than the current combustion facility at NETL.

No significant impacts are anticipated to air quality during facility operations, as long as exhaust systems meet requirements of the International Mechanical Code (IMC) (ECTC Preliminary Design Report and NETL Thermal Sciences Team personnel).

## **4.7 Socio-Economics**

The existing and potential future social, economic, and land use conditions were evaluated through a review of the Bureau of Labor and U.S. Census Bureau statistics.

Social and economic trends are influenced by several regional and community growth factors. The following sections review the proposed project's influence on economics and employment, population and housing, residential and commercial displacements, and environmental justice.

## **Affected Environment**

### **Economics and Employment**

The total civilian labor force in the Morgantown, West Virginia, metropolitan statistical area increased from 40,500 workers in 2000 to 69,600 workers in November 2018 (U.S. Department of Labor, Bureau of Labor Statistics, [https://www.bls.gov/eag/eag.wv\\_morgantown\\_msa.htm](https://www.bls.gov/eag/eag.wv_morgantown_msa.htm)). Monongalia County's unemployment rate increased over the same period from 2.4 to 3.8 percent (U.S. Department of Labor, Bureau of Labor Statistics, [https://www.bls.gov/eag/eag.wv\\_morgantown\\_msa.htm](https://www.bls.gov/eag/eag.wv_morgantown_msa.htm)) (FRED Economic Data, Economic Research, Federal Reserve Bank of St. Louis, <https://fred.stlouisfed.org/series/WVMONO5URN>).

An examination of the occupational structure of the Monongalia County workforce in 2010 reveals that managerial/professional, service, and sales and office positions comprised more than 80 percent of all workers (Table 4; Reinke, 2015).

**Table 4. Occupational Structure by Percent, Monongalia County, 2010**

<b>Occupation</b>	<b>% of Monongalia County Workforce</b>
Managerial/Professional	40.6
Service	18.6
Sales and Office	22.1
Natural Resources, Construction, and Maintenance	10.0
Production, Transportation, and Materials Moving	8.7

The most recent employment statistics available from the U.S. Census Bureau indicate that the leading industry sectors in Monongalia County in 2017 were educational services and health care and social assistance (Table 5). Additional census results indicate that 74.6 percent of workers in Monongalia County are private wage and salary workers, 21.5 percent are government workers, and 3.8 percent are self-employed (Table 6).

**Table 5. Industry Sector by Percent of Employment, 2017**

<b>Industry Sector</b>	<b>Monongalia County Employment</b>	<b>Monongalia County Percent</b>
Agriculture, Forestry, Fishing, and Hunting and Mining	1,858	3.7
Construction	2,650	5.3
Manufacturing	2,809	5.6
Wholesale Trade	901	1.8
Retail Trade	5,329	10.7
Transportation and Warehousing, and Utilities	1,592	3.2
Information	679	1.4
Financing and Insurance, and Real Estate and Rental and Leasing	1,927	3.9

Industry Sector	Monongalia County Employment	Monongalia County Percent
Professional, Scientific, and Management, and Administrative and Waste Management Services	4,839	9.7
Educational Services, and Health Care and Social Assistance	17,822	35.8
Arts, Entertainment, and Recreation, and Accommodation and Food Services	5,398	10.9
Other Services, Except Public Administration	1,490	3.0
Public Administration	2,431	4.9
Total	49,725	100

Table 6. Class of Worker by Percent of Employment, 2017

Class of Worker	Monongalia County Employment	Monongalia County Percent
Private Wage and Salary Workers	37,092	74.6
Government Workers	10,711	21.5
Self-Employed in Own, Not Incorporated Business Owners	1,905	3.8
Unpaid Family Workers	17	0.0
Total	49,725	100

## **Environmental Consequences**

### ***Proposed Annex Construction***

The construction activities associated with the ECTC annex have an estimated duration of 15 months and are expected to create jobs for approximately 24 workers in the following areas: 3 general contractors, 3 or 4 electrical contractors, 3 or 4 mechanical contractors, 5 site-work contractors, 3 to 4 Information Technology (IT) contractors, and 3 to 4 electrical utilities contractors. Therefore, a temporary benefit to the local and regional economies is expected to result from the proposed action.

### ***Proposed Facility Operations***

It is anticipated that no new hires would be needed for the maintenance, operation, and use of the ECTC facility, as staff currently working at NETL-Morgantown would be utilized. The operation of the facility on NETL property would therefore have no significant long-term impact on the local economy.

## **Population and Housing**

The population of Monongalia County has increased over the last several decades. The county population grew from 63,714 persons in 1970 to 75,024 persons in 1980, 75,509 in 1990, 81,866

in 2000, 96,189 in 2010, and to 104,622 in 2016. However, the city of Morgantown experienced a population decline from 29,431 persons in 1970 to 26,809 persons in 2000 (-9.0 percent), followed by an increase to 31,073 in 2014 (15.9 percent). The population of Star City, the small community adjacent to NETL, has experienced an increase over that same period, with the population growing from 1,312 persons in 1970 to 1,366 in 2000 (4.0 percent), 1,825 in 2010 (33.6 percent), and to 1,917 in 2014 (5.0 percent) ([www.city-data.com](http://www.city-data.com)).

According to the 2010 census, an estimated total of 43,238 occupied housing units exist in Monongalia County (an increase of 29.3 percent from 33,446 in 2000), comprised of 22,139 owner-occupied units (an 8.6 percent increase from 20,391 in 2000) and 17,638 rental-housing units (a 55.4 percent increase from 11,350 in 2000). A total of 3,461 vacant housing units exist in Monongalia County. There are an estimated 11,701 total occupied housing units in the city of Morgantown. These units consist of 4,361 owned units and 7,360 rental-housing units. There is a total of 963 vacant housing units in the city of Morgantown. The 2010 census data lists 903 total occupied housing units in Star City, which consist of 406 owned units and 497 rental-housing units. There is a total of 98 vacant housing units in Star City (U.S. Census Bureau, American FactFinder).

## **Environmental Consequences**

### ***Proposed Annex Construction***

Construction of the ECTC annex would not significantly affect the existing population and housing in the immediate project area, the surrounding communities, or Monongalia County since the duration of construction activities is relatively short and only approximately 24 temporary workers would be needed during construction.

### ***Proposed Facility Operations***

Operation of the ECTC facility on NETL property would not significantly affect the existing population and housing in the immediate project area, surrounding communities, or Monongalia County since no new hires would result from this proposed project.

## **Environmental Justice**

Population data from the 2010 census were analyzed for the project area. These data indicate that Monongalia County is 91.0 percent white and 9.0 percent minority races; the city of Morgantown is 89.7 percent white and 10.3 percent minority races; and Star City is 88.7 percent white and 11.3 percent minority races. The median household income for Star City in 2015 was \$40,833, with approximately 13.5 percent of families with incomes at or below the poverty level ([www.city-data.com](http://www.city-data.com)). Therefore, there are no identifiable minority or low-income populations present near the NETL facility. Consequently, no disproportionate adverse effects on minority or low-income populations would result from the proposed action (U.S. Census Bureau, American FactFinder).



## **Environmental Consequences**

### ***Proposed Annex Construction***

Because there are no identifiable minority or low-income populations present, construction associated with the ECTC would not significantly affect the existing population with regard to environmental justice issues.

### ***Proposed Facility Operations***

Because there are no identifiable minority or low-income populations present, operation of the ECTC facility on NETL property would not have a significant effect on environmental justice issues in the project area, surrounding communities, or Monongalia County.

## **4.8 Utilities**

### **Affected Environment**

The following descriptions of existing utilities, new facility utility requirements, and proposed utility upgrades were originally described in the Building 42 (Navy Facility) Renovation, 95 percent submission (DOE, NETL, December 21, 2017).

#### **Existing Utilities**

The Navy site's B-42 is served by the following underground utilities: a 2-inch domestic water service fed from a nearby 6-inch domestic water line. The sanitary sewer consists of a septic tank and leach field. There is also an 8-inch fire line onsite.

The B-42 electrical service originates in the site main switchgear #2, cubicle 22. The service extends overhead down the walking trail with 3#4 American wire gauge (AWG) bare copper conductor. A dip pole exists and feeds a 150 kilovolt-ampere (kVA), 4160:208/120Y pad mount transformer with 3#4/0 AWG medium voltage (MV) conductors. The pad mounted transformer feeds main distribution panel DP-1 via an automatic transfer switch. The electrical service for the building is being reconfigured on the primary side. The overhead #4 conductors are required to be removed due to the ampacity of the conductors (170 Amperes) not being adequate for the future ECTC annex.

B-42's telecommunications service originates in the TS-9 pedestal and consists of 25 pair of copper aerial routed from handhole HH#6. There is currently no optical fiber cabling to the building. The existing telecommunications service would remain.

#### **New Facility Utility Requirements**

The following utilities would be required for the new facility: a 4-inch domestic water line, a 6-inch fire protection water line, a 3-inch (50 psi) natural gas line, and a 4-inch sanitary sewer line.

The ECTC annex would feature four high-bay test cells with common gas headers. The following specialty requirements would be needed for the facility: high-pressure oxygen (O<sub>2</sub>), CO<sub>2</sub>, and natural gas; medium-pressure air and hydrogen (H<sub>2</sub>); and (compressed) air preheat. Maximum combustor pressure is targeted to be 4,500 psi with a minimum delivery pressure to the head end of the combustor of 5,000 psi.

### **Proposed Utility Upgrades**

Utility upgrades are currently being installed as part of the B-42 renovation work. These utility upgrades (Appendix B) are being made in order to meet the anticipated increases in capacity needed to operate the ECTC annex. These renovations are covered under a CX signed on July 9, 2018.

The existing 2-inch domestic water service is being removed and a new 4-inch domestic water service is being installed. A new 6-inch fire protection water service is being installed. The existing septic tank and leach field is being replaced by a grinder pump lift station. A 6-inch diameter SDR-35 gravity sewer line will connect the B-42 building to the grinder pump station. A 2-inch diameter pressure pipe is being utilized to connect the grinder pump station to the public sanitary sewer gravity system located at the nearest sanitary sewer manhole (owned by the MUB), which is approximately 2,000 linear feet away.

A new natural gas line is being connected to an existing 4-inch, 50-psi Dominion Gas Company gas main located on the project site. Dominion Gas is tapping the existing gas line to extend a new line to a meter set located near the existing NETL property fence. A new 3-inch, 50-psi gas line is being connected to the outlet of the gas meter and extended to underground to a valved and capped connection located at the proposed gas compressor pad located on the project site. A 2-inch, 50-psi gas line is also being connected to the new 3-inch underground line to the compressor pad and extended to the building to feed gas-fired HVAC equipment located inside B-42. A new gas pressure regulation station is being installed along the exterior of the building to reduce the gas pressure from 50 psi to 14-inch water column pressure. A new low-pressure gas line is being extended up along the exterior of the building to the roof, where it is being connected to the HVAC rooftop unit and capped for further extension.

A new feeder sized as 3#500KCMIL MV-105 with a #4/0 thermoplastic, high heat, nylon (THHN) ground is being routed to the riser pole located adjacent to the B-42 service road. New primary overhead feeders consisting of 4#4/0 bare copper, seven-strand hard drawn aerial conductors would be routed on the existing power poles.

A new 5kV-rated pad mounted switchgear is being placed to serve the electrical distribution of the future building and backfeed the existing 150 kVA pad mounted transformer. The switchgear is similar to an S&C Vista 413 switchgear. The primary feeders consist of 3#500KCMIL MV-105 copper conductors with a #4/0 THHN ground from the dip pole. The switchgear is being sized to serve a future 1500 kVA pad mounted transformer and the future pad mounted air compressor. An empty duct bank system is being extended from the switchgear to a strategic location for the future building addition and air compressor.

Existing telecommunications raceway is being utilized from existing handhole HH#6 to the first utility pole located north of manhole MH2E. The telecommunications cabling would be routed overhead on the existing utility poles. Optical fiber and CAT3 will be extended to the building. The intent of this is for future cutover to minimize telecommunications downtime.

## **Environmental Consequences**

### ***Proposed Annex Construction***

All utility companies that service NETL would be notified of impending activities before construction begins. Utility company facilities onsite should not be impacted by the construction because all utilities for the ECTC annex would be extended from B-42, where planned feeds and current upgrades are being taken into account for the annex. Completion of connections would necessitate temporary shutdown of the utilities onsite.

### ***Proposed Facility Operations***

No significant impacts would be anticipated to local utility services during normal operation of the ECTC facility.

## **Noise and Vibration**

### **Affected Environment**

The proposed ECTC facility would be located within the existing NETL-Morgantown site. The siting of the facility on NETL's property was done with the intent of minimizing adverse impacts caused by any noise or vibration that might emanate from the facility. Facility design was also undertaken to minimize any potential offsite adverse impacts from the facility.

### ***Proposed Annex Construction***

Construction activities would result in temporary and short duration increases in noise and vibration levels. To minimize these potential adverse impacts, major construction activities would be scheduled during normal daylight working hours and would be implemented consistent with 23 CFR, Part 772.19, which requires construction contractors to minimize or eliminate adverse construction noise impacts to the community. Equipment noise levels are expected to be in the range of 65 to 70 decibels at a distance of 400 feet for each machine. This does not take into account any noise dampening caused by topography. Vibrations from these machines are expected to be below 0.031 inches/sec at the same distance of 400 feet. These vibrations would be well below the vibration damage threshold of 0.20 in/sec (U.S. Department of Transportation website). A map has been included that shows the nearest residential structure is approximately 300 feet from the perimeter of the construction area at the Navy site (Figure 8).

### ***Proposed Facility Operations***

The new ECTC facility would utilize appropriately installed mufflers to mitigate noise during

experimental activities to meet all OSHA noise exposure requirements for onsite personnel (NETL Thermal Sciences Team personnel).

Operation of the facility is expected to occur between 6 a.m. and 6 p.m. Testing would have an anticipated duration of one hour. The anticipated noise levels that would result from testing at the ECTC are well below levels that would cause even minor adverse offsite impacts, given that the nearest residential structure is approximately 300 feet from the perimeter of the ECTC facility (Figure 8). There are not expected to be any vibration-related impacts to this residential structure, or vibration impacts as a whole during project operations (NETL Thermal Sciences Team personnel).



Figure 8. Current Viewshed from the Viewpoint

## **4.9 Aesthetics and Visual Resources**

### **Affected Environment**

The proposed project is located within the existing NETL-Morgantown complex and is not located near sensitive visual resource receptors, such as recreational viewers. The facility would not block significant or scenic views and is not located on or near designated scenic highways. The proposed project is consistent with the visual characteristics of the NETL-Morgantown site. There are no aesthetically sensitive areas within the viewshed of the site.

After the proposed construction, the facility will be more visible (Figure 9), although seasonal tree crown volume and vegetation will obscure the view. The viewshed analysis provided to the West Virginia SHPO on July 13, 2018 (Appendix C) did not identify historic-age buildings within the viewshed of the proposed project that are eligible for listing on the NRHP. The West Virginia SHPO concurred with this recommendation in a letter to NETL received on August 8, 2018 (Appendix C).

The ECTC would be located in a remote part of the NETL site (relative to all other buildings onsite) in a wooded area. The building would be one story with four high-bay test cells. The roof line for three of these test cells would be 33 feet above grade and the fourth test cell would be approximately 44 feet above grade. Most of the building structure would be concealed by existing trees. The ECTC facility would have an irregular roofline of various heights, ranging from 20 feet (B-42) to 44 feet high (the test cells at the eastern side of the building). Trees in the vicinity of B-42, in general, are greater than 50 feet tall.



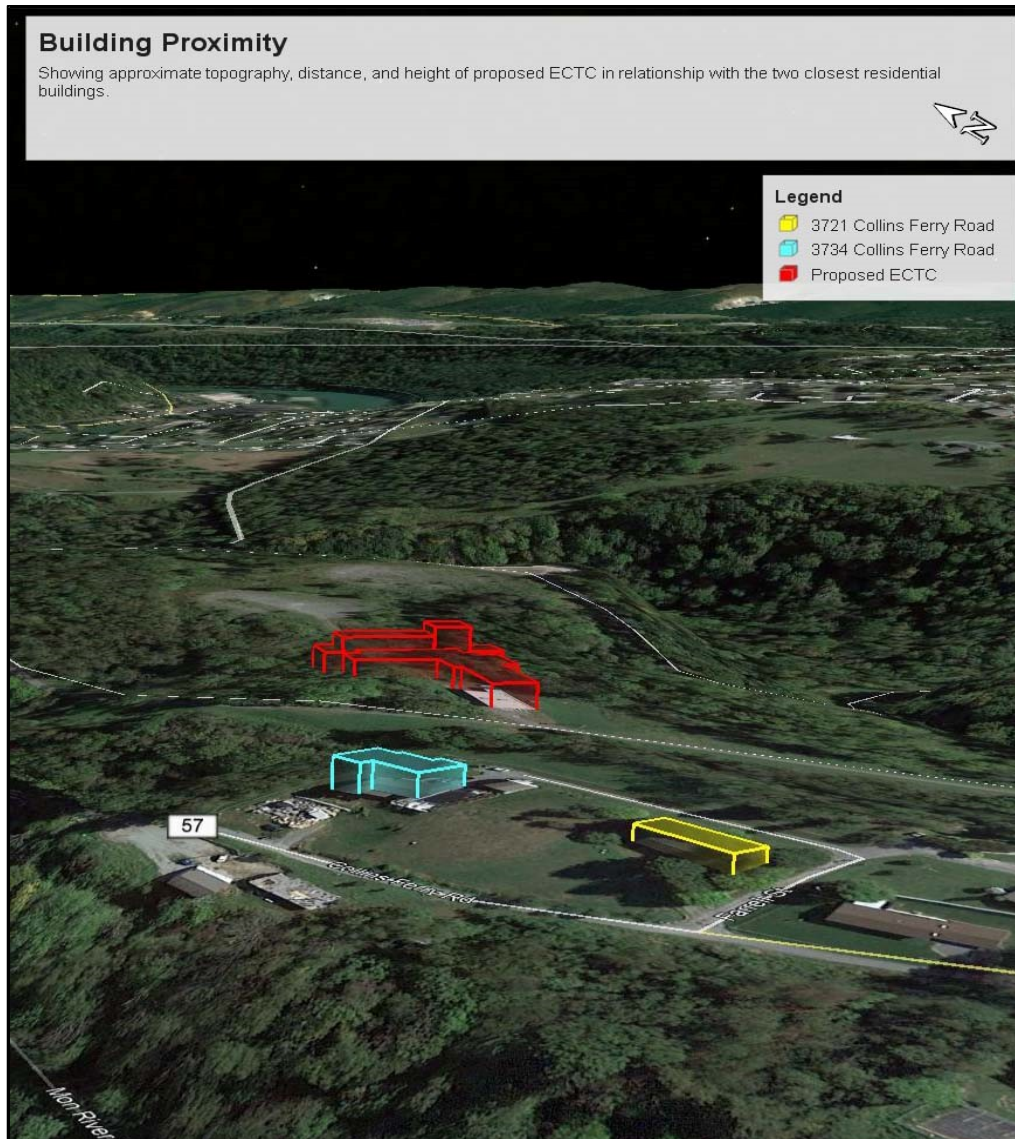


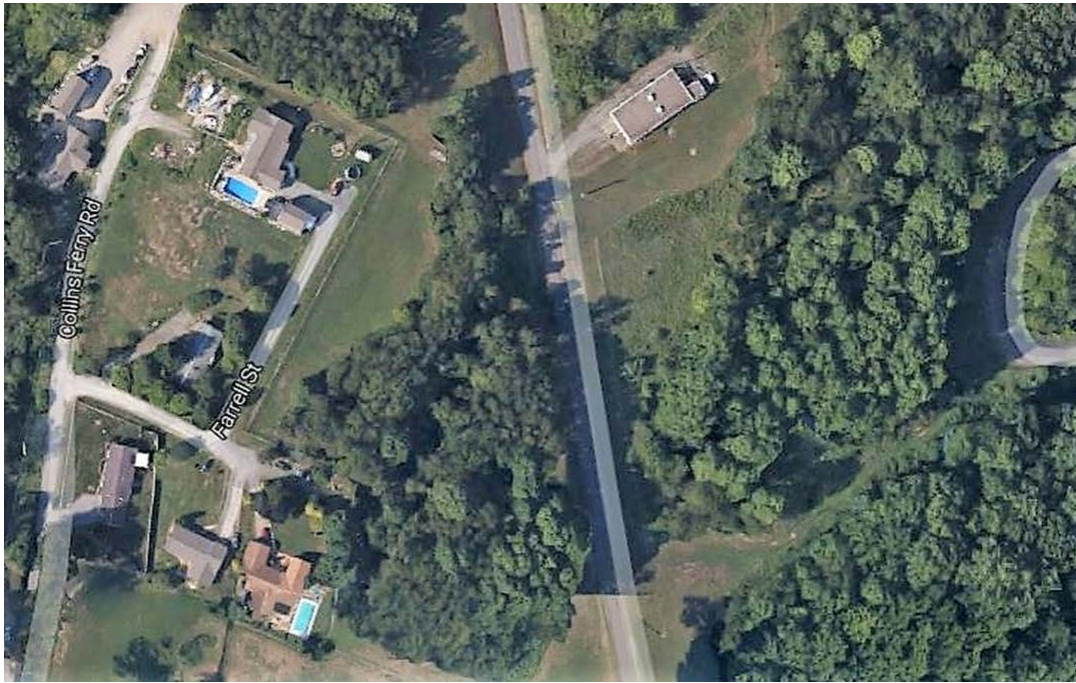
Figure 9. Building Proximity to the Two Closest Residential Buildings

## Environmental Consequences

### *Proposed Annex Construction*

Construction activities would occur in the location currently occupied by the former Navy site's B-42, in a currently undeveloped portion of the Morgantown site. As can be seen in Figure 9, existing B-42 is located approximately 340 feet east of 3734 Collins Ferry Road and approximately 480 feet northeast of 3721 Collins Ferry Road. Both houses are currently visible from the top of existing Building 42 (which is 20 feet tall). Reciprocally, B-42 is currently visible from both houses, though it is minimally visible depending on vantage point and seasonal tree crown volume. Because existing B-42 is at a slightly lower elevation (down a slight hillside), the view is somewhat obscured due to topography. Likewise, a dense swath of trees and

vegetation obstructs the view to and from existing B-42, especially in warmer months when foliage is thick.



**Figure 10. Aerial Photo of Current Building 42 and Nearest Residential Properties**

### ***Proposed Facility Operations***

Normal operation of the ECTC facility would include regular maintenance and landscaping activities, which would preserve the aesthetics of the facility and surrounding viewshed. Operations would also not result in visible plumes of smoke or steam (NETL Thermal Sciences Team personnel).

## **4.10 Regulated Waste**

### **Affected Environment**

All solid and hazardous waste that may be generated as part of this project would comply with NETL's Hazardous Waste Program, which ensures proper management, neutralization, and disposal of all hazardous wastes generated at NETL. Wastes are managed according to approved research and facility Safety Analysis and Review System (SARS) packages, stored in appropriate containers, and segregated as needed for compatibility in designated satellite accumulation areas at or near the point of generation. Wastes are handled, transported, and disposed of by trained hazardous waste personnel in accordance with applicable federal, state, and local regulations (NETL ES&H Hazardous Waste website). An emergency response organization is also available to respond for any major spills or incidents that may occur. There is an onsite facility, located in B-33, which takes care of collection, separation, and disposal of any hazardous wastes generated

onsite. The facility follows all applicable laws and regulations, namely the Resource Conservation and Recovery Act (RCRA), in order to dispose of the waste properly.

All non-hazardous waste would be managed according to applicable NETL procedures.

## **Environmental Consequences**

### ***Proposed Annex Construction***

Construction contractors must comply with several requirements that would be specified in contracts to do work for NETL (Clause H.7) regarding waste handling and disposal, including the following:

*The Contractor shall submit to the Contracting Officer's Representative (COR) their proposal to manage construction waste. Construction waste can include recyclable materials, non-regulated waste, and regulated waste. All identified waste streams from the construction effort will be reviewed and waste determinations will be made by NETL's Hazardous Waste Program Personnel via generator knowledge and/ or testing. Per regulatory requirements in 40 CFR 262, documentation of generator knowledge, test results, waste analysis, or other determinations must be kept for three years.*

*Recyclable materials generated (i.e., scrap metals, concrete) shall be recycled to the maximum extent practicable and all documentation (i.e., manifests) associated with the recyclable material shall be provided to NETL ES&H via the Project COR.*

*For all non-regulated wastes generated during the project, disposal documentation (i.e., recycle documentation, shipping invoices, and disposal receipts) shall be retained and a copy of each submitted to the COR after disposal.*

*All regulated wastes generated on-site during the project, including materials believed to contain lead, mercury, asbestos, PCBs (such as fluorescent lamp ballasts), circuit boards, or other hazardous/ regulated substances, requires notification and coordination with NETL's Hazardous Waste Program Manager (or designee at each NETL site), as well as, disposal via NETL's Hazardous Waste Program. Only designated NETL ES&H personnel or certified/ permitted specialized contractors are authorized to handle and dispose of regulated wastes. Specifically, all:*

- RCRA-regulated hazardous waste must be handled and disposed of by NETL via NETL's Hazardous Waste Program.*
- Toxic Substances Control Act (TSCA) waste (asbestos, lead-based paint chips, PCB wastes, etc.) may be handled and processed by the Contractor/ Subcontractors only if the identified Contractor/Subcontractor has all appropriate and necessary certifications and permits for the specific generated waste and, upon project completion, provides all related documentation, including disposal documentation, to the COR.*



Any solid and hazardous waste that may be generated as part of this project would comply with NETL's Hazardous Waste Program referenced above and follows NETL procedures regarding waste and spill management.

Oversight for construction contractors is provided through NETL's Site Operations Services 3 (SOS3) contract. Contractors provide oversight, inspections, and record-keeping for construction contractors, and report back to federal representatives regarding applicable onsite construction projects (NETL Facility Operations support personnel).

### ***Proposed Facility Operations***

Operational waste streams have not yet been identified. Typical waste from project operations would only be gaseous emissions with components such as CO<sub>2</sub>, CO, and nitrogen oxide (NO<sub>x</sub>), with no solid wastes expected to be generated as part of normal project operations. Small amounts of soot could be generated as a byproduct of experimental operations if gas mixtures are not correctly calibrated (NETL Thermal Sciences Team personnel). However, if any solid or hazardous waste is generated as part of the operation of the ECTC facility, these would likely be covered under current site permits and managed as part of NETL's Hazardous Waste Program, which follows NETL procedures regarding solid and hazardous waste control.

## **4.11 Traffic**

### **Affected Environment**

All vehicular traffic entering and leaving the NETL-Morgantown site must access the site via Collins Ferry Road (CR 57) and pass through the security gate. To establish a baseline of traffic levels at NETL-Morgantown, data collected from NETL vehicular speed monitoring apparatus from late September to October 2017 was analyzed. Results of this analysis showed that an average of approximately 360 vehicles enter the site per weekday between the hours of 6 a.m. and 10 a.m. This range was selected to capture vehicles entering from the time of site opening through mid-morning, and to exclude duplicative counting of vehicles exiting/returning at lunch and end of day departures. The NETL-Morgantown site also has an onsite daycare center that has a parking lot with a maximum capacity of approximately 30 cars. Access to this daycare facility is through a gate separate from the main NETL-Morgantown entrance and does not add to the onsite traffic numbers (NETL Facility Operations support personnel). In addition to residential housing (houses and apartments), other businesses and public facilities located along Collins Ferry Road include: Mylan Pharmaceuticals, Inc., Social Security Office, various office buildings and store fronts, Suncrest Elementary School, Assisted Living at Evergreen, and Mountaineer Early Learning Center daycare. Based on a 2017 traffic count report, the annual average daily traffic (AADT) volume on Collins Ferry Road north of Burroughs Street in 2017 was 6,948 vehicles, which is a 5 percent decrease compared to the average AADT volume of the prior three years (7,316 vehicles from 2014 through 2016) (Morgantown Monongalia Metropolitan Planning Organization – 2017 Traffic Count Report). A small number of these vehicle counts (approximately 300-400) can be attributed to NETL-Morgantown traffic, based on the numbers captured in the NETL vehicular speed monitoring apparatus.

## **Environmental Consequences**

### ***Proposed Annex Construction***

Automotive transportation impacts would be limited to construction activities conducted by up to approximately 24 construction-related contractors (described in detail in the Economics and Employment section of this document) and an estimated 2 deliveries per day to the construction site. This would be a negligible addition to the current automotive and truck transportation along Collins Ferry Road and vehicles entering the NETL-Morgantown site, based on the baseline NETL-Morgantown traffic levels and the approximately 7,000 daily vehicles on Collins Ferry Road counted in the 2017 Morgantown Monongalia Metropolitan Planning Organization Traffic Count Report.

### ***Proposed Facility Operations***

There would be no new employees at NETL related to the operation of the ECTC. In addition, there is projected to be only one additional gas delivery to the NETL site per month for the operation of the ECTC, which would be a negligible increase from baseline NETL-Morgantown and approximately 7,000 daily Collins Ferry Road traffic counts. Therefore, no significant impacts to traffic are expected related to operation of the ECTC facility at NETL-Morgantown.

## **4.12 Public and Occupational Health and Safety**

### **Affected Environment**

This project would occur on the grounds of NETL-Morgantown and would thus follow all of NETL's established health and safety programs and protocols, which includes programs such as injury/illness reporting, confined space, and electrical safety. These programs are mostly defined by the 440 series of NETL procedures and by the CFR, as well as any applicable industry standards. Since all hazards would be mitigated to a safe state and managed onsite with well-defined processes and procedures, it is not expected for any significant impact to occur to offsite resources.

## **Environmental Consequences**

### ***Proposed Annex Construction***

Construction of the proposed ECTC facility would follow the SARS process (Procedure 421.1-00.04). The SARS processes define and analyze all possible hazards related to the project and provide mitigations to those hazards.

### ***Proposed Facility Operations***

The project would follow the research and development (R&D) SARS process (NETL Procedure 421.1-00.01) for operational activities within the facility after construction.

## **Accident and Intentional Destructive Act Analysis**

Due to the nature of the proposed ECTC operations involving combustion-related research activities with compressed gases, a reasonably foreseeable accident that could occur at the ECTC facility could involve accidental explosions related to combustion experiments or stored compressed gases. This type of event would most directly impact employees and visitors of the ECTC facility present at the time of the incident. Two houses in close proximity to the ECTC facility (located approximately 340 feet east of 3734 Collins Ferry Road and approximately 480 feet northeast of 3721 Collins Ferry Road, respectively) may also be impacted by an accidental explosion at the ECTC facility. However, the probability of an accidental explosion is low due to several factors. NETL employees who use compressed gas cylinders, welding, flame-or arc cutting equipment, facility custodians, and line managers of users of compressed gas cylinders are required to take a training course titled “Handling Compressed Gas Cylinders” to comply with NETL Procedure 440.1-01.43, “Safety Requirements for Portable Compressed Gas Containers.” Thus, NETL employees working at the ECTC facility would be properly trained on how to use these compressed gases as part of experimental activities.

If an accidental explosion were to occur, the construction of the four test cells would most likely mitigate and limit the scale of the accident. The typical interior and exterior wall construction of the four test cells would consist of 30-inch thick concrete walls reinforced with #8 and #5 bars. Thus, it is likely that any accidental explosion that might occur would be adequately contained within a given test cell and would not impact other portions of the ECTC facility or the two houses in close proximity.

The occurrence of an accident during the course of ECTC facility construction activities would also be unlikely, given the extensive safety requirements of external construction contractors working at NETL. Given the extensive amount of training and safety requirements of NETL employees and contractors, and the relative construction strength of the proposed ECTC test cells, further analysis of construction and operation-related accidents at the ECTC facility is not warranted.

In terms of intentional destructive acts, NETL-Morgantown is a federal facility bounded by fencing and is guarded 24 hours a day by trained security staff. Vehicular security patrols occur throughout the site, including the proposed ECTC facility grounds. Federal and contractor employees working at NETL are required to receive a security badge to access the facility, and employees are required to display these badges at all times while on site. Employees are also subject to a variety of general and specialized training requirements, including training on security awareness. Access to the NETL-Morgantown site is controlled by a gated entrance staffed by security guards. Employees can only enter the site after presenting their badge to a security guard, or by using their badge to open the gate outside of regular site hours (6 a.m. to 6 p.m.). Employee vehicles are subject to random security checks, and all delivery vehicles are searched prior to entering the site. Security must be notified at least 24 hours in advance of any non-NETL employees visiting the site, and up to 180 days in advance for foreign nationals entering the site (as documented in NETL’s Safeguards and Security Handbook and NETL Order 142.3, Unclassified Foreign National Visits and Assignments Policy). Upon approval of access,

non-NETL employees visiting the site must be escorted at all times by a badged employee while on site. The proposed ECTC facility would contain supplies of high-pressure oxygen, carbon dioxide, natural gas, and medium-pressure air and hydrogen for combustion activities, which are unlikely targets for acquisition by terrorists. Research at NETL-Morgantown does not involve nuclear program work, and thus does not contain nuclear materials subject to theft by terrorists. Due to the high levels of physical and operational security, the relative isolation of the NETL-Morgantown site and proposed ECTC facility, and the lack of high-value materials to be utilized at the proposed ECTC facility, the likelihood of intentional destructive acts as a result of the ECTC construction and operation is low, and additional analysis of possible intentional destructive acts is not warranted.

## **5.0 Cumulative Impacts Associated with the Proposed Action**

Guidelines prepared by the Council on Environmental Quality (CEQ) for implementing NEPA broadly define cumulative impacts as the “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Environmental impacts from development that may occur in the future combined with impacts from past development have cumulative effects on the environment.

### **5.1 Construction Impacts**

Past development of the ECTC annex site involved the construction of the current B-42 and installation of communication antennas relocated from the east-central portion of the NETL site to the current location at the north end of the site. The purpose of this action was to maximize the distance between antennas to reduce electromagnetic interference and upgrade equipment and operation capabilities. No significant adverse impacts were identified as a result of these previous relocation and construction activities. The proposed ECTC annex construction would continue the development of the north end of the NETL-Morgantown site.

Future major general plant projects identified as part of NETL’s Construction Safety and Analysis Review System (CSARS) process at the NETL-Morgantown site include the demolition of four buildings (B-9, B-11, B-27, and B-27A) and a roof replacement for B-24, as well as laboratory renovations to B-17. The roof replacement project is expected to be completed by the first part of 2019. The demolition projects have been initiated as of early June 2018 with estimated completion dates in 2019. The laboratory renovations will begin in 2019 (NETL Facility Operations support personnel). These projects would occur within the main building complex at NETL-Morgantown, and the closest project activity (the demolition of B-27) would be more than 2,000 feet from the proposed ECTC annex construction activities. The impacts from these demolition and roof repair activities are expected to include temporary impacts from noise, vibration, wastes, traffic (from increased numbers of construction vehicles), and minor air quality degradation from residual dust and greenhouse emissions from construction vehicles. All NETL construction oversight, safety, and waste management procedures previously described for the ECTC annex construction would also be applied to these projects. Given the distance

between the B-42 (Navy) site and construction sites and the waste and safety oversight procedures employed by NETL, no additive impacts to the environment are anticipated, even if construction activities are completed concurrently. Therefore, current cumulative impacts would be limited to the minor impacts from the ECTC annex construction previously identified in this document.

Future development outside of the NETL-Morgantown boundary may involve the construction of a new bridge crossing the Monongahela River and connecting to WV 100 and I-79, along with an extension of Collins Ferry Road to this new bridge. Additional proposed developments in the area include new road connections between Van Voorhis/West Run and Collins Ferry Roads to US 119. Although these proposed developments have not been formalized or approved to date, these developments were recommended to be carried forward for further evaluation ahead of twelve other proposed traffic reconstruction projects, including the no-build alternative, to the Morgantown Monongalia Metropolitan Planning Organization (MMMPO) Policy Board (Morgantown Monongalia Metropolitan Planning Organization I-79 Access Study – Final Report). The construction of the ECTC facility will have negligible impacts related to these possible new roadway developments, as the ECTC construction activities will result in minor, temporary increases in traffic on Collins Ferry Road from approximately 24 construction-related contractors and an estimated two deliveries per day to the construction site. These construction activities will also likely be completed prior to any new roadway development in proximity to the NETL-Morgantown site.

## **5.2 Operational Impacts**

Operation of the ECTC annex would include combustion experiments similar to those already undertaken at NETL, although at higher pressures. Waste streams from these experiments will be controlled by following existing NETL procedures for waste management, and noise impacts would be mitigated through the use of properly installed mufflers. Given these mitigation measures, experimental activities conducted at the ECTC will have negligible/minor impacts and would not contribute to cumulative impacts to the environment. Because there will be no new employees hired for the operation of the ECTC facility, traffic increases will be negligible and limited to one additional gas delivery to the NETL-Morgantown site per month. This additional monthly delivery will also have negligible impact related to any future roadway development in proximity to the NETL-Morgantown site.

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## **Appendix A: Distribution List**

The following is a list of persons and agencies who received a copy of this Environmental Assessment.

***State and Local Offices***

Office of the Governor – The Honorable Jim Justice  
State Capitol  
1900 Kanawha Boulevard, East  
Charleston, WV 25305  
(304) 558-2000 or 1 (888) 438-2731

Ms. Kelly A. Bragg  
Energy Development Specialist  
Office of Energy  
State of West Virginia  
1900 Kanawha Boulevard  
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(304) 558-2234 (ext. 2004)  
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City Hall  
City of Morgantown  
389 Spruce Street  
Morgantown, WV 26505  
(304) 292-5154  
[wkawecki@morgantownwv.gov](mailto:wkawecki@morgantownwv.gov)

Mr. Aaron Johnson  
Adult Services Librarian  
Morgantown Public Library  
373 Spruce Street  
Morgantown, WV 26505  
(304) 291-7425

Ms. Susan Pierce  
Director and Deputy State Historic Preservation Officer  
West Virginia Division of Culture and History  
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Capitol Complex  
1900 Kanawha Boulevard East  
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*Tribes of Monongalia County, West Virginia*

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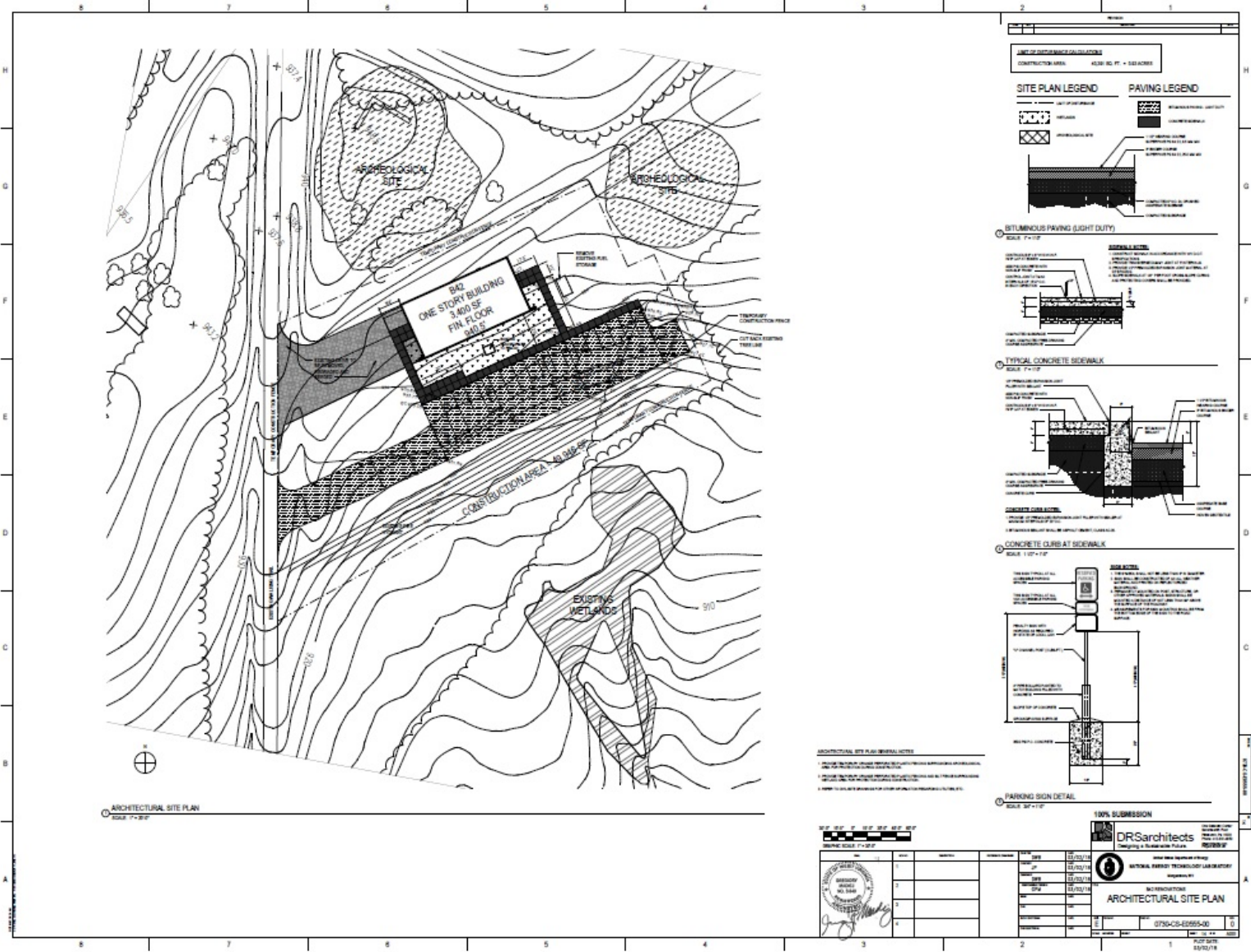
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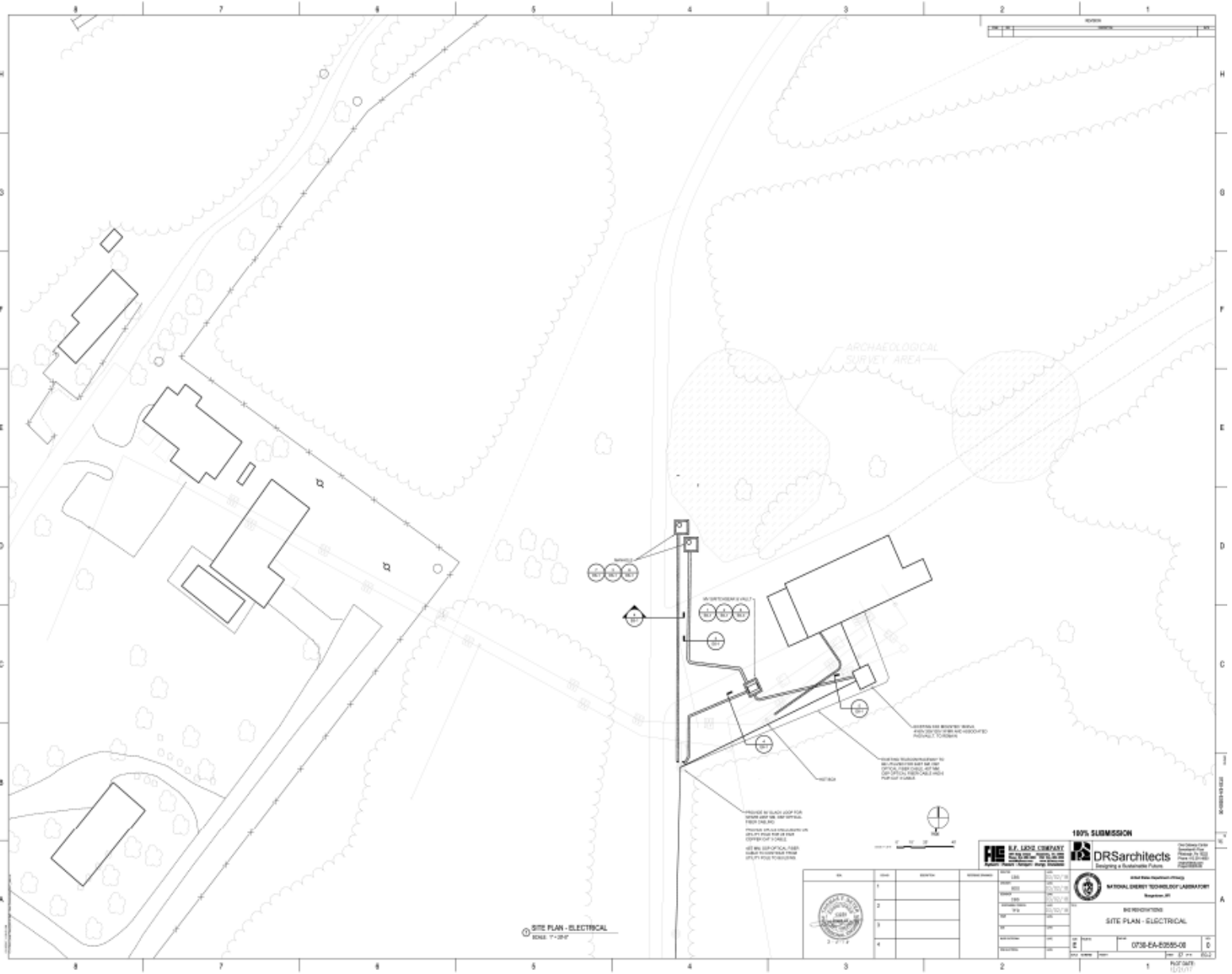
## **Appendix B: Site Location Maps, Drawings, and Photos**





Architectural Site Plan from 100-Percent Design





Site Plan – Electrical from 100-Percent Design



## **Appendix C: Correspondence and Agency Consultation**

**Correspondence to Ms. Deborah Carter, Project Leader, U.S. Fish and Wildlife Service, West Virginia Field Office, Ecological Services (September 29, 2010). No attachments.**



**NATIONAL ENERGY TECHNOLOGY LABORATORY**  
Albany, OR • Morgantown, WV • Pittsburgh, PA



September 29, 2010

Deborah Carter  
Project Leader  
U.S. Fish and Wildlife Service  
West Virginia Field Office  
Ecological Services  
694 Beverly Pike  
Elkins, WV 26241

Subject: Request for consultation under NEPA on proposed federal project in Monongalia County

Dear Ms. Carter,

The U.S. Department of Energy's (DOE) National Energy Technology Laboratory (NETL) is proposing to construct and operate a Performance Verification Laboratory (PVL) facility to be located on the Morgantown NETL site in West Virginia.

NETL will design, construct, and make operational a DOE PVL facility for verifying the energy performance of selected appliances and equipment to facilitate improved enforcement of DOE energy conservation standards and DOE/Environmental Protection Agency (EPA) Energy Star® programs. The PVL facility will build upon the capabilities of the NETL's existing Appliance Technology Evaluation Center (ATEC). A description of the proposed project and graphics showing its location are enclosed.

As part of DOE's coordination and consultation responsibilities, and to comply with both Section 7 of the Endangered Species Act of 1973, as amended, and provision of the Fish and Wildlife Coordination Act, we would appreciate receiving any information you have on wildlife resources, including threatened and endangered species or critical habitat, in the project area.

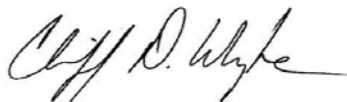
Based on the scope of the proposed project, DOE plans to prepare an Environmental Assessment (EA) in accordance with requirements of the National Environmental Policy Act (NEPA) of 1966 to analyze, document, and disseminate information on the potential environmental consequences of the project. If your initial review concludes that no endangered or threatened species (or their habitat) are present in the project area, and that neither protected species nor their habitat would be affected by the proposed action, a written acknowledgement of that conclusion would be appreciated. The information that you provide will be considered in preparing a draft EA, which will be provided to you for review upon availability.

Should you require additional information, or have any questions or comments about this project, please contact the DOE's National Energy Technology Laboratory as soon as possible at the following:

Mr. Cliff Whyte  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P. O. Box 880, MS B07  
Morgantown, WV 26507-0880  
Telephone: (304) 285-2098  
Email: [Cliff.Whyte@netl.doe.gov](mailto:Cliff.Whyte@netl.doe.gov)

Thank you for your assistance.

Sincerely,

A handwritten signature in black ink that reads "Cliff D. Whyte". The signature is written in a cursive style with a long, sweeping underline.

Cliff Whyte  
NEPA Compliance Officer

Enclosure

**Correspondence from Ms. Barbara Sargent, Environmental Resources Specialist, Wildlife Diversity Program, Wildlife Resources Section (April 5, 2002). No attachments.**

SENT BY: U.S. DOE/NETL

: 5- 3- 2 : 8:29AM :

U.S. DOE/NETL-

NETL:# 8/ 3



**DIVISION OF NATURAL RESOURCES**

Wildlife Resources Section  
Operations Center  
P.O. Box 67

Elkins, West Virginia 26241-3235  
Telephone (304) 637-0245  
Fax (304) 637-0250

**Bob Wise**  
Governor

**Ed Hamrick**  
Director

April 5, 2002

Mr. Lloyd Lorenzi, Jr.  
U.S. Department of Energy  
National Energy Technology Laboratory  
P.O. Box 10940  
Pittsburgh, PA 15236-0940

Dear Mr. Lorenzi:


We have reviewed our files for information on rare, threatened and endangered (RTE) species and wetlands for the area of the proposed facilities upgrade at the National Energy Technology Laboratory in Monongalia County, WV.

We have no known records of any RTE species or wetlands within the project area. The Wildlife Resources Section knows of no surveys that have been conducted in the area for rare species or rare species habitat. Consequently, this response is based on information currently available and should not be considered a comprehensive survey of the area under review.

Enclosed please find an invoice.

Thank you for your inquiry, and should you have any questions please feel free to call upon us.

Sincerely,

  
Barbara Sargent  
Environmental Resources Specialist  
Wildlife Diversity Program  
Wildlife Resources Section

enclosure

Correspondence to Ms. Susan Pierce, State Historic Preservation Officer, West Virginia  
Division of Culture and History (April 27, 2017). [Click here for attachment.](#)

Attachment Tools Department of Energy proposed new building site - Message (HTML)

File Message McAfee E-mail Scan ADOBE PDF Attachments Tell me what you want to do

Ignore Delete Archive Reply Reply Forward Meeting IM More Move OneNote Actions Mark Unread Categorize Follow Up Translate Find Related Select Zoom

Delete Respond Move Tags Editing Zoom

FP Pozzuto, Fred susan.m.pierce@wv.gov; Triulzi, Jill E. (CONTR); Sholtis, Johnna N. (CONTR) 1 4/27/2017

Department of Energy proposed new building site

ECTCprelimsiteplans.pdf .pdf File

Susan,

It was very good talking with you again this morning. The proposed new building will be located at the Department of Energy's Morgantown Campus of NETL (*National Energy Technology Laboratory*). This new proposed building will be called the Energy Conversion Technology Center (*ECTC*). The description below briefly describes the project;

*"The proposed building of approximately 16,800 square feet will be composed of two structural systems. The area of the blast resistant test cells will be constructed of reinforced, cast-in-place concrete and the remainder of the building will be conventional steel framing and masonry construction. As an exterior skin, the concrete structure of the test cell will be exposed expressing the function of this component, while the remainder of the steel frame building will be clad with an aluminum panel system."*

Also for your information I've attached some preliminary site plans. The "Navy site" is currently our preferred over the "B-20 site" because there's much less earthwork yielding an approximately \$500K savings. More site plans as they relate to cultural resources will be provided to you in my preliminary letter that you should be receiving in a week or two.

Thanks again. I'll be in touch.

*Fred E. Pozzuto, P.E., P.G.*  
Acting Associate Director  
NEPA Compliance Division  
O: 304-285-5219  
B: 304-719-1767  
C: 724-255-3637

Correspondence to Ms. Susan Pierce, State Historic Preservation Officer, West Virginia Division of Culture and History (June 1, 2017). [Click here for attachment.](#)



NATIONAL ENERGY TECHNOLOGY LABORATORY  
Albany, OR • Morgantown, WV • Pittsburgh, PA



June 1, 2017

Ms. Susan Pierce, State Historic Preservation Officer  
West Virginia Division of Culture and History  
The Culture Center - Capitol Complex  
1900 Kanawha Boulevard East  
Charleston WV 25305-0300

**Subject: Request for consultation under NEPA on proposed federal project at the National Energy Technology Laboratory (NETL) Monongalia County, West Virginia**

Dear Ms. Pierce,

The United States Department of Energy's (DOE) National Energy Technology Laboratory (NETL) is proposing to construct and operate a new Energy Conversion Technology Center (ECTC) to be located at the NETL facility at 3610 Collins Ferry Road, Morgantown, West Virginia. The ECTC will be a multi-use, high pressure combustion facility.

"The proposed building of approximately 16,800 square feet will be composed of two structural systems. The area of the blast resistant test cells will be constructed of reinforced, cast-in-place concrete and the remainder of the building will be conventional steel framing and masonry construction. As an exterior skin, the concrete structure of the test cell will be exposed expressing the function of this component, while the remainder of the steel frame building will be clad with an aluminum panel system."

Please refer to attachments (*9 sheets total*) indicating the proposed ECTC site with super-imposed archeological data from previous studies.

In 1992 an Environmental Assessment (EA) was completed by the Chesapeake Division Naval Facilities Engineering Command for construction of the B-42 Navy facility that was to be used by the Navy (*property leased from DOE to the Navy*) for the Navy Material Data Systems Group (NMDSG) Military Affiliate Radio Station (MARS). This EA concluded that the site files of the West Virginia Division of Culture and History, Historic Preservation Section, contained no references to prehistoric, historic, or architectural resources within the boundary of NETL-Morgantown site and the proposed action would not impact significant cultural properties.

In association with this EA, Ecology and Environment (1992) completed a Phase 1A/B cultural resource investigation. Ecology and Environment, Inc. identified a stone foundation, a twentieth century cinderblock/concrete foundation, and a concrete pad within the northern portion of the NETL-Morgantown property during Phase I archaeological investigations. Subsurface testing of the parcel identified two clusters of historic artifacts. Shovel tests produced non-diagnostic materials in one sampling area and kitchen, household, and architectural materials that dated from the nineteenth century to modern times in a second area. The study concluded that the deposits



lacked integrity and were not eligible for nomination to the National Register of Historic Places. To date, the site has not been listed formally with the West Virginia Division of Culture and History.

In 1993, it was determined by the West Virginia Division of Culture and History that despite differing interpretations which appear to have led to a conflict at that time, the site with potential cultural significance was to be avoided for the original Navy project, and therefore there would be no effect to the resource, and the Navy proceeded.

DOE is committed to its stewardship responsibilities for managing cultural resources on DOE-owned land and property impacted by DOE operations. In keeping with that responsibility, the DOE developed a comprehensive program of Cultural Resources Management and completed a site-wide cultural resources report later in 1993. The primary purpose of this site-specific cultural resource management plan was to integrate historic preservation requirements with ongoing operations and maintenance of the facility for compliance with relevant statutes and regulations. This Cultural Resources report did identify cultural and prehistoric resources in proximity to the proposed ECTC facility at the former Navy Site. Phase II evaluator investigations were deemed warranted should this area be impacted in the future; such evaluation also is assumed under the necessities of compliance with Section 110 of the NHPA (National Historic Preservation Act).

As part of DOE's coordination and consultation responsibilities, and to comply with provisions implementing Section 106 of the National Historic Preservation Act of 1966, we would appreciate receiving any additional information you have regarding historic or cultural properties in the project area. In addition, we look forward to receiving your input on a possible Phase II Archaeological Investigation.

Based on the scope of the proposed ECTC project, DOE plans to prepare an Environmental Assessment (EA) in accordance with requirements of the National Environmental Policy Act to analyze, document, and disseminate information on the potential environmental consequences of the project. Information that you provide will be incorporated and appropriately addressed in the EA. Moreover, when the Draft EA is circulated for public comment, your office will be sent an electronic and hard copy where you make provide any further comments.

Thank you for your assistance. Should you require additional information, please call me at (304) 285-5219, send faxes to (304) 285-4403 or send e-mail to [fred.pozzuto@netl.doe.gov](mailto:fred.pozzuto@netl.doe.gov). Please address written correspondence to:



Mr. Fred Pozzuto, Acting Associate Director  
NEPA Compliance Office  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880 MS B07  
Morgantown, West Virginia 26507-0880

w/Attachments

**Correspondence from Ms. Susan Pierce, State Historic Preservation Officer, West Virginia Division of Culture and History (June 21, 2017). No attachments.**



*The Culture Center*  
1900 Kanawha Blvd., E.  
Charleston, WV 25305-0300

**Randall Reid-Smith, Commissioner**

Phone 304.558.0220 • www.wvculture.org  
Fax 304.558.2779 • TDD 304.558.3562  
EEOWA Employer

June 21, 2017

Mr. Fred Pozzuto  
Acting Associate Director  
NEPA Compliance Office  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880 MS B07  
Morgantown, West Virginia 26507

RE: Proposed Project at the National Energy Technology Laboratory (NETL)  
Near Morgantown, Monongalia County, West Virginia  
FR: 17-732-MG

Dear Mr. Pozzuto:

We have reviewed the information that was submitted for the aforementioned project. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

According to the submitted information, the U.S. Department of Energy, National Energy Technology Laboratory (NETL) proposes to construct and operate a new Energy Conversion Technology Center (ECTC) at its NETL facility located at 3610 Collins Ferry Road, Morgantown, Monongalia County, West Virginia. The proposed building will be approximately 16,800 square feet in size.

Archaeological Resources:

As indicated in the submitted materials, archaeological investigations were conducted in 1991 and 1992 in advance of the then proposed relocation of the Military Affiliate Radio Station facility. This resulted in the identification of two archaeological sites, 46MG90, an historic era stone foundation and artifact scatter associated with the Sinclair Farmstead, and 46MG91, a prehistoric stone tool and debitage scatter possibly dating to the Middle Woodland Period. Site 46MH90 was initially identified by Ecology and Environment and determined to have been disturbed when the structure was demolished. However, later survey efforts by Goodwin and Associates determined that intact deposits lie beneath the disturbed soils. Goodwin and Associates also identified 46MG91. In their 1992 cultural resource management plan, Goodwin recommends that both sites undergo evaluation for inclusion in the National Register of Historic Places. To our knowledge, the National Register evaluations were not conducted. Although the status and condition of these sites is currently unknown, it is our understanding that the Department of Energy has avoided impacting their locations in the past. Because this is no longer possible with the currently proposed project, we request that these sites undergo National Register evaluations prior to initiating construction activities in their locations. We will provide further comment upon receipt of a proposed Phase II scope of work for each site.



June 21, 2017  
Mr. F. Pozzuto  
FR: 17-732-MG  
Page 2

Architectural Resources:

We cannot complete our review with the information provided. Based on the submitted documentation, there are properties located within sight of the proposed project area, some of which may be eligible for inclusion in the National Register of Historic Places. To evaluate the proposed project's indirect and visual effects on architectural properties, we request you forward to our office color photographs and original dates of construction of all properties that are forty-five (45) years or older and will have a line of sight of the proposed project area, including access roads. Your photographs need to be keyed to a USGS topographic or aerial map and should accurately depict from various angles any architectural resources, building or structural details, and outbuildings. Your photographs also need to document the project area by showing general views, known disturbances, and any rock outcrops. Panoramic shots of surrounding landscapes and viewsheds are also necessary for us to complete our review. Be sure to include images of the proposed project area from the position of the individual properties. If nearby buildings or structures are less than forty-five (45) years old or will not be within the line of sight of the proposed project, please confirm in writing.

We also ask that you provide our office with detailed maps and project plans, including engineering or architectural drawings, so that we may better evaluate any effects the undertaking may have on nearby architectural properties.

We will provide additional comments upon receipt of the requested information; however, we reserve the right to request additional information, including the completion of Historic Property Inventory forms.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Lora A. Lamarre-DeMott, Senior Archaeologist, or Mitchell K. Schaefer, Structural Historian, at (304) 558-0240.*

Sincerely,



Susan M. Pierce  
Deputy State Historic Preservation Officer

SMP/LLD/MKS

Correspondence to Ms. Susan Pierce, State Historic Preservation Officer, West Virginia Division of Culture and History (November 17, 2017). [Click here for attachment.](#)



**NATIONAL ENERGY TECHNOLOGY LABORATORY**  
Albany, OR • Morgantown, WV • Pittsburgh, PA



November 17, 2017

ATTN: Ms. Susan Pierce, State Historic Preservation Officer  
West Virginia Division of Culture and History  
The Cultural Center - Capitol Complex  
1900 Kanawha Boulevard East  
Charleston, WV 25305-0300

**Subject: NETL Morgantown, Phase II Work Plan for the Sinclair Farmstead site (46MG90), Monongalia County, West Virginia FR# 17-732-MG**

Ms. Pierce,

As part of the Environmental Assessment (DOE/EA-2066D) for the Energy Conversion Technology Center located at the Department of Energy's (DOE) National Energy Technology Laboratory (NETL) Morgantown campus and following our consultants suggested Cultural Resource Management Plan, please find enclosed a proposed Phase II Work Plan for the Sinclair Farmstead site (46MG90). This Phase II work plan was prepared by our archeological consultant Michael Baker International, Inc. (Michael Baker) due to the potential for impacts to the site that could result from the proposed development.

Our office had previously outlined this project in a letter to the WVDCH dated June 1, 2017. The site is located within the National Energy Technology Laboratory property located in Morgantown, West Virginia and was first identified in 1992. The investigations will assist in making recommendations as to the eligibility of the Sinclair Farmstead site for nomination to the National Register of Historic Places by conducting intensive documentary research and limited archaeological excavations within the site boundary established during Phase I survey in 1992.

Phase II investigations of the Sinclair Farmstead site will involve intensive documentary research and limited archaeological excavations to make recommendations as to the site's eligibility for nomination to the NRHP. Previous excavations recorded a moderate level of disturbance surrounding the foundation, particularly in the western portion of the site; recovered a limited number of artifacts; and recorded no features excepting the foundation. Based on these results, Phase II investigations will emphasize documentary research rather than intensive excavations. Information gathered during the documentary research and results of prior Phase I surveys will inform the Phase II excavation plans. Michael Baker will excavate up to five (5) 1m x 1m test units at locations where earlier artifacts were recovered, within the foundation, and at the locations of any outbuildings or other features noted in historic documentation. The excavations will serve to identify the extent of the ante-bellum occupational horizon, including any cultural features.

The proposed work will be conducted pursuant to the instructions and intents set forth in Section 101(b)(4) of the National Environmental Policy Act of 1969; Section 1(3) and 2(b) of Executive Order 11593; Section 106 of the National Historic Preservation Act, as amended; 36CFR 800, as revised August 5, 2004; West Virginia Code § 29, as amended; and the *Guidelines for Phase I, II, and III Archaeological Investigations and Technical Reports* (Trader 2001), prepared by the West

Virginia Division of Culture and History (WVDCH). Key Michael Baker personnel will meet appropriate professional standards as outlined in *Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines*, Federal Register, Vol. 48, No. 190-September 29, 1983, Pt. IV, and formerly published in 36CFR § 61.

These Phase II efforts will be accomplished in six (6) Tasks as further explained in the attachment.

Further, under a separate cover letter we (NETL) will be sending a photographic package to a Mr. Mitchell Schaefer, Structural Historian of your office for his further review.

If you have any questions on the overall project or of an administrative nature, please call me at (304)285-5219 or email at [fred.pozzuto@netl.doe.gov](mailto:fred.pozzuto@netl.doe.gov). If you have any questions on the archeological aspects of the project or require additional information, please contact Ms. Kathryn Lombardi, M.A., R.P.A with Michael Baker by phone at 412-269-4615 or e-mail at [klombardi@mbakerintl.com](mailto:klombardi@mbakerintl.com).



Mr. Fred Pozzuto, Acting Associate Director  
NEPA Compliance Office  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880, M/S B07  
Morgantown, West Virginia 26507-0880

w/attachments

Ms. Lombardi (w/o attachments)



Correspondence to Mr. Mitchell Schaefer, Structural Historian, West Virginia Division of Culture and History (November 20, 2017). [Click here for attachment.](#)



**NATIONAL ENERGY TECHNOLOGY LABORATORY**  
Albany, OR • Morgantown, WV • Pittsburgh, PA



November 20, 2017

ATTN: Mr. Mitchell Schaefer, Structural Historian  
West Virginia Division of Culture and History  
The Cultural Center - Capitol Complex  
1900 Kanawha Boulevard East  
Charleston, WV 25305-0300

**Subject: NETL Morgantown, Phase II Photo documentation of Sinclair Farmstead site (46MG90), Monongalia County, West Virginia FR# 17-732-MG**

Mr. Schaefer,

As part of the Environmental Assessment (DOE/EA-2066D) for the Energy Conversion Technology Center located at the Department of Energy's (DOE) National Energy Technology Laboratory (NETL) Morgantown campus and following our consultants suggested Cultural Resource Management Plan, please find enclosed our photo documentation for the Sinclair Farmstead site (46MG90). A Phase II work plan was prepared by our archeological consultant Michael Baker International, Inc. (Michael Baker) and sent to Ms. Susan Pierce for her review under a separate cover letter dated November 17, 2017.

As you may recall, our office had previously outlined this project in a letter to the WVDCH dated June 1, 2017. The site is located within the National Energy Technology Laboratory property located in Morgantown, West Virginia and was first identified in 1992. The investigations will assist in making recommendations as to the eligibility of the Sinclair Farmstead site for nomination to the National Register of Historic Places by conducting intensive documentary research and limited archaeological excavations within the site boundary established during Phase I survey in 1992.

Please provide any comments upon your review to our photo documentation concerning viewshed and any potential visual impacts that may be of concern.

If you have any questions on the overall project or of an administrative nature, please call me at (304)285-5219 or email at [fred.pozzuto@netl.doe.gov](mailto:fred.pozzuto@netl.doe.gov). If you have any questions on the archeological aspects of the project or require additional information, please contact Ms. Kathryn Lombardi, M.A.,R.P.A with Michael Baker by phone at 412-269-4615 or e-mail at [klombardi@mbakerintl.com](mailto:klombardi@mbakerintl.com).

Mr. Fred Pozzuto, Acting Associate Director  
NEPA Compliance Office

U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880, M/S B07  
Morgantown, West Virginia 26507-0880

w/attachments

Ms. Lombardi (w/attachments)

**Correspondence from Ms. Susan Pierce, State Historic Preservation Officer, West Virginia Division of Culture and History (December 15, 2017). No attachments.**



December 15, 2017

*The Culture Center*  
1900 Kanawha Blvd., E.  
Charleston, WV 25305-0300

**Randall Reid-Smith, Commissioner**

Phone 304.558.0220 • www.wvculture.org  
Fax 304.558.2779 • TDD 304.558.3562  
EEO/AA Employer

Mr. Fred Pozzuto  
Acting Associate Director  
NEPA Compliance Office  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880 MS B07  
Morgantown, West Virginia 26507

RE: Proposed Project at the National Energy Technology Laboratory (NETL)  
Proposed Phase II Work Plan – Site 46MG90  
FR: 17-732-MG

Dear Mr. Pozzuto:

We have reviewed the proposed Phase II work plan that was submitted for the abovementioned project. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

Archaeological Resources:

The Phase II work plan proposes to conduct a combination of intensive documentary research and limited archaeological excavations to determine whether 46MG90 has the potential to yield information associated with the lives of significant persons and its importance to the development of Monongalia County during the nineteenth century. Specifically, research will be conducted to gather information regarding the life of F.R. Sinclair and his status as a resident of Monongalia County, his Civil War service and his involvement in the local economies and politics. Research will also attempt to discover when the structures within the site were built and if either of them was constructed by F.R. Sinclair. Field investigations will include the excavation of up to five 1 x 1 meter test units across the site at locations suggested by the documentary research. Up to 250 historic era artifacts will be processed and analyzed. The results of the Phase II investigations will be submitted in a technical report. All work will meet federal and state standards and guidelines. We concur with the proposed Phase II work plan and look forward to reviewing the results.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Lora A. Lamarre-DeMott, Senior Archaeologist, at (304) 558-0240.*

Sincerely,

Susan M. Pierce  
Deputy State Historic Preservation Officer

SMP/LLD

**Correspondence from Ms. Susan Pierce, State Historic Preservation Officer, West Virginia Division of Culture and History (December 19, 2017). No attachments.**



**The Culture Center**  
1900 Kanawha Blvd., E.  
Charleston, WV 25305-0300

**Randall Reid-Smith, Commissioner**

Phone 304.558.0220 • www.wvculture.org  
Fax 304.558.2779 • TDD 304.558.3562  
EEC/AA Employer

December 19, 2017

Mr. Fred Pozzuto  
Acting Associate Director  
NEPA Compliance Office  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880 MS B07  
Morgantown, West Virginia 26507

RE: Proposed Project at the National Energy Technology Laboratory (NETL.)  
Proposed Phase II Work Plan – Site 46MG90  
FR: 17-732-MG-1

Dear Mr. Pozzuto:

We have reviewed the proposed Phase II work plan that was submitted for the abovementioned project. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

**Architectural Resources:**

Thank you for the project area photographs; however, we cannot complete our review with the information provided. In our letter dated June 21, 2017, we requested that you provide our office with detailed maps and project plans, including engineering or architectural drawings, so that we may better evaluate any effects the undertaking may have on nearby architectural properties. We specifically need to evaluate how the new building may visually affect those nearby resources. Thus, it will be useful if your drawings include accurate sizes and dimensions, as well as indicators illustrating how tall the building will be in comparison to the surrounding tree line.

In the event that the proposed building will exceed the height of the surrounding tree line, we will request color photographs and original dates of construction for all properties that will have a view of the proposed structure.

We will provide additional comments upon receipt of the requested information; however, we reserve the right to request additional information, including the completion of Historic Property Inventory forms.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Mitchell K. Schaefer, Structural Historian, at (304) 558-0240.*

Sincerely,

Susan M. Pierce  
Deputy State Historic Preservation Officer

SMP/MKS



Correspondence to Ms. Susan Pierce, State Historic Preservation Officer, West Virginia Division of Culture and History (April 19, 2018). [Click here for attachment.](#)



**NATIONAL ENERGY TECHNOLOGY LABORATORY**  
Albany, OR • Morgantown, WV • Pittsburgh, PA



April 19, 2018

Ms. Susan Pierce, State Historic Preservation Officer  
West Virginia Division of Culture and History  
The Culture Center - Capitol Complex  
1900 Kanawha Boulevard East  
Charleston WV 25305-0300

**Subject: Phase II Report: Archaeological Investigations at the Sinclair Farmstead site (46MG90), Monongalia County, West Virginia FR# 17-732-MG**

Dear Ms. Pierce,

The United States Department of Energy's (DOE) National Energy Technology Laboratory (NETL) is proposing to construct and operate a new Energy Conversion Technology Center (ECTC) to be located at the NETL facility at 3610 Collins Ferry Road, Morgantown, West Virginia. The ECTC will be a multi-use, high pressure combustion facility.

In support of the Environmental Assessment (EA) being prepared for the ECTC located at NETL's Morgantown complex and following our established Cultural Resource Management Plan, please find enclosed two (2) hard copies of the Phase II Archeological II Report, two (2) photo-documentation CD's of the archaeological investigations, and two (2) hard copies of the Archeological Site Report for the Sinclair Farmstead site (46MG90). The Phase II report was prepared by Michael Baker International, Inc. (Michael Baker) following the Phase II Work Plan approved by the WVDCH in a letter dated December 15, 2017. Based upon the results of the Phase II investigations, the site is recommended as not eligible for nomination to the National Register of Historic Places.

Due to the scope of the proposed ECTC project, DOE plans to shortly release for public comment a Draft Environmental Assessment in accordance with requirements of the National Environmental Policy Act (NEPA) to analyze, document, and disseminate information on the potential environmental consequences of the project. This Phase II Archeological Report will be incorporated as an appendix in the Draft EA. Moreover, when the Draft EA is circulated for public comment, your office will be sent an electronic and hard copy whereby you may choose to provide any further comments.



If you have any questions on technical archeological aspects of the project or require additional information, please contact Ms. Kathy Lombardi with Michael Baker by phone at 412-269-4615 or e-mail [klombardi@mbakerintl.com](mailto:klombardi@mbakerintl.com). Should you require additional information, regarding the overall project please call me at (304) 285-5219, send faxes to (304) 285-4403 or send e-mail to [fred.pozzuto@netl.doe.gov](mailto:fred.pozzuto@netl.doe.gov). Please address written correspondence to:

A handwritten signature in black ink, appearing to read 'Fred Pozzuto', with a stylized flourish at the end.

Mr. Fred Pozzuto, Acting Associate Director  
NEPA Compliance Office  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880 MS B07  
Morgantown, West Virginia 26507-0880

w/Enclosures

CF: Michael Baker (Ms. Lombardi) w/o Encl.

**Correspondence from Ms. Susan Pierce, State Historic Preservation Officer, West Virginia Division of Culture and History (May 23, 2018). No attachments.**



*The Culture Center*  
1900 Kanawha Blvd., E.  
Charleston, WV 25305-0300

**Randall Reid-Smith, Commissioner**

Phone 304.558.0220 • www.wvculture.org  
Fax 304.558.2779 • TDD 304.558.3562

EEO/AA Employer

Mr. Fred Pozzuto  
Acting Associate Director  
NEPA Compliance Office  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880 MS B07  
Morgantown, West Virginia 26507

RE: Proposed Project at the National Energy Technology Laboratory (NETL)  
Proposed Phase II Archaeological Investigations – Site 46MG90  
FR: 17-732-MG-3

Dear Mr. Pozzuto:

We have reviewed the technical report that documents Phase II investigations at the Sinclair Farmstead site (46MG90). As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

Archaeological Resources:

The archaeological investigations included archival research and the excavation of five 1 x 1-meter test units. Archival documents indicate that Franklin R. Sinclair was a farmer and minor government official in Monongalia County who also served as a colonel during the Civil War and was a deacon of the Morgantown Baptist Church in 1866. It is unclear when Sinclair purchased the property containing the site, but historic maps demonstrate that the site area was owned by F.R. Sinclair in 1886. It is also unclear whether he lived on the property prior to 1900. Land records suggest that the original structure on the property was razed ca. 1930 and that, by 1960, a second structure had been built on the site.

Field investigations were concentrated in the portion of the site from where antebellum artifacts were recovered during the Phase I survey. An additional 57 artifacts were recovered, including whiteware, redware and porcelain sherds, glass container and window fragments, a marble dating to ca. 1910 - 1951, two complete beer bottles likely dating to ca. 1899-1914 and a glass canning jar lid liner that was manufactured between 1920 - 1960. The artifacts were recovered from construction and demolition strata associated with the former structures or from the plowzone. No artifacts were recovered from what is thought to have been the original living surface. No cultural features were identified. Field work conducted within the vicinity of the concrete block foundation and concrete pad found no evidence of these features.

June 21, 2017  
Mr. F. Pozzuto  
FR: 17-732-MG  
Page 2

Because archival research was not able to uncover significant information about the life of F.R. Sinclair or definitively link him to the site, 46MG90 is recommended as not eligible for the National Register of Historic Places under Criterion B. In addition, field work documented prior disturbance to the site. No cultural features or temporally discrete strata were identified. Therefore, the 46MG90 is also recommended as not eligible under Criterion D. We concur with these recommendations. We also concur that no further work is necessary.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Lora A. Lamarre-DeMott, Senior Archaeologist, at (304) 558-0240.*

Sincerely,



Susan M. Pierce  
Deputy State Historic Preservation Officer

SMP/LLD

Correspondence to Ms. Susan Pierce, State Historic Preservation Officer, West Virginia  
Division of Culture and History (July 13, 2018). [Click here for attachment.](#)



July 13, 2018

Ms. Susan Pierce, State Historic Preservation Officer  
West Virginia Division of Culture and History  
The Culture Center - Capitol Complex  
1900 Kanawha Boulevard East  
Charleston WV 25305-0300

**Subject: Architectural Resources (Viewshed) follow up as part of Phase II Report  
Archaeological Investigations at the Sinclair Farmstead site (46MG90), Monongalia County,  
West Virginia, FR# 17-732-MG-3**

Dear Ms. Pierce,

The United States Department of Energy's (DOE) National Energy Technology Laboratory (NETL) is proposing to construct and operate a new Energy Conversion Technology Center (ECTC) to be located at the NETL facility at 3610 Collins Ferry Road, Morgantown, West Virginia. The ECTC will be a multi-use, high pressure combustion testing facility.

In support of the Environmental Assessment (EA) being prepared for the ECTC located at NETL's Morgantown complex and following our established Cultural Resource Management Plan, a Phase II Archeological Report, was sent to your office on April 19, 2018 for the Sinclair Farmstead site (46MG90). This Phase II report was prepared by Michael Baker International, Inc. (Michael Baker) which followed the Phase II Work Plan approved in a letter from your office dated December 15, 2017. Based upon the results of Michael Baker's April 19<sup>th</sup> Phase II investigations, the site was recommended as not eligible for nomination to the National Register of Historic Places. Subsequently, your office responded on May 23, 2018 concurring with Michael Baker's findings contained in the Phase II Archeological report.

This letter is in response to correspondence from your office dated June 21, 2017, and December 15, 2017, in which you requested documentation of the project's potential indirect and visual effects to historic age (>45 years of age) buildings, structures, objects, or districts that may be present with in the viewshed of the proposed new ECTC building, along with detailed maps and project plans, including engineering or architectural drawings. This letter contains a brief project description and presents the results of a viewshed analysis and field investigation. Attachments to this letter include mapping (Attachment 1), viewshed figures and photographs (Attachment 2), field investigation photographs (Attachment 3), and detailed project plans (CD only). Please note, the building plans are at a 15% design level, and much of the drawings include details unrelated to viewshed matters. Further, please note that many features of the proposed ECTC have been scaled down due to funding and mission related matters.



### **Project Description**

The Department of Energy is proposing to construct and operate a new Energy Conversion Technology Center (*ECTC*) to be located on the National Energy Technology Laboratory (*NETL*) campus at 3610 Collins Ferry Road, in Morgantown, West Virginia (*Attachment 1: Mapping*). The proposed *ECTC*, a high-pressure combustion facility, will be built as an extension to the existing Building 42 (*former Naval Facility*). The Navy constructed the existing building in 1992 to support two adjacent former radio transmitter towers. The Navy recently vacated the building and turned it over to *NETL*. The proposed undertaking will enlarge the existing 3,440 square-foot rectangular building to an L-shaped building of approximately 10,000 - 16,800 square feet; it will be comprised of two structural systems: concrete and steel. The area of the test cells will be constructed of reinforced, cast-in-place concrete for safety purposes and the remainder of the building will be conventional steel framing and masonry construction. As an exterior skin, the concrete structure of the test cell will be exposed expressing the function of this component, while the remainder of the steel frame building will be clad with an aluminum panel system. The new building will have an irregular roofline of various heights, ranging from 20-feet (*existing building*) to 44-feet high (*the test cells at the eastern side of the building*) (*Refer to CD for ECTC 15% Specifications and Drawings*). Trees in the vicinity of existing Building 42, in general, are greater than 50 feet tall.

### **Viewshed Analysis**

Existing Building 42 is located approximately 340 feet east of 3734 Collins Ferry Road and approximately 480 feet northeast of 3721 Collins Ferry Road. Both houses are currently visible from the top of existing Building 42 (*which is 20 feet tall*). Reciprocally, Building 42 is currently visible from both houses, though it is minimally visible depending on vantage point and seasonal tree crown volume. Because existing Building 42 is at a slightly lower elevation (*down a slight hillside*), the view is somewhat obscured due to topography. Likewise, a dense swath of trees and vegetation obstructs the view to-and-from existing Building 42, especially in warmer months when foliage is thick. The tree line is deeper near 3721 Collins Ferry Road, and thins in front of 3734 Collins Ferry Road. GoogleEarth Viewshed layering provides a tool that helped to approximate the view from each house toward the proposed undertaking at Building 42 (*proposed ECTC*), and from the top of the proposed *ECTC* (*maximum height of 44 feet*) toward the houses. The current view from 3721 Collins Ferry Road (*not taking into consideration tree coverage*) provides visibility of the top of Building 42. After the proposed construction, the *ECTC* will be more visible, though not dramatically. Once tree coverage is taken into consideration, the change in view from 3721 Collins Ferry Road will not be exceptional (*see Attachment 2: Viewshed Figures and Photographs for graphics depicting these concepts*). The current view from the north side of 3734 Collins Ferry Road (at approximately five-feet above ground level, again, not taking into consideration tree coverage), provides some visibility of the top of Building 42. After the proposed construction, the *ECTC* (*maximum height of 44 feet*) will be more visible, though tree coverage and vegetation will obscure the view (*see Attachment 2: Viewshed Figures and Photographs for graphics depicting these concepts*).

### **Field Investigation**

A field view conducted on April 5, 2018, revealed two historic-age houses within the viewshed of the proposed undertaking at Building 42: 3721 Collins Ferry Road and 3734 Collins Ferry Road (*Attachment 3: Photographs of Buildings*). Each property is discussed below. Several other properties that are conceivably within the viewshed of the proposed undertaking are not of historic age.

3734 Collins Ferry Road

3734 Collins Ferry Road is located approximately 340 feet west of Building 42. The property is located on a sloping lot bound between Farrell Street on its southeast and Collins Ferry Road on its northwest, and is bordered on its southeast and northeast by lands of the NETL. The property contains a circa 1960 dwelling, detached garage, in-ground pool, storage shed, and a large paved parking area. The house is a one-story, frame, single-family dwelling that is banked into the hillside so that its northwest (*rear*) façade rises two full stories in height. The house measures six bays wide by four bays deep and is constructed on a continuous concrete block foundation. Its exterior frame walls are clad in vinyl siding. Its side gable roof incorporates a front and rear intersecting cross gable and is clad in asphalt shingles. The house's window openings are fitted with a combination of one-over-one-light, double-hung, one-light fixed, picture, and one-by-one-light sliding vinyl sash windows. A one-story, two bay porch fronts the house's southeast (*front*) façade and a two-story, four-bay porch fronts the house's northwest (*rear*) façade. The house first appears on aerial imagery in 1960 (*Attachment 1: Mapping*), which matches the Monongalia County property record card for this parcel. The house, however, does not appear on the 1976 USGS quadrangle map or on the 1976 and 1977 aerial photographs (*Attachment 1: Mapping*). The house is clearly visible on the 1988 aerial, the 1994 USGS quadrangle map, and the 1997 aerial (*Attachment 1: Mapping*). A recent real estate listing provided a construction date of 1985, which corresponds with the review of USGS mapping and aerial photography. It is likely that the dwelling depicted on the 1960 aerial was demolished and that the subject home was constructed circa 1985. The house is a common twentieth-century single-family dwelling without architectural distinction and retains a low level of historic integrity. The house is likely less than 50-years of age, and does not appear to be eligible for the National Register of Historic Places (NRHP) and is not subject to the minor visual impacts resulting from construction of the proposed ECTC.

3721 Collins Ferry Road

3721 Collins Ferry Road is located approximately 480 feet southwest of Building 42. The property is located on a sloping corner lot bound between Farrell Street on its southeast and southwest and Collins Ferry Road on its northwest, and is bordered on its southeast by lands of the NETL. The property contains a circa 1955 dwelling. The house is a one-story, frame, single-family dwelling that is banked into the hillside so that its northwest (*rear*) façade rises two full stories in height. The house measures six bays wide by two bays deep and is constructed on a continuous concrete block foundation. Its exterior frame walls are clad in faux stone siding, and its side gable roof is clad in asphalt shingles. An interior chimney rises from the roof's southeast (*front*) slope. The house's window openings are fitted with one-over-one light, double-hung vinyl sash and one-by-one-light, sliding vinyl sash windows. A cut-away porch is located on the house's north corner. The house first appears on aerial imagery in 1960, which matches the Monongalia County property record card for this parcel. A review of USGS mapping and aerial photography supports the construction date (*Attachment 1: Mapping*). The house is a common mid-twentieth-century single-family dwelling without architectural distinction and retains a low level of historic integrity. The house does not appear to be eligible for the NRHP and is not subject to the minor visual impacts resulting from construction of the proposed ECTC. Given that neither of the historic-age buildings within the viewshed of the proposed undertaking appear to be eligible for the NRHP, it is recommended that no further historic resources investigations are warranted.

In compliance with Section 106 of the National Historic Preservation Act of 1966, we ask that you review our efforts and those of Michael Baker to identify any viewshed impacts on historic

properties contained herein for the proposed undertaking and concur with the findings of this report.

Due to the scope of the proposed ECTC project, DOE plans to shortly release for public comment a Draft Environmental Assessment in accordance with requirements of the National Environmental Policy Act (*NEPA*) to analyze, document, and disseminate information on the potential environmental consequences of the project. This Architectural Report will be incorporated as an appendix in the Draft EA. Moreover, when the Draft EA is circulated for public comment, your office will be sent an electronic and hard copy whereby you may choose to provide any further comments at that time.

If you have any questions on technical archeological/architectural aspects of the project or require additional information, please contact Ms. Kathy Lombardi with Michael Baker by phone at 412-269-4615 or e-mail [klombardi@mbakerintl.com](mailto:klombardi@mbakerintl.com). Should you require additional information, regarding the overall project please call me at (304) 285-5219, send faxes to (304) 285-4403 or send e-mail to [fred.pozzuto@netl.doe.gov](mailto:fred.pozzuto@netl.doe.gov). Please address written correspondence to:



Mr. Fred Pozzuto, Associate Director  
Environmental Compliance Division  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880 MS B07  
Morgantown, West Virginia 26507-0880

w/Enclosures

- Attachment 1: Mapping
- Attachment 2: Viewshed Figures and Photographs
- Attachment 3: Photographs of Buildings
- Attachment 4: Proposed ECTC Plans and Specifications (*CD only*)

CF: Michael Baker (*Ms. Lombardi*) w/o Encl.



**Correspondence from Ms. Susan Pierce, State Historic Preservation Officer, West Virginia Division of Culture and History (August 8, 2018). No attachments.**



*The Culture Center*  
1900 Kanawha Blvd., E.  
Charleston, WV 25305-0300  
**Randall Reid-Smith, Commissioner**  
Phone 304.558.0220 • www.wvculture.org  
Fax 304.558.2779 • TDD 304.558.3562  
West Virginia State Office

August 8, 2018

Mr. Fred Pozzuto, Acting Associate Director  
Environmental Compliance Division  
U.S. Department of Energy, National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880 MS B07  
Morgantown, West Virginia 26507

RE: Proposed Project at the National Energy Technology Laboratory (NETL)  
Architectural Resources (Viewshed) Report  
FR: 17-732-MG-4

Dear Mr. Pozzuto:

We have received your submission of July 13, 2018. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

Architectural Resources:

We have reviewed the submitted report and concur with the project consultant, Michael Baker's recommendations that the properties located at 3721 and 3734 Collins Ferry Road, approximately 480 and 340 feet from the proposed project, are *not eligible* for inclusion in the National Register of Historic Places. Both have undergone significant modifications over time and do not embody the distinctive characteristics of any particular type, period, or method of construction. There is also no reason to believe the two properties are associated with individuals or events that have influenced the broad patterns of our nation's history. Available aerial imagery and topographic mapping suggest all other surrounding properties that may have a view of the proposed undertaking were developed no earlier than the late 1970s; therefore, it is highly unlikely any of them would be deemed eligible for inclusion in the National Register. Thus, it is our opinion the undertaking will have *no effect* on historic architectural resources. We will provide additional comments to this effect upon receipt of the draft Environmental Assessment that your letter indicated will be submitted to our office in the near future.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Mitchell K. Schaefer, Structural Historian, at (304) 558-8240.*

Sincerely,

Susan M. Pierce  
Deputy State Historic Preservation Officer

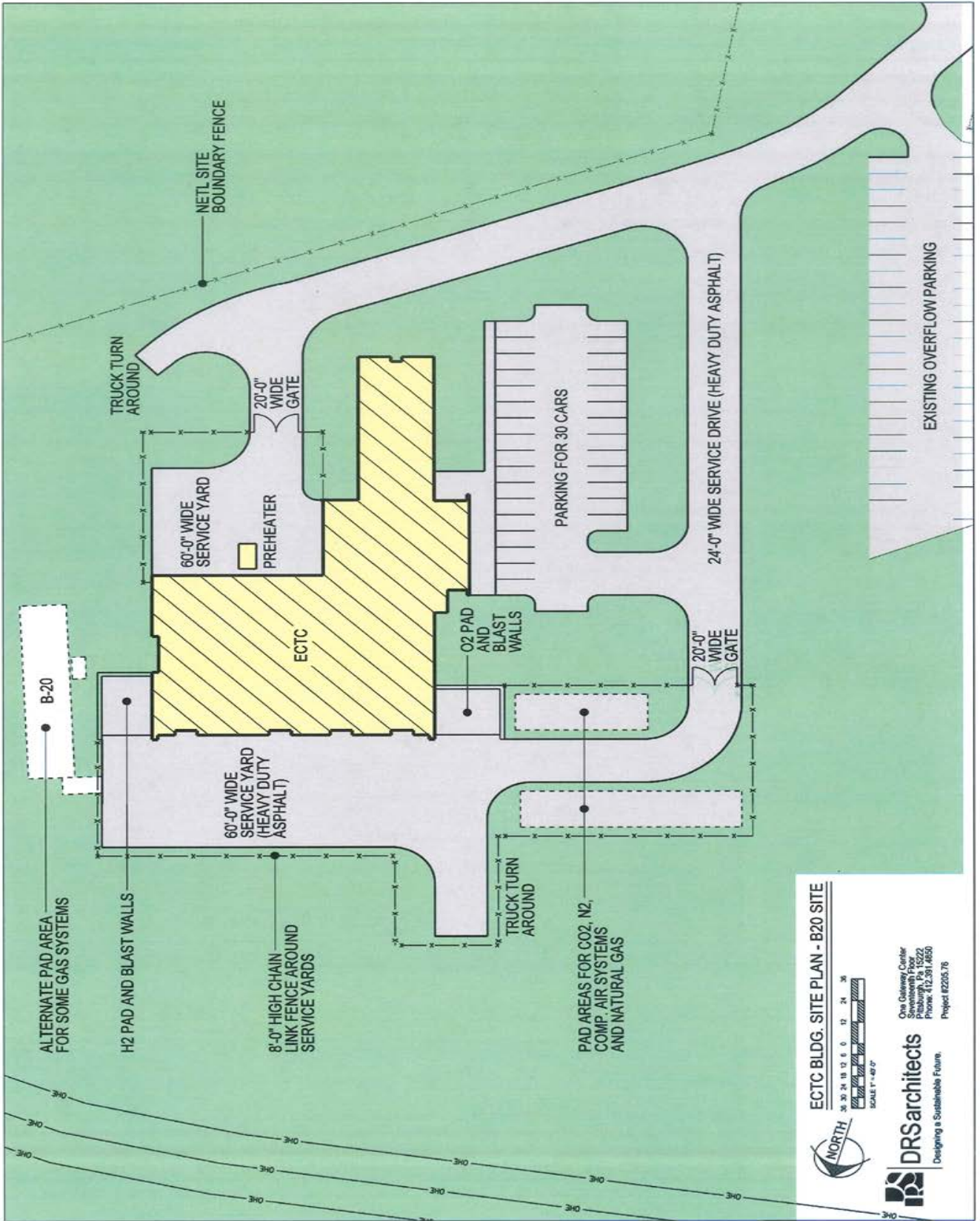
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## **Appendix D: Documentation from Correspondence and Agency Consultation**

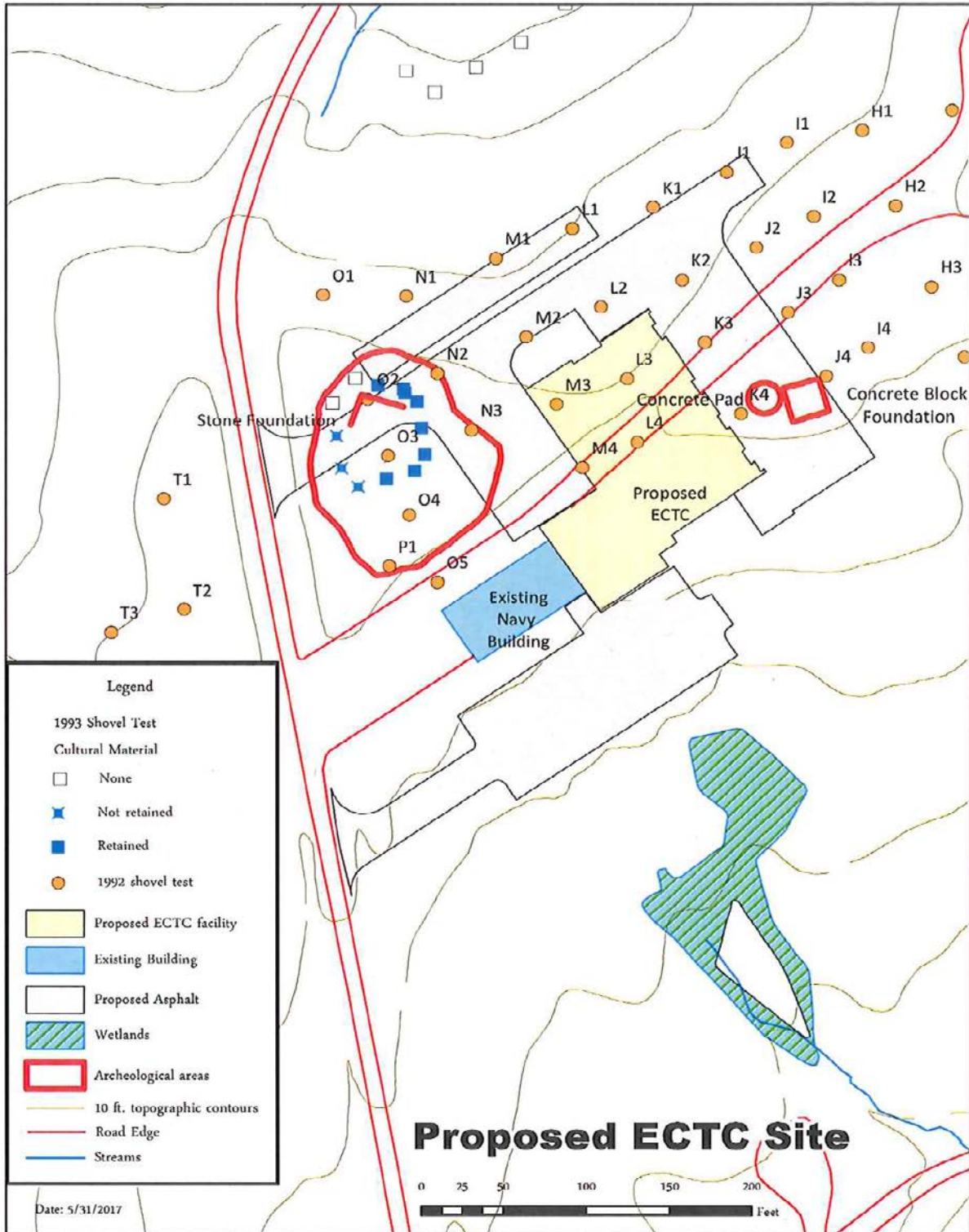
From correspondence to Ms. Susan Pierce, State Historic Preservation Officer, West Virginia Division of Culture and History (April 27, 2017). [Click here for original correspondence.](#)







From correspondence to Ms. Susan Pierce, State Historic Preservation Officer, West Virginia Division of Culture and History (June 1, 2017). [Click here for original correspondence.](#)



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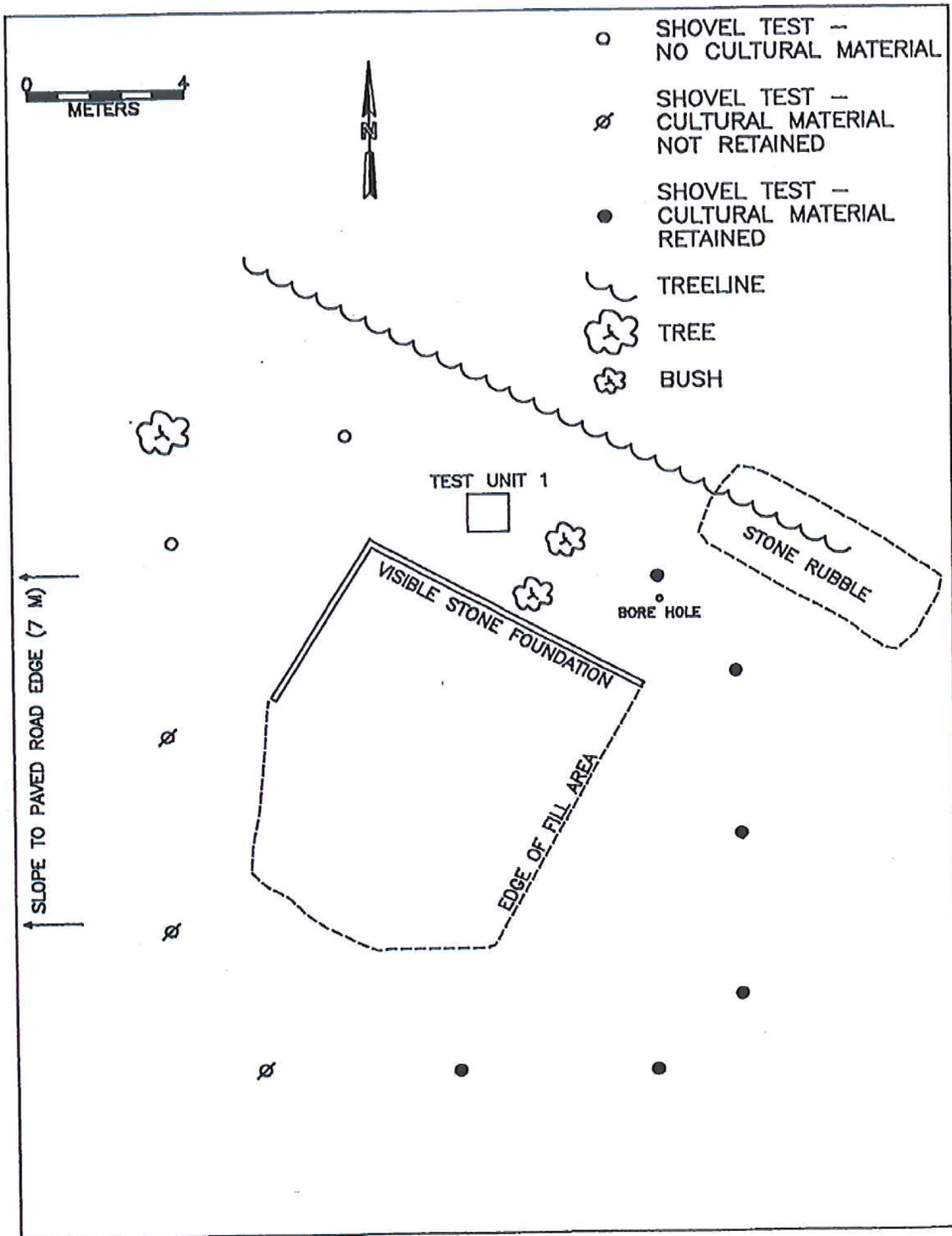


Figure 11. Site Plan of Stone Foundation and Testing Pattern in Area 9.

# REFERENCE GOLD CIRCLES

Table A6-2				
NMDSG PHASE IB SURVEY HISTORICAL ARTIFACTS				
Shovel Test	Depth of Artifacts (Inches)	Artifacts		
I2	6 - 12	1 Brown glass fragment		
		1 Metal wire fragment		
		1 Hotelware fragment (1880 - present)		
J3	0 - 3 (Mottled fill)	2 Clear glass fragments		
K4	3 - 10	1 .410 gauge shotgun shell brass rim		
M1	0 - 11	4 Hotelware fragments (1880 - present)		
M2	0 - 15 Fill	1 Multicolored plastic cup, "Dairy Guild of America"		
		1 plastic fragment		
		1 Automatic bottle machine clear glass bottle neck fragment (post-1903)		
		1 Hotelware fragment (1880 - present)		
		1 Aluminum foil fragment		
		1 "Monongalia County Dog Tag, No. 1009, 1935"		
		18 Clear bottle glass fragments		
		1 Electrical fuse, inscribed "Economy Fuse & Manufacturing Company, 125 V., Chicago USA, Patented August 16, 1920, February 27, 1917, June 22, 1920"		
		M4	0 - 8	1 Brown glass fragment
		N1	0 - 10 (Mottled fill)	1 Cream jar fragment
1 Grommet				
N2	0 - 15 (Mottled fill)	1 Large mammal left mandible fragment (possibly <u>Suldae</u> )		
		1 Large mammal left scapula fragment ( <u>Bostaurus</u> )		
		1 Large mammal left mandible fragment ( <u>Bostaurus</u> )		
		8 Small bone fragments		
		1 Plain whiteware fragment (1820 - present)		
		1 Electrical insulator		
		2 Hotelware fragments (1880 - present)		
		5 Coal fragments		

A6-7

REFERENCE GOLD CIRCLES

Table A6-2		
NMDSG PHASE IB SURVEY HISTORICAL ARTIFACTS		
Shovel Test	Depth of Artifacts (Inches)	Artifacts
01	0 - 12 (Mottled fill)	1 Brown glass fragment
		1 Clear glass fragment
		1 Roofing nail
03	0 - 15	6 Plain whiteware fragments (1820 - present)
		3 Brick fragments
		5 coal fragments
		1 Clear glass fragment
04	0 - 4 (Mottled fill)	1 Roofing nail
		3 Slag fragments
05	0 - 11	2 Brick fragments
		1 Brown glass fragment
		1 Earthenware (?) fragment
T2	0 - 10 (Mottled fill)	1 Clay bird fragment
		1 Glazed clay marble
		1 fireproof tile fragment

Source: Ecology and Environment, Inc. 1991.

# REFERENCE BLUE SQUARES

ST = Small Test  
 QUID = Quibboid

Page No. 3  
 11/25/92

MORGANTHAU NEIC  
 PHASE I  
 ARTIFACT INVENTORY

FS#	FUNCTIONAL GROUP	MATERIAL CLASS	ARTIFACT TYPE	DESCRIPTION	COMMENTS	COUNT	DATE RANGE
*	Subtotal *					6	
*	TRANSECT 09 ST 03 6 FLAKE	CHERT	LEVEL 02 11-26CHBS UNMODIFIED	NON-CORTEX	COURSE, GRAY CHERT	1	
*	Subtotal *					1	
**	Subtotal **					18	
**	AREA 09						
*	EAST 12 Kitchen	Ceramic	LEVEL 01 00-33CHBS Whiteware	Undecorated		1	1820-PRESENT
	12 Kitchen	Ceramic	Rodware	Dark Brown/ Black Glaze		1	1600-1830+
	12 Kitchen	Ceramic	Early Porcelain Type	Overglaze China Export	BASE, RED	2	1898-PRESENT
	12 Kitchen	Glass	Machine Made Bottle	Clear		5	
*	Subtotal *						
*	EAST ST 02 13 Architecture	Glass	LEVEL 01 00-36CHBS Architectural Element	Window Glass		1	
*	Subtotal *					1	
*	EAST ST 03 14 Kitchen	Ceramic	LEVEL 01 00-40CHBS Whiteware	Embossed Pattern		3	1820-PRESENT
	14 Kitchen	Ceramic	Whiteware	Decal		1	1880-PRESENT
	14 Kitchen	Glass	Machine Made Bottle	Amber		2	1898-PRESENT
	14 Miscellaneous	Metal	Unidentified Object	Sheet Metal		1	
					GREEN & PINK, GILT RIM		



# REFERENCE BLUE SQUARES

Page No. 4  
1/25/92

NORCANTON METC  
PHASE I  
ARTIFACT INVENTORY

FS#	FUNCTIONAL GROUP	MATERIAL CLASS	ARTIFACT TYPE	DESCRIPTION	COMMENTS	COUNT	DATE RANGE
* Subsubtotal *							
* NORTH ST 02 LEVEL 01 00-43CHBS							
9	Architecture	Ceramic	Miscellaneous	Ceramic Tile		1	
9	Furniture	Ceramic	Miscellaneous	Flower Pot		2	1779-1820
9	Kitchen	Ceramic	Pearlware	Underglaze Blue Hand-Painted	HOLLOW WARE	2	1898-PRESENT
9	Kitchen	Glass	Machine Made Bottle	Amber		1	1898-PRESENT
9	Kitchen	Glass	Machine Made Bottle	Clear		1	
9	Personal	Metal	Personal Use	Other	LIGHTER, PRONSOUP	1	
* Subsubtotal *							
* SOUTH ST 02 LEVEL 01 00-22CHBS							
10	Architecture	Glass	Architectural Element	Window Glass		3	
10	Architecture	Metal	Construction Hardware	Bolt and/or Bracket		1	
10	Kitchen	Glass	Machine Made Bottle	Amber	BOLT HEAD	1	1898-PRESENT
* Subsubtotal *							
* SOUTH ST 03 LEVEL 01 00-18CHBS							
11	Architecture	Glass	Architectural Element	Window Glass		20	
11	Kitchen	Ceramic	Redware	Dark Brown/ Black Glaze	HOLLOW WARE, INTERIOR GLAZE	2	
11	Kitchen	Ceramic	Redware	Dark Brown/ Black Glaze		1	
11	Kitchen	Ceramic	Redware	Brown Glaze		1	
11	Kitchen	Ceramic	Miscellaneous Stoneware	Refined Red, Glazed	HOLLOW WARE RIM	1	
11	Kitchen	Ceramic	Pearlware	Green Shell-Edged	RIM	3	1780-1830
11	Kitchen	Ceramic	Pearlware	Underglaze Floral Polychrome	HOLLOW WARE, BROWN BLUE & YELLOW	2	1795-1815
11	Kitchen	Ceramic	Pearlware			10	1820-PRESENT
11	Kitchen	Ceramic	Whiteware	Cream-Colored Earthenware		10	1820-PRESENT

MORGANTOWN METC  
PHASE I  
ARTIFACT INVENTORY

FSF FUNCTIONAL GROUP	MATERIAL CLASS	ARTIFACT TYPE	DESCRIPTION	COMMENTS	COUNT	DATE RANGE
11 Kitchen	Ceramic	Whiteware	Cream-Colored Earthenware	FLAT WARE RIM, POSS. CREAMWARE	2	1820-PRESENT
11 Kitchen	Ceramic	Unidentified Ceramic	Unidentified Earthenware	SOFT PINK PASTE, CLEAR GLAZE	1	
11 Kitchen	Glass	Glass Tipped Pontil	Dark Green	CASE BOTTLE	4	1700's-c. 1870
11 Kitchen	Glass	Unidentifiable Bottle Glass	Clear		3	
11 Kitchen	Glass	Blown in Mold	Aqua	TRIN	3	
11 Kitchen	Glass	Unidentifiable Fragment	Milk Glass	TRIN	1	
* Subtotal *					54	
<b>LEVEL 01 00-10CMB</b>						
* UNIT 01	Glass	Architectural Element	Window Glass		16	
15 Architecture	Metal	Wire Nail, Common	2-4"		16	POST 1890
15 Architecture	Metal	Wire Nail, Finish	< 2"		6	POST 1890
15 Architecture	Metal	Wire Nail, Common	< 2"		3	POST 1890
15 Architecture	Metal	Wire Nail, Common	Fragment		6	POST 1890
15 Kitchen	Ceramic	Whiteware	Undecorated		2	1820-PRESENT
15 Kitchen	Glass	Machine Made Bottle	Amber		17	1898-PRESENT
15 Kitchen	Glass	Machine Made Bottle	Clear		9	1898-PRESENT
15 Kitchen	Metal	Miscellaneous	Can		1	
15 Kitchen	Metal	Miscellaneous	Plastic/Other		1	
15 Miscellaneous	Synthetic	Miscellaneous	Other	PULLEY, PROB. FOR CLOTHESLINE	1	
15 Activities	Metal	Miscellaneous	Plastic Toy	BINDO CHIP	1	
15 Activities	Synthetic	Miscellaneous			79	
* Subtotal *						
<b>LEVEL 02 10-23CMB</b>						
* UNIT 01	Glass	Architectural Element	Window Glass		3	
16 Architecture	Metal	Construction Hardware	Electrical Hardware	INSULATED WIRE	1	
16 Architecture	Metal	Wire Nail, Common	2-4"		20	POST 1890
16 Architecture	Metal	Wire Nail, Common	< 2"		6	POST 1890

REFERENCE BLUE SQUARES



# REFERENCE BLUE SQUARES

MORGANTOWN METC  
PHASE I  
ARTIFACT INVENTORY

FS#	FUNCTIONAL GROUP	MATERIAL CLASS	ARTIFACT TYPE	DESCRIPTION	COMMENTS	COUNT	DATE RANGE
17	Kitchen	Glass	Machine Made Bottle	Clear		2	1898-PRESENT
17	Miscellaneous	Stone	Miscellaneous Stone	Graphite		2	
* Subtotal *							
* UNIT 01							
LEVEL 05 43-67CHBS							
18	Kitchen	Ceramic	Pearlware	Other Transfer-Printed	BLUE	1	1792-1840
18	Kitchen	Ceramic	Pearlware	Transitional (Pearl/White)	FLAT WARE	1	c.1810-1840
* Subtotal *							
* UNIT 01							
LEVEL 06 67-77CHBS							
19	Architecture	Glass	Architectural Element	Window Glass		3	
19	Architecture	Manufactured	Brick	Fragment		1	
19	Architecture	Metal	Unidentified	Nail		1	
19	Kitchen	Ceramic	Redware	Dark Brown/ Black Glaze		2	
19	Kitchen	Ceramic	Domestic Gray Stoneware	Albary Slip on Gray	BOLLON WARE, BLUE DECORATION	1	1800-1900
19	Kitchen	Ceramic	Pearlware	Underglaze Blue Hand-Painted		2	1779-1820
19	Kitchen	Ceramic	Industrial Stoneware	Late White Stoneware	W/SLIP	1	
19	Miscellaneous	Metal	Unidentified Object	Iron/Steel		4	
* Subtotal *							
* UNIT 01							
LEVEL 07 77-87CHBS							
20	Architecture	Manufactured	Brick	Fragment		6	
20	Architecture	Metal	Unidentified	Out/Wrought Nail		2	
20	Architecture	Metal	Unidentified	Nail		1	
20	Kitchen	Ceramic	Redware	Dark Brown/ Black Glaze	BOLLON WARE, INTERIOR GLAZE	4	
20	Kitchen	Ceramic	Redware	Clear Glaze, Plain	POSS. SLIP DECORATION	6	

**From correspondence to Ms. Susan Pierce, State Historic Preservation Officer, West Virginia Division of Culture and History (November 17, 2017). [Click here for original correspondence.](#)**

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**PROPOSED WORK PLAN FOR  
PHASE II ARCHAEOLOGICAL INVESTIGATIONS  
AT THE SINCLAIR FARMSTEAD SITE (46MG90),  
NATIONAL ENERGY TECHNOLOGY LABORATORY,  
MONONGALIA COUNTY, WEST VIRGINIA  
FR: 17-732-MG**

**INTRODUCTION**

This work plan outlines Phase II archaeological investigations at the Sinclair Farmstead site (46MG90), in Monongalia County, West Virginia. The investigations will combine extensive documentary research and limited archaeological excavations in an effort to make recommendations for eligibility for the site's nomination to the National Register of Historic Places (NRHP). The site is located on a ridgetop above the east bank of the Monongahela River and southwest of West Run (Figure 1). The historic locus consists of an infilled stone foundation and associated artifact scatter that dates from the mid-nineteenth to late twentieth century. It is located east of Perimeter Road on the National Energy Technology Laboratory (NETL) property. The identified site area measures approximately 30 x 45 m (100 x 150 ft) or 0.1 ha (0.3 ac).

The site was first identified in 1992 during a Phase I survey for the Naval Material Data System Group conducted by Ecology and Environment, Inc. Historic artifacts were recovered from 10 shovel test probes (STP) excavated in the vicinity of a stone foundation (Figure 2). The assemblage consisted of kitchen, household, and architectural refuse consistent with a farmstead/rural residence. Diagnostic artifacts included undecorated whiteware sherds (ca. 1820+), hotelware (1880+), a clear glass bottleneck manufactured by an automatic bottle machine, an electric fuse with a patent date of 1920, a dog license collar tag dated 1935, and several modern items (i.e., plastic, aluminum foil, electrical insulator). A large area was also identified as having dense amounts of ash and coal dust within the stratigraphic column. The ash and coal episode was attributed to the 1980 demolition of the structure. The report recommended that the deposits adjacent to the stone foundation were the result of "a tertiary depositional process and lacked integrity." Therefore, the site was recommended as not eligible for nomination to the NRHP.

The area was resurveyed by R Christopher Goodwin and Associates in 1992 and the results were included in the Morgantown Energy Technology Center's 1993 Cultural Resource Management Plan (Polglase et al. 1993) (Figures 2 and 3).

This survey consisted of the excavation of 11 STPs and a 1 x 1 m (3.3 x 3.3 ft) test unit surrounding the stone foundation and filled cellar area (Figure 3). All of the STPs were located within 6 m (19.7 ft) of the foundation and cellar, and were 3-5 m (9.8-16.4 ft) apart. STPs excavated to the west of the foundation contained disturbance attributed to the construction of Perimeter Road, located approximately 7 m (23 ft) west of the foundation. STPs were excavated to a maximum depth of 43 cm (16.9 in). STPs excavated to the north, east and south of the foundation contained historic and modern artifacts, three of which, North STP 2, East STP 1, and South STP 3 contained artifacts that date to the early to mid-nineteenth century. Soil stratigraphy for these STPs is not discussed in the report.



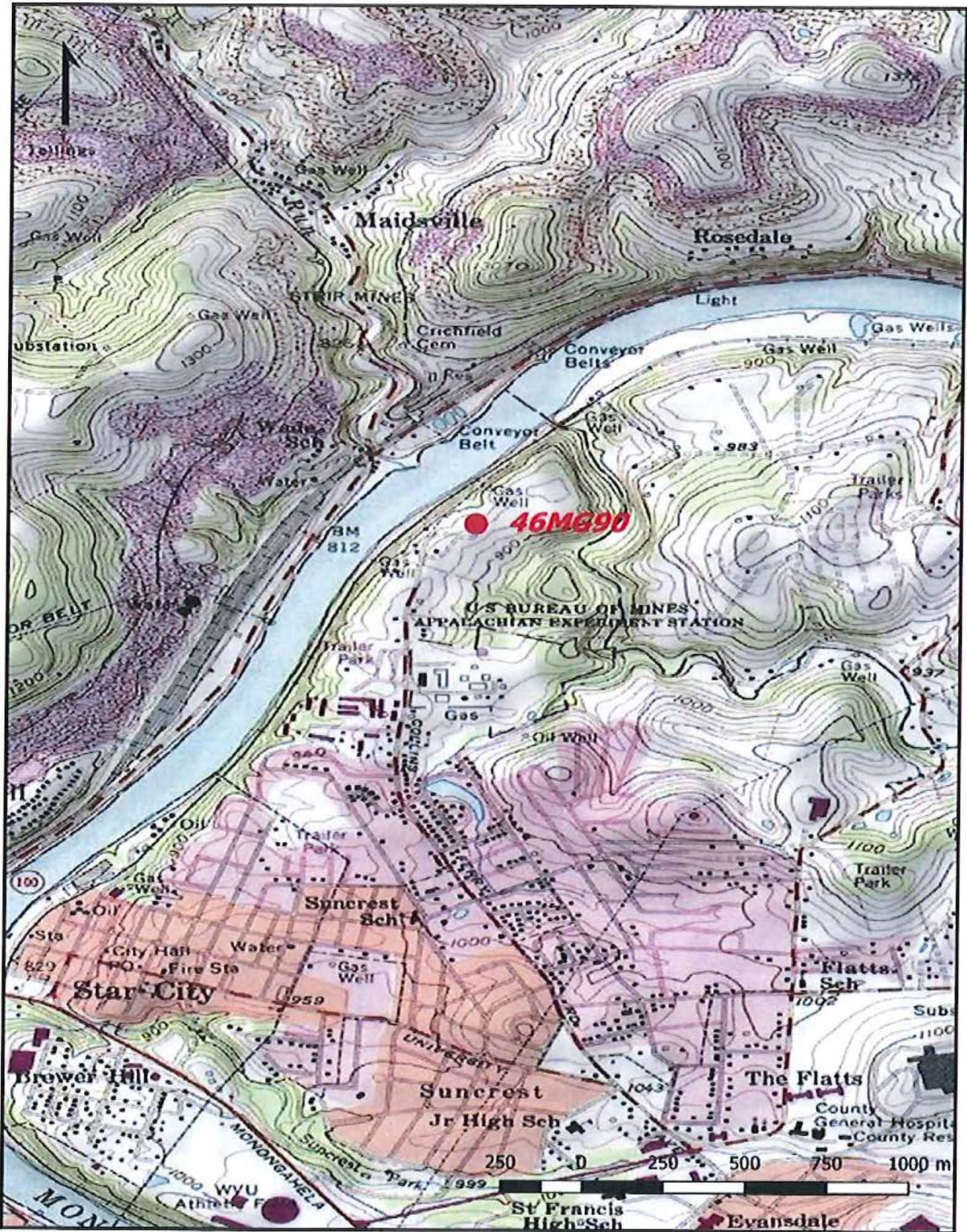


Figure 1. Location of Site 46MG90 on Morgantown North, W. Va. 7.5' U.S.G.S. topographic quadrangle.



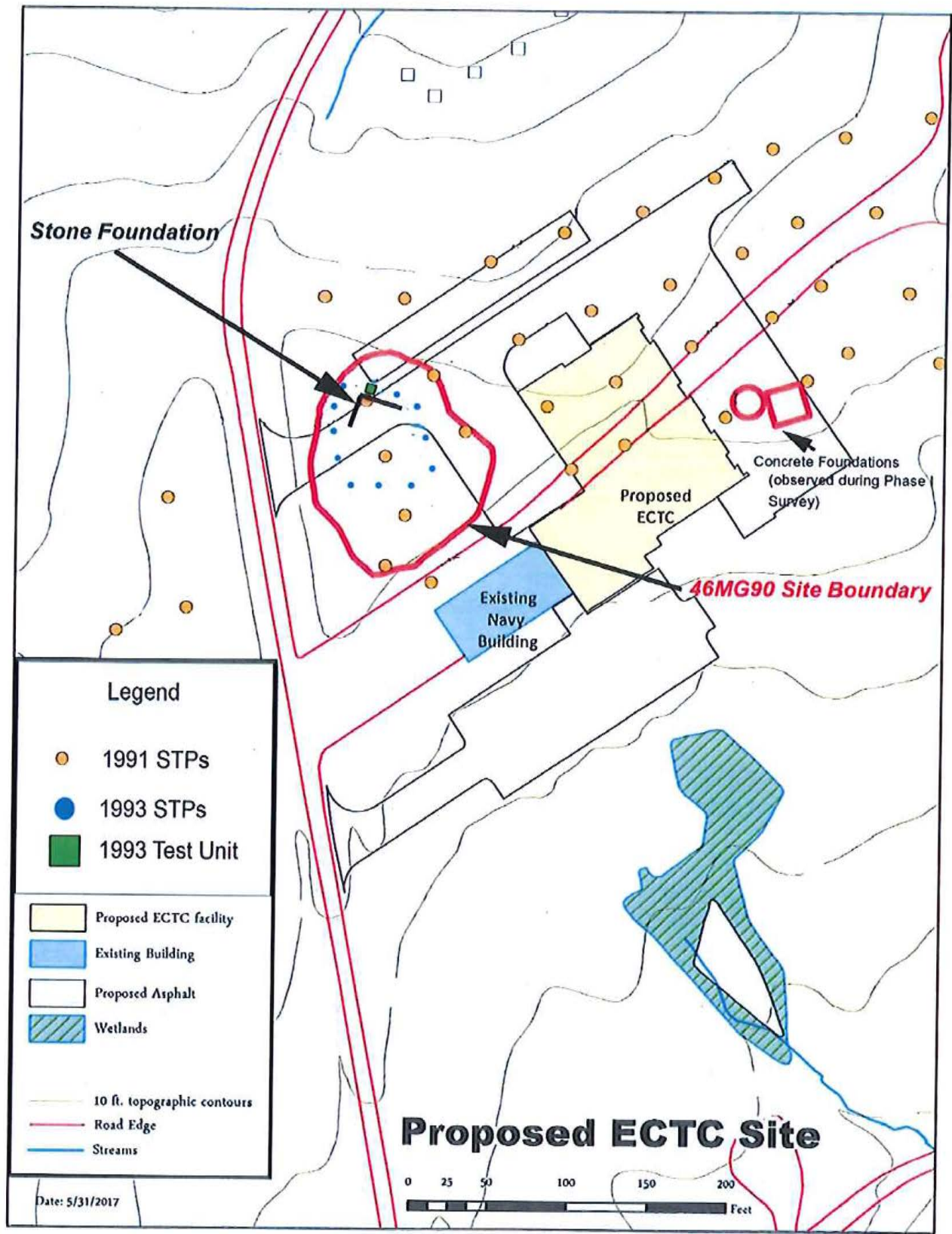


Figure 2. Proposed ECTC site showing previous archaeological surveys (adapted from Pozzuto 2017).



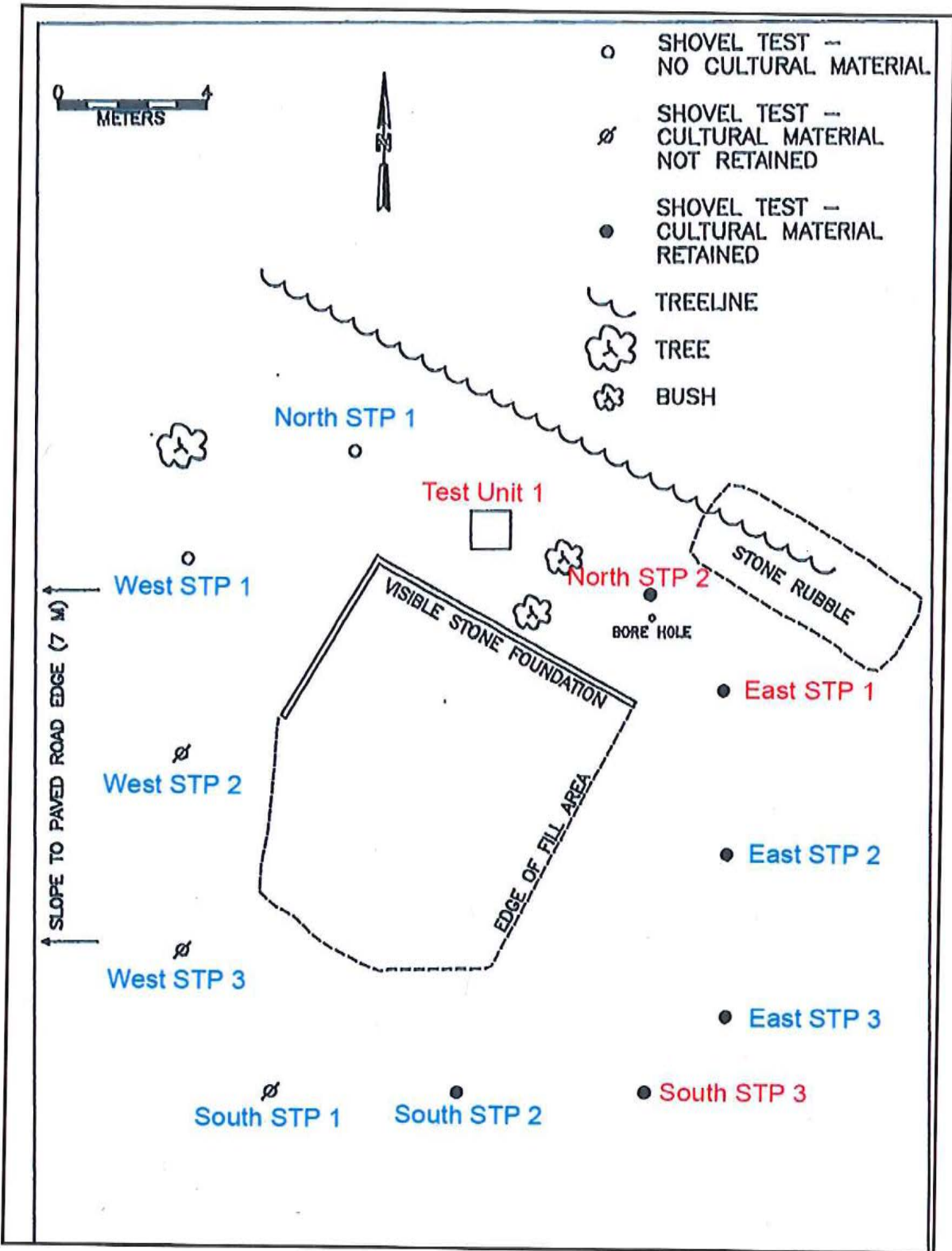


Figure 3. Map showing locations of 1992 STPs and Test Unit. STPs containing possible Antebellum artifacts are labeled in red (adapted from Polglase et al. 1993).

Test Unit 1 was emplaced 2 m north of the foundation, between STPs North 1 and North 2. Five distinct soil strata were identified (Figure 4). The uppermost stratum, Stratum I (0 to 23 cm [0-9 in] bgs), contained dense concentrations of 20<sup>th</sup> century artifacts consisting primarily of architectural debris including wire nails, window glass, mortar, plaster, brick, wood, tar paper, and asphalt shingle fragments. Stratum I was attributed to the ca. 1980 demolition of the structure. Underlying Stratum I was identified as a thick fill deposit, Stratum II (23 to 67 cm [9-29.9 in] bgs), containing a small amount of historic material including machine-made bottle glass, window glass, and whiteware. Due to the lack of artifacts and features in this stratum, an auger probe was excavated beginning at 43 cm (16.9 in) bgs and a third stratum was identified at a depth of 67 cm (29.9 in) bgs. The remainder of Stratum II was removed without screening. Stratum III (67 to 87 cm [29.9-34.3 in] bgs) contained earlier historic artifacts than those found in Strata I and II; including redware and pearlware, and a wrought or cut nail. Underlying Stratum III was a sterile homogenous silty clay and excavation was terminated at 97 cm (38.2 in) bgs. Stratum III was interpreted as a buried A horizon containing historic materials dating from the mid-nineteenth century. Stratum II, contains few artifacts, however, two pearlware sherds were recovered from the second excavation level. Stratum II, therefore, may have resulted from the excavation of the cellar within the stone foundation. This suggests that the foundation is not from the original structure on this property and Stratum II is covering evidence of a prior occupation evidenced in Stratum III.

An examination of historic maps of the site area show a structure on the property beginning in 1886. The Lathrop 1886 *Atlas of Marion and Monongalia Counties* shows this parcel was owned by F.R. Sinclair, who historic research identified as a locally prominent resident who participated in local politics and was a member of the local militia during the Civil War. Subsequent mapping shows a building at this location in 1902, 1932, and 1976.

Site 46MG90 consists of a stone foundation from a structure razed ca. 1980 and associated an artifact scatter dating from the mid-nineteenth century. Based on the early artifacts recovered during the 1992 survey, additional archaeological investigations were recommended to address the site's potential to contain significant information relating to antebellum settlement in the Monongahela Valley. In a response letter dated February 23, 1993, the WVDCH concurred with this recommendation, stating "In conclusion, we agree with the content of your letter. If the site is avoided, no further consultation is required according to the Section 106 review process. If there was to be a direct impact to the site, further evaluation would be required, but avoidance eliminates this requirement. (Appendix I: Farrar 1993).

In June 2017, the NETL informed the WVDCH of the planned construction of a new Energy Conversion Technology Center (ECTC) within the NETL complex (Appendix I: Pozzuto 2017). The ECTC and its associated parking lots will impact the Sinclair Farmstead site. The letter served to inform the WVDCH that an Environmental Assessment would be prepared for the project and to ask for WVDCH "input on a possible Phase II Archaeological Investigation."

The WVDCH response, dated June 21, 2017, stated that because it is no longer possible to avoid the site, "we request that the site undergo National Register evaluations prior to initiating construction activities in their locations. We will provide further comment upon receipt of a proposed Phase II scope of work for the site" (Appendix I: Pierce 2017).



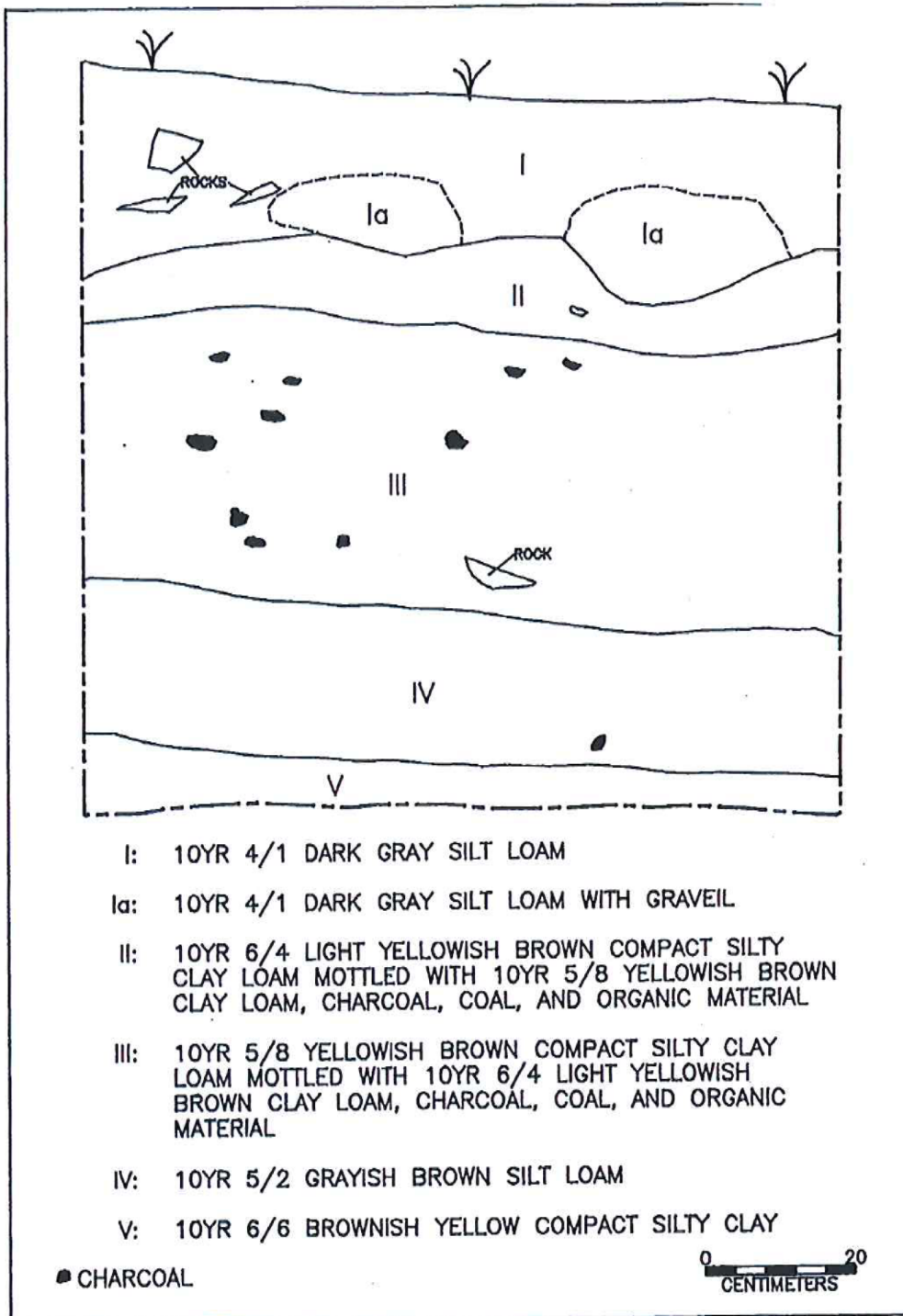


Figure 12. Profile of West Wall of Unit No. 1 (Area 9), Showing Fill and Buried Historic Component.

Figure 4: West Profile of Test Unit 1, excavated during 1992 Phase I (adapted from Polglase et al. 1993).

The WVDCH response letter also refers to a second site identified during the CRMP survey, 46MG91. This site is located north and east of the proposed construction and will not be impacted. Therefore, it is not addressed in the following work plan.

The following Phase II Work Plan will serve to evaluate the Sinclair Farmstead site for NRHP eligibility.

### **PROPOSED PHASE II RESEARCH DESIGN**

Phase II investigations of the Sinclair Farmstead site will involve intensive documentary research and limited archaeological excavations in an effort to make recommendations as to the site's eligibility for nomination to the NRHP. Previous excavations recorded a moderate level of disturbance surrounding the foundation, particularly in the western portion of the site; recovered a limited number of artifacts; and recorded no features excepting the foundation. Based on these results, Phase II investigations will emphasize documentary research rather than intensive excavations. Information gathered during the documentary research and results of prior Phase I surveys will inform the Phase II excavation plans. Michael Baker will excavate up to five 1 x 1 m test units at locations where earlier artifacts were recovered, within the foundation, and at the locations of any outbuildings or other features noted in historic documentation. The excavations will serve to identify the extent of the ante-bellum occupational horizon, including any cultural features.

The proposed work will be conducted pursuant to the instructions and intents set forth in Section 101(b)(4) of the National Environmental Policy Act of 1969; Section 1(3) and 2(b) of Executive Order 11593; Section 106 of the National Historic Preservation Act, as amended; 36CFR 800, as revised August 5, 2004; West Virginia Code § 29, as amended; and the *Guidelines for Phase I, II, and III Archaeological Investigations and Technical Reports* (Trader 2001), prepared by the West Virginia Division of Culture and History (WVDCH). Key Baker personnel will meet appropriate professional standards as outlined in *Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines*, Federal Register, Vol. 48, No. 190-September 29, 1983, Pt. IV, and formerly published in 36CFR § 61.

#### **Task 1 – Project Coordination and Administration**

Baker will work in close coordination with the NETL to address any issues that may arise as a result of the Phase II archaeological investigations. One meeting with the NETL and potentially the WVDCH to discuss project goals, methods, and work progress or results is assumed.

#### **Task 2 – Background Research**

In the 1993 CRMP, Polglase et al. identified the Sinclair Farmstead site as a parcel belonging to F.R. Sinclair, as shown on the 1886 map in the *Atlas of Marion and Monongalia Counties* (Lathrop 1886). Subsequent maps show a structure at this location through 1976. The structure was razed ca. 1980. Michael Baker will conduct a thorough deed search to create a land use history of this parcel back to its original land grant, if possible. Research will also attempt to confirm the location of an earlier structure, possibly replaced by the current cellar hole and foundation.

Research will also be conducted to gather information regarding the life of F.R. Sinclair and his status as a citizen of Monongalia County, including his Civil War service and involvement in the local economy and politics. The research will attempt to discover when the structure(s) were built, and if, in fact, either of them were constructed by F.R. Sinclair.



### Task 3 – Archaeological Field Investigations

The excavation plan is based upon the results of the Phase I surveys conducted by Ecology and Environment (1992) and R. Christopher Goodwin and Associates (Polglase et al. 1993). A summary of proposed fieldwork for the site is presented below.

Baker will:

- Establish a permanent site datum. Center points of cultural features, the stone foundation, site datum, and several grid points will be recorded with a Trimble GPS unit.
- Excavate up to five 1 x 1 m (3.3 x 3.3 ft) test units across the site, at locations suggested by documentary research to further examine the antebellum deposits. The units will be hand excavated by arbitrary levels within naturally-defined soil horizons. Excavations will follow the same procedures implemented during the test probing with representative plans views and profiles mapped and photo-documented using digital photography for each test unit.
- Strata I and II were determined by Polglase et al. 1993 to be from the demolition of the structure in 1980 and possibly related to the cellar excavation of the structure. Based on these assumptions, these Strata will be discarded during Phase II excavations.

Although unlikely, if human remains are encountered, procedures outlined in West Virginia Title 82, Series 3, *Standards and Procedures for Granting Permits to Excavate Archaeological Sites and Unmarked Graves*, will be followed. The NETL and WVDCH will be immediately notified and, if requested, Michael Baker will consult with interested parties to devise a method of treatment for these remains.

### Task 4 – Artifact Processing and Analyses

Analysis for Phase II studies will specifically address the potential of 46MG90 to yield significant cultural information. Michael Baker will wash, label, and catalog up to **250 historic artifacts** according to the current WVDCH *Guidelines*. All historic-period artifacts will be separated and analyzed according to material type, function, and diagnostic attributes (e.g., form, style, and decoration). Where applicable, date ranges and references for material types and diagnostic attributes will be recorded.

### Task 5 – Site Analysis and Report Preparation

Phase II site analysis will specifically address the potential of the site to yield information that is associated with the lives of significant persons (Criterion B) and its importance to the development on Monongalia County during the nineteenth century (Criterion D) as outlined in 36 CFR Part 63. The results of background research, fieldwork, artifact, and site analyses will be detailed in a draft Phase II report, and recommendations will be made concerning the significance and NRHP eligibility of Site 46MG90. Environmental and broad contextual information for the site area was contained in the previous reports and will not be included. As currently envisioned, the report will incorporate a project overview, the results of the documentary research, including a detailed land use history and information of occupants of the parcel, research design based on the results of the documentary research, and similar information pertaining to the project as a whole. Field methods and results, as well as recommendations for additional work, if applicable, will be included in this

volume. The report will be appropriately illustrated with maps, figures, and photographs, and will meet all requirements of the *Guidelines*.

#### Task 6 - Phase II Artifact Curation/Disposition

Artifacts, original paperwork, research materials, and project photographs will be returned to the NETL to be archived at the NETL complex (Fred Pozzuto, personal communication).

#### **Deliverables**

Baker will prepare a draft Phase II archaeological report based upon the results of the tasks noted above and following the format of the WVDCH *Guidelines*. Baker will provide a draft copy of the report to the NETL for internal review. Upon receipt of comments from the NETL, Michael Baker will submit up to two (2) copies of the final Phase II report to the WVDCH with a CD/DVD containing an electronic copy of the report and appropriate shape files.

#### **References**

Ecology and Environment Inc.

1992 *Environmental Assessment for the Proposed Antenna Relocations at the Naval Material Data Systems Group (NMDSG) Facilities, Morgantown, West Virginia*. Prepared for Chesapeake Division Naval Facilities Engineering Command. Prepared by Ecology and Environment Inc.

Farrar, William G.

1993 Letter to John Ganz, Environmental Manager, Morgantown Energy Technology Center, dated February 23, 1993, from William G. Farrar, Deputy West Virginia State Historic Preservation Officer, West Virginia Department of Culture and History, Charleston.

Lathrop, J.M., H.C. Penny and W.R. Proctor

1886 *An Atlas of Marion and Monongalia Counties, West Virginia*. D.J. Drake and Company, Philadelphia.

Pierce, Susan

2017 Letter to Fred Pozzuto, Acting Associate Director, NEPA Compliance Office, U.S. Department of Energy. National Energy Technology, Morgantown, dated June 21, 2017 from Susan Pierce, Deputy West Virginia State Historic Preservation Officer, West Virginia Department of Culture and History, Charleston regarding the Proposed Project at the National Energy Technology Laboratory FR# 17-732-MG.

Polglase, Christopher R., Michelle T. Moran, Thomas W. Davis, Hugh McAloon, and Timothy A. Silva.

1993 *Cultural Resource Management Plan for Morgantown Energy Technology Center*.

Prepared for Department of Energy Morgantown Energy Technology Center. Prepared by R. Christopher Goodwin and Associates, Inc.

Pozzuto, Fred

2017 Letter to Susan Pierce, Deputy West Virginia State Historic Preservation Officer, West Virginia Department of Culture and History, Charleston, dated June 1, 2017, from Fred Pozzuto, Acting Associate Director, NEPA Compliance Office, U.S. Department of Energy. National Energy Technology, Morgantown regarding the Proposed Project at the National Energy Technology Laboratory.





WEST VIRGINIA DIVISION OF  
CULTURE AND HISTORY

February 23, 1993

John Ganz  
Environmental Manager  
Morgantown Energy Technology Center  
P.O. Box 880  
Morgantown, WV 26507-0880

RE: Navy Antenna Relocation Project  
FR#: 93-531-MG

Dear Mr. Ganz,

We have received your letter of January 28 regarding the construction site at the Morgantown Energy Technology Center and are aware of the conflict that has arisen regarding the foundations of the demolished house. The enclosed reports have interpreted Section 106 of the National Historic Preservation Act; these differing interpretations appear to have led to the conflict. The review process requires the identification of historic resources that may be impacted by a federal undertaking. The two surveys have identified two historic sites known as METC-1 and METC-2. These remain unevaluated for National Register status; however, shovel testing has delineated the extent of these sites.

The second step of the review process assesses the effects on the resources. If a site is avoided, there is no effect to the resource. If the extent of the site has been identified, there is no need to continue archaeological testing. It is our understanding that METC plans to avoid the two sites during construction; therefore, there will be no effect to the cultural resources. However, if during construction, any archaeological artifacts are discovered, the Section 106 review process requires the postponement of any further construction until our office has had an opportunity to evaluate the discovery.

In conclusion, we agree with the content of your letter. If the site is avoided, no further consultation is required according to the Section 106 review process. If there was to be a direct impact to the site, further evaluation would be required, but avoidance eliminates this requirement.

THE CULTURAL CENTER • 1900 KANAWHA BOULEVARD, EAST • CHARLESTON, WEST VIRGINIA 25305-0300  
TELEPHONE 304-558-0220 • FAX 304-558-2779 • TDD 304-558-0220


(Encl 2)

6

Page 2  
John Ganz  
February 23, 1993

We appreciate the opportunity to comment. If you have any questions, please contact Susan Pierce, Director of Review and Compliance.

Sincerely,

  
William G. Farrar, Deputy  
State Historic Preservation Officer

WGF/SMP:ps

\*\*\*Note: The remaining attachments to this Phase II Work Plan are identical to those presented above in the June 1, 2017, Request for Consultation letter with attachments and include the June 21, 2017, West Virginia SHPO response letter, for the Proposed Project at the National Energy Technology Laboratory (NETL).

From correspondence to Mr. Mitchell Schaefer, Structural Historian, West Virginia Division of Culture and History (November 20, 2017). [Click here for original correspondence.](#)

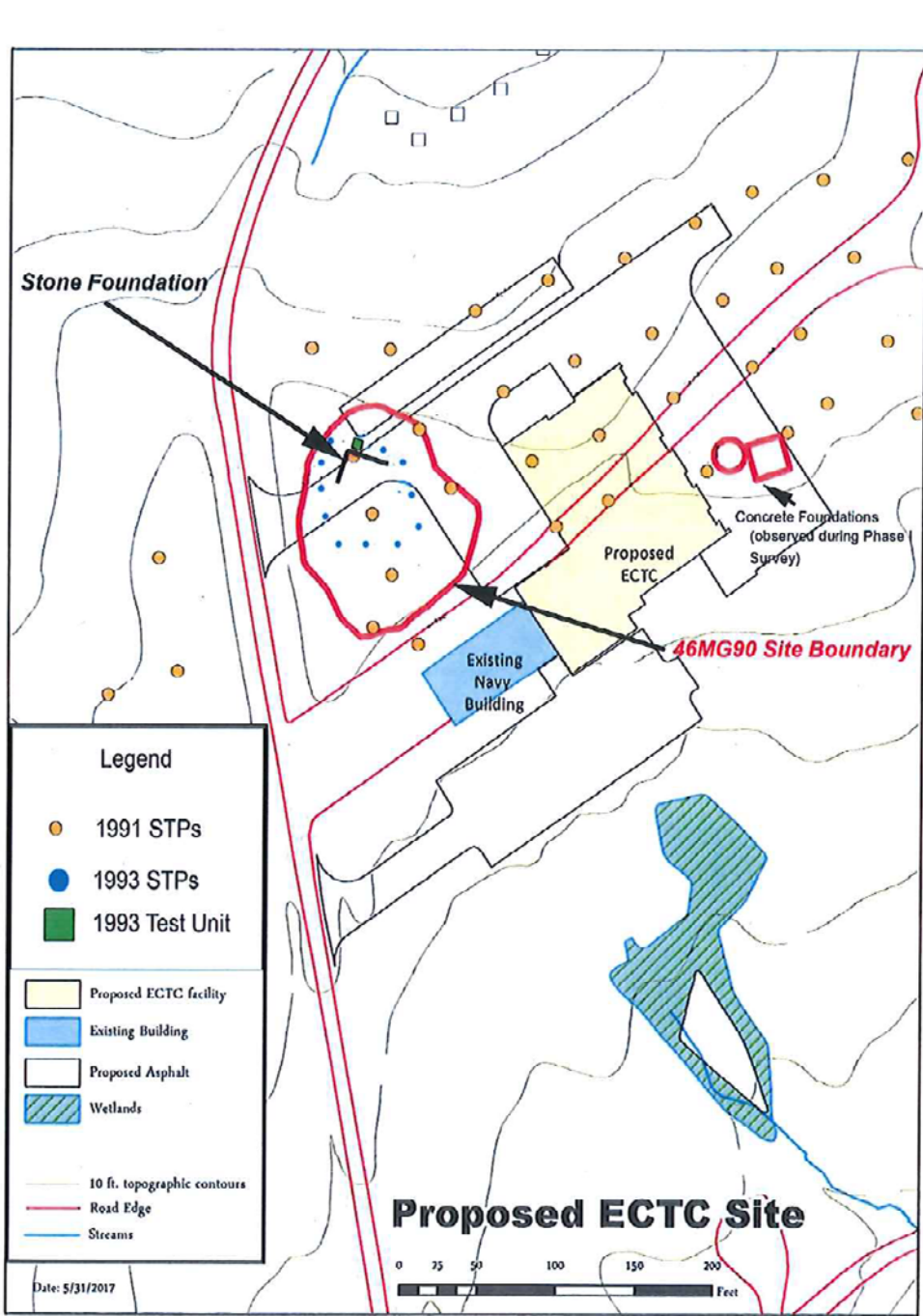
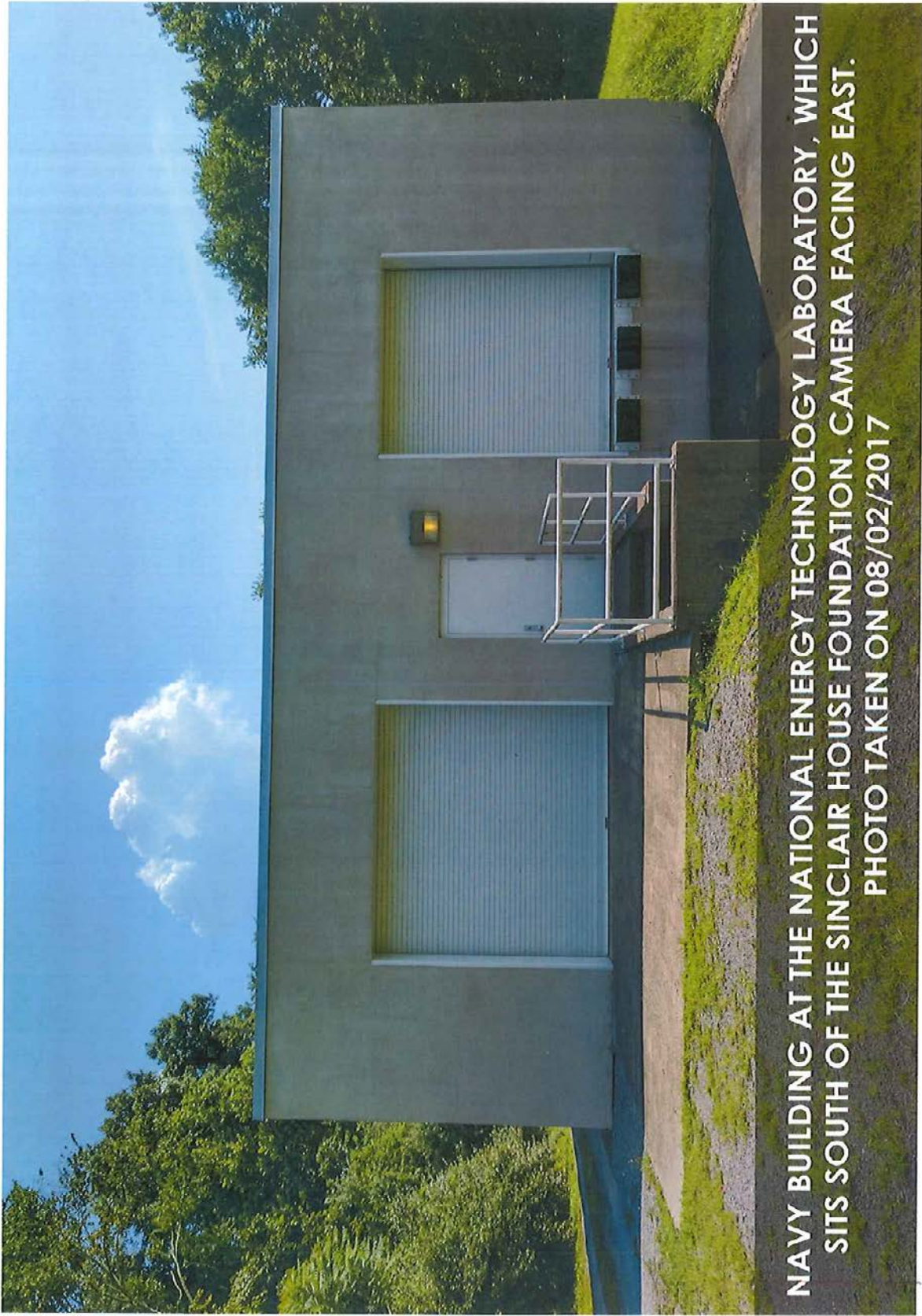


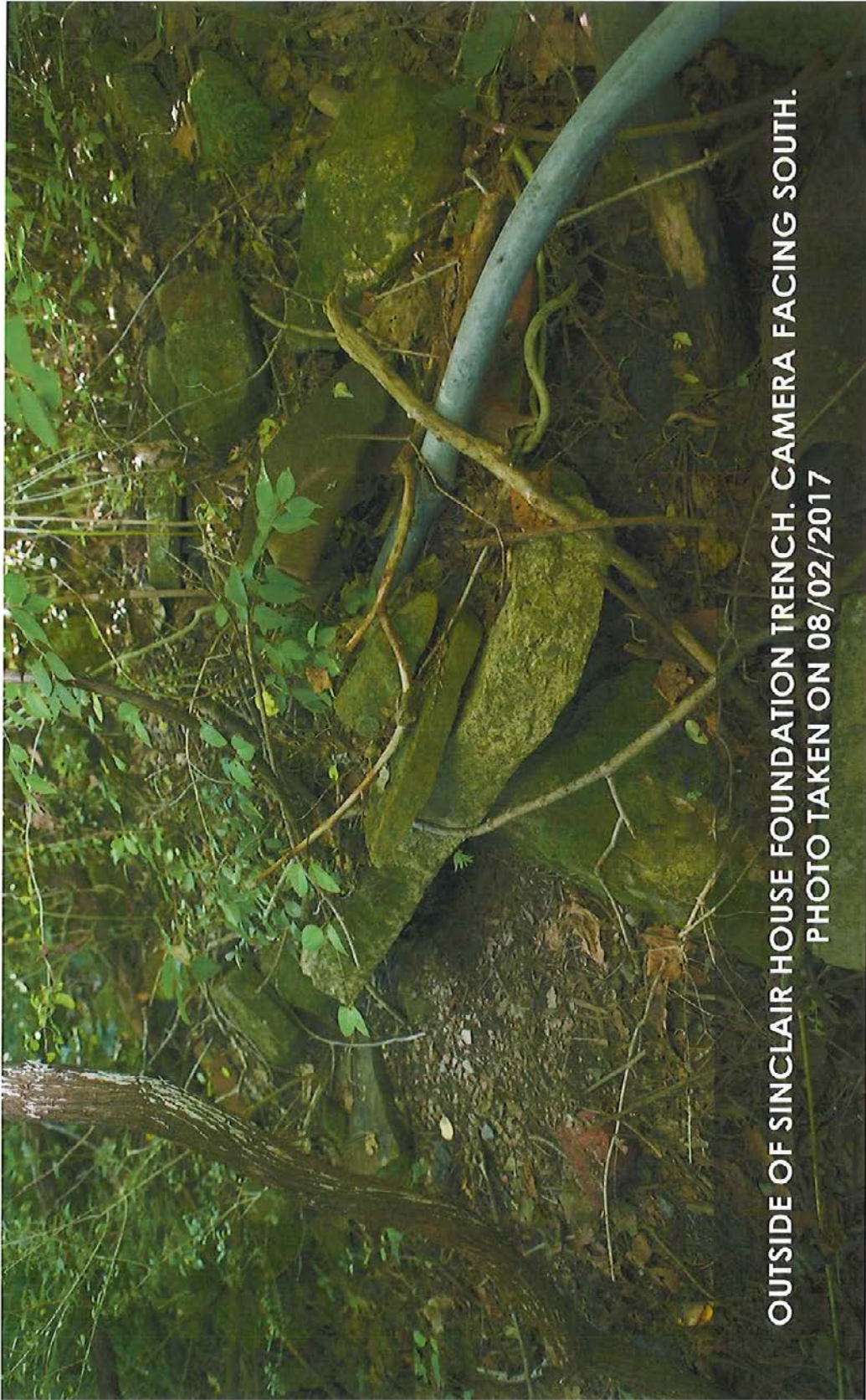
Figure 2. Proposed ECTC site showing previous archaeological surveys (adapted from Pozzuto 2017).





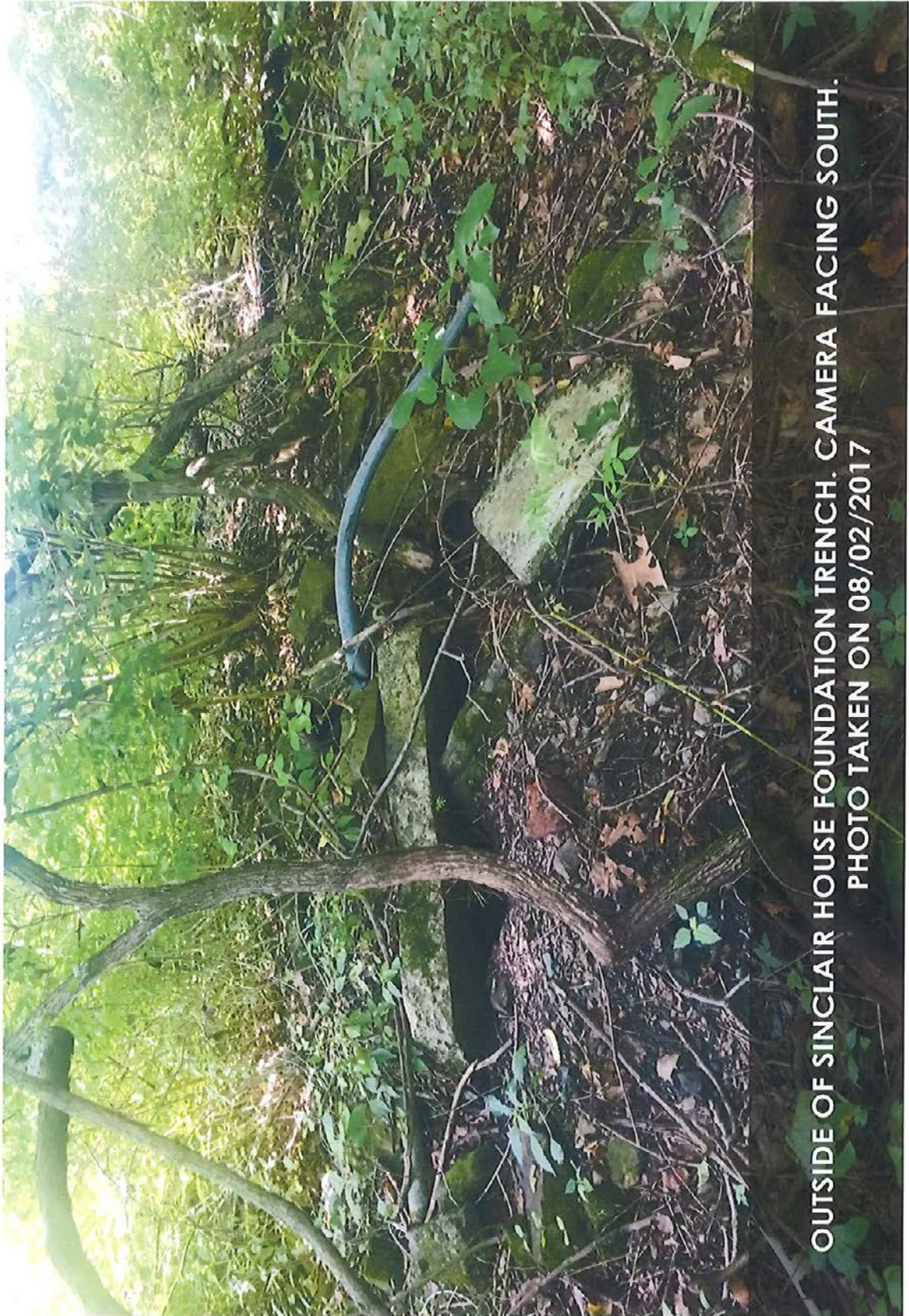
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PHOTO TAKEN ON 08/02/2017**





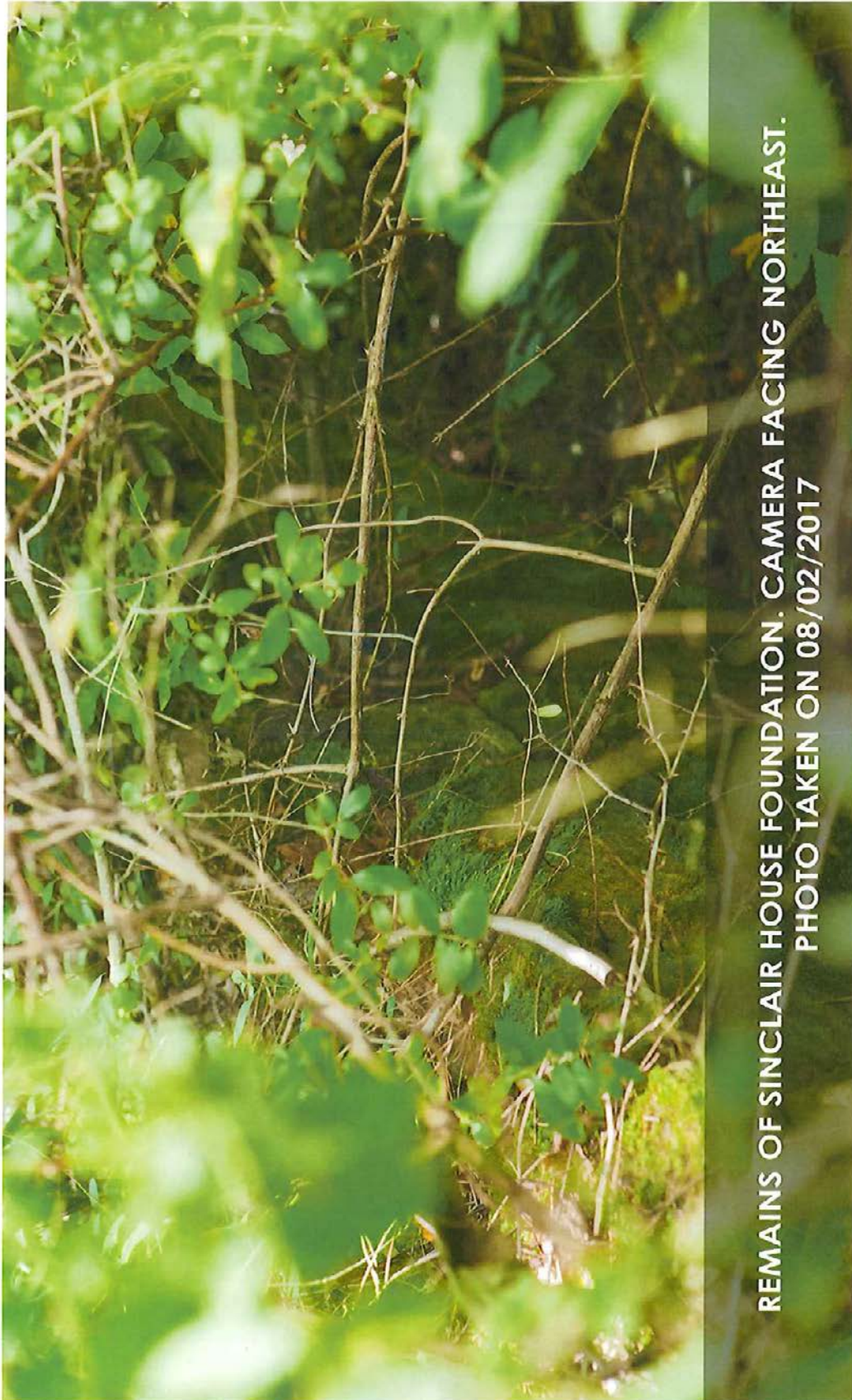
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PHOTO TAKEN ON 08/02/2017





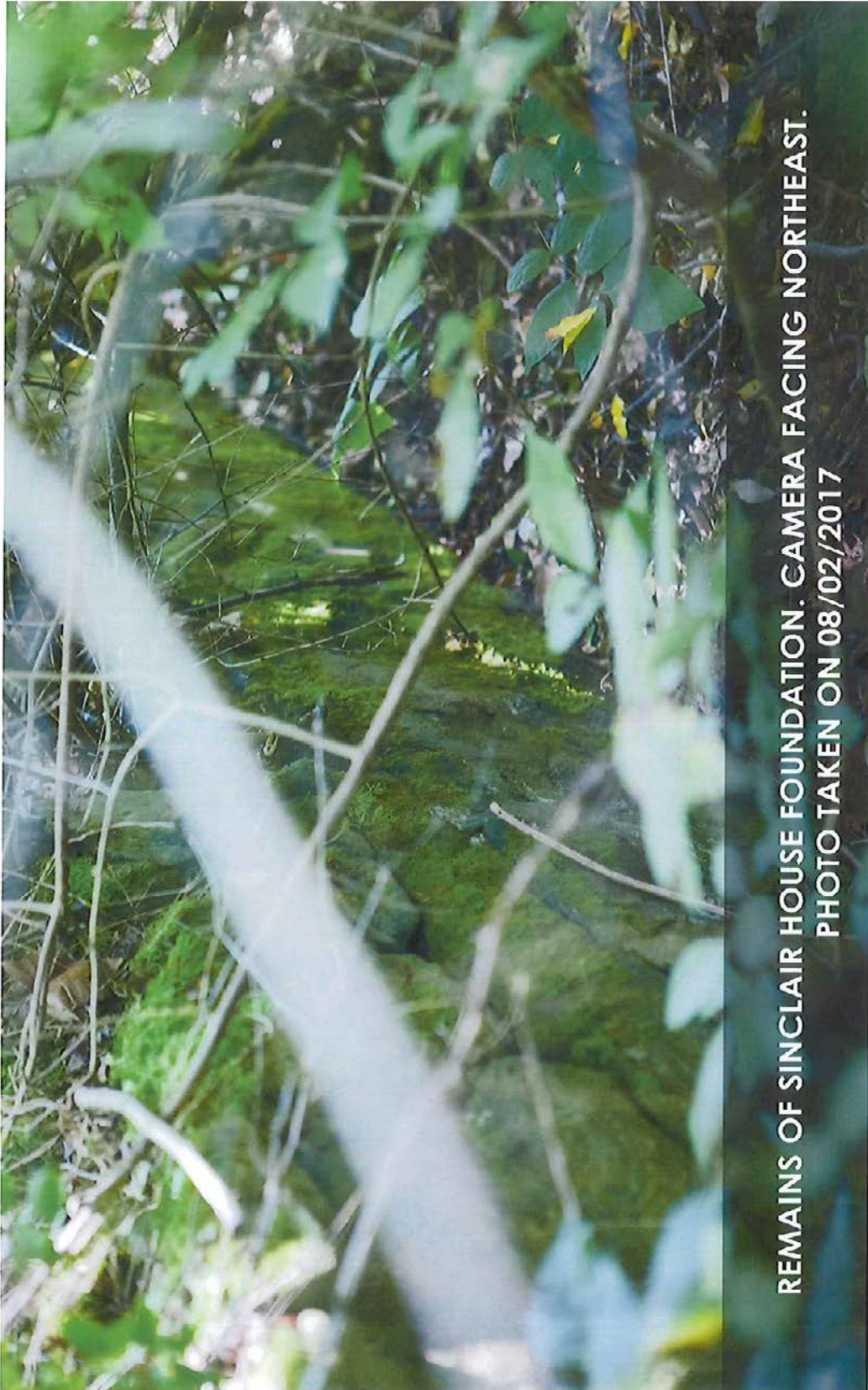
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PHOTO TAKEN ON 08/02/2017





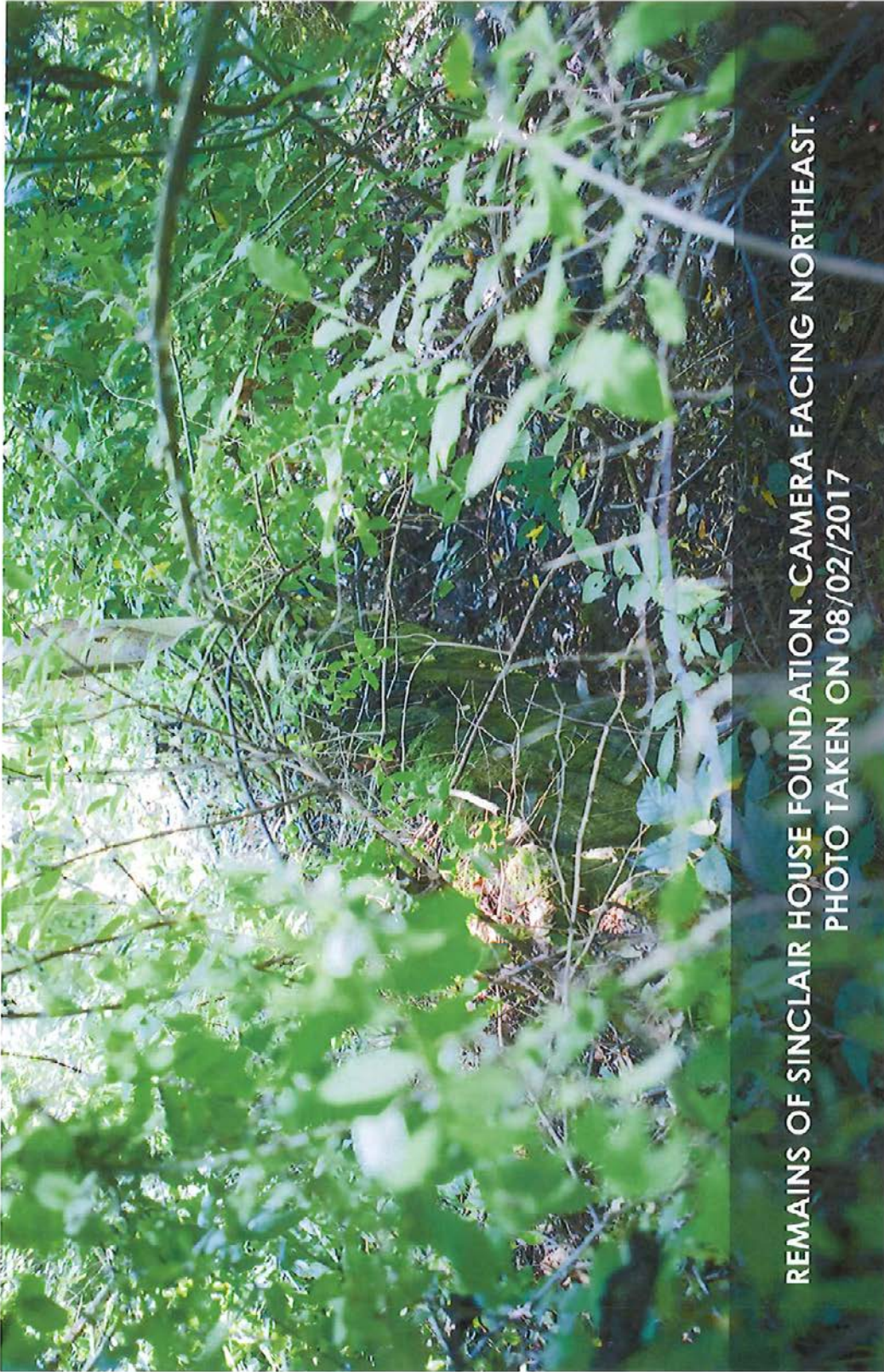
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PHOTO TAKEN ON 08/02/2017





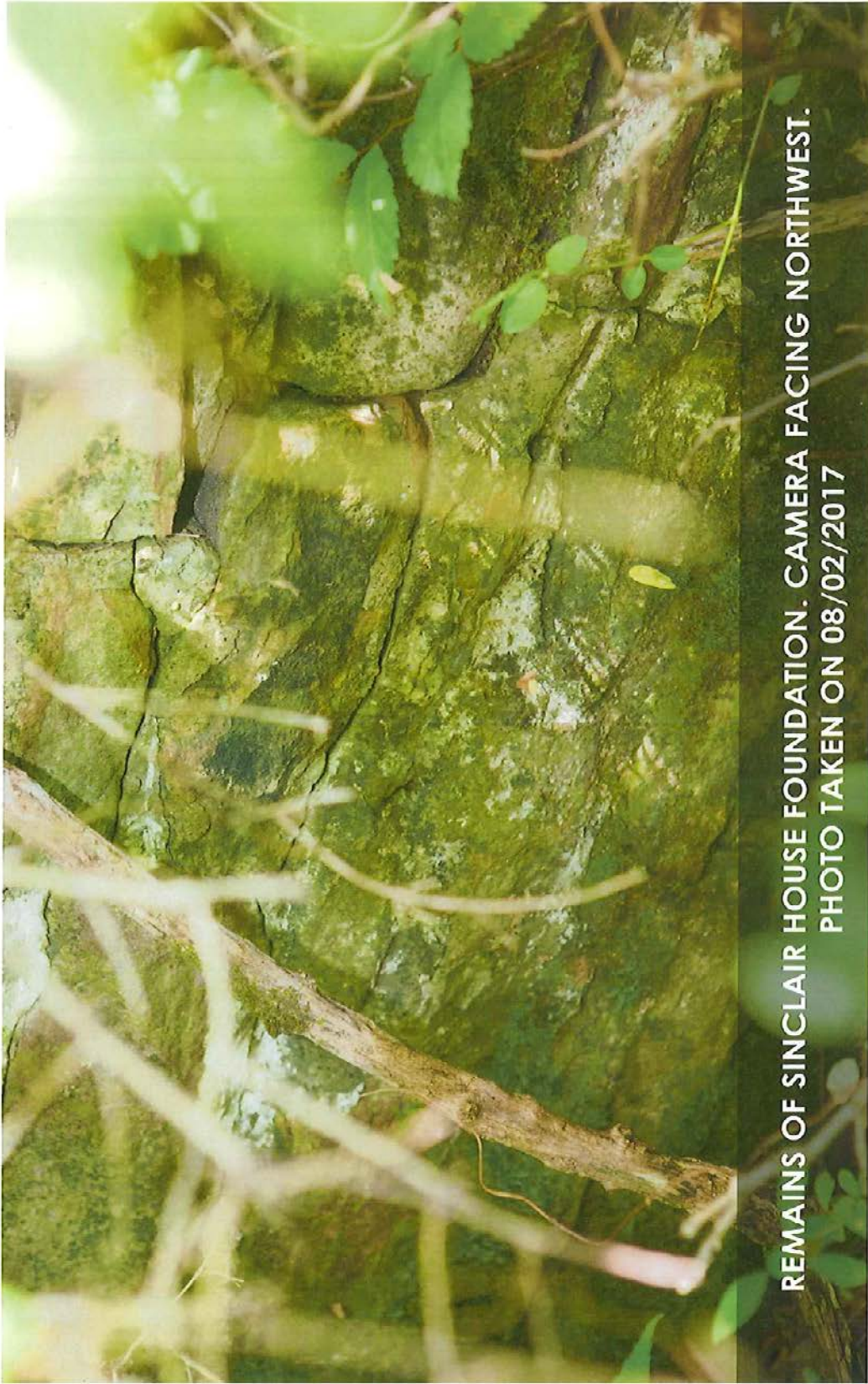
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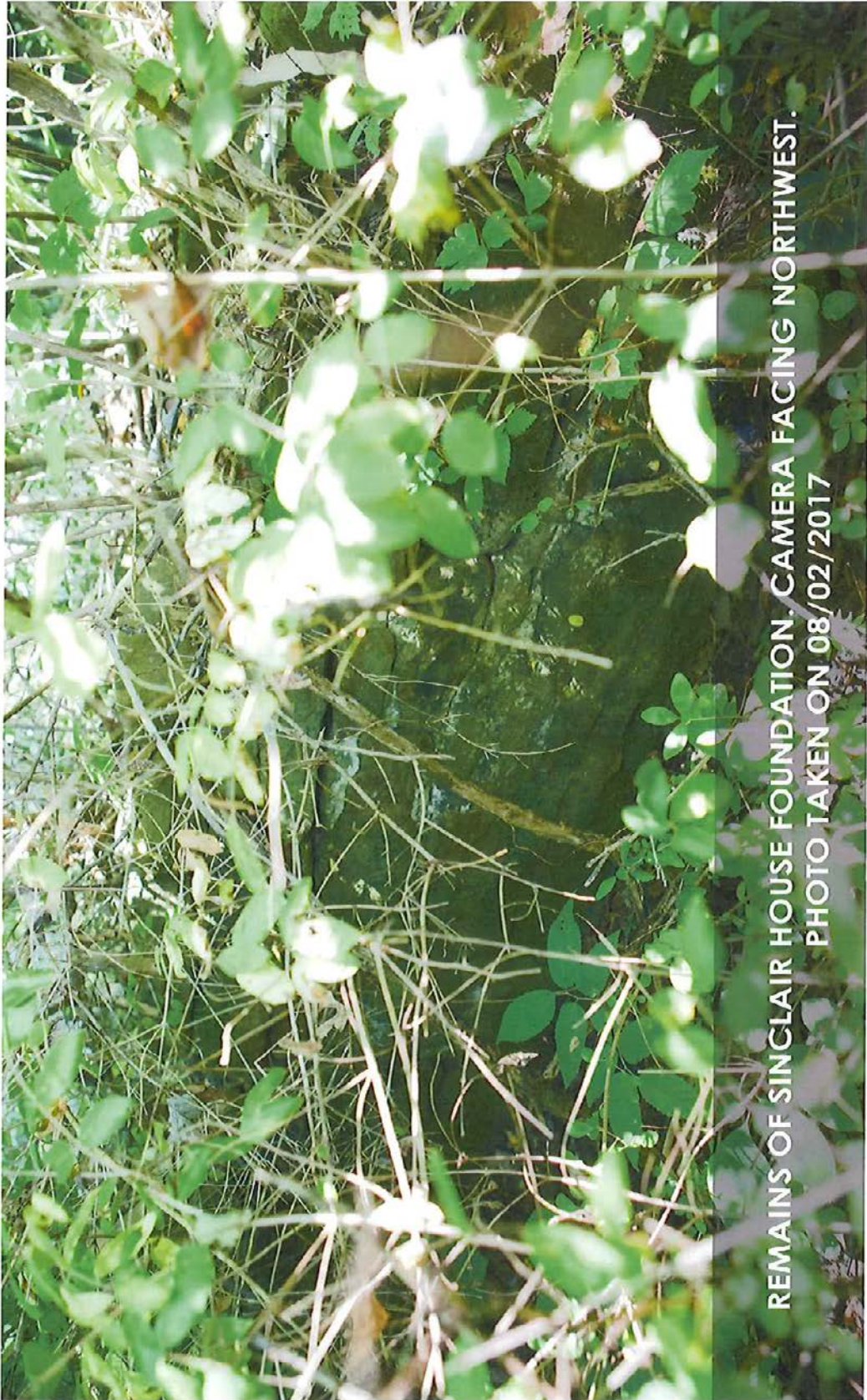
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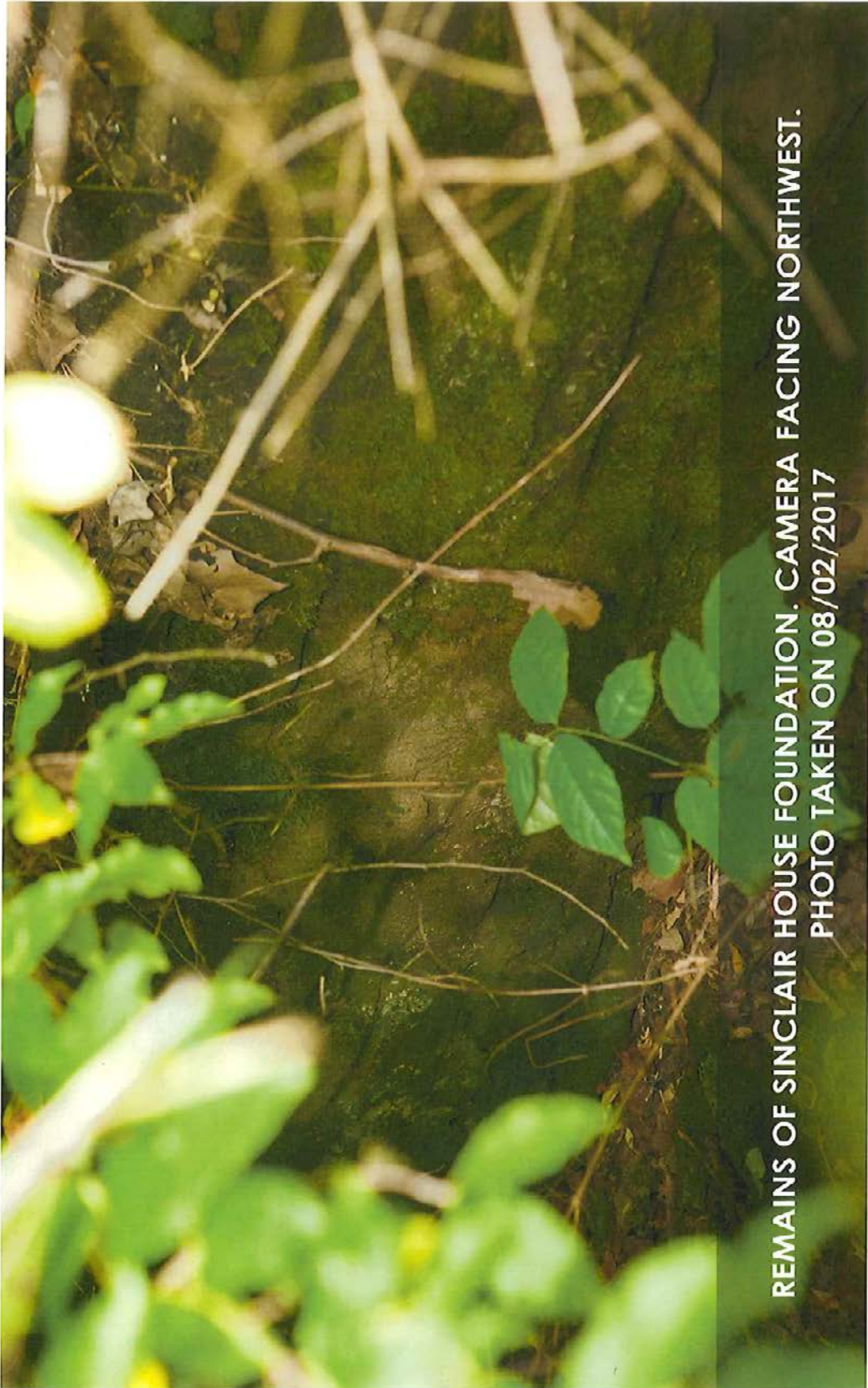


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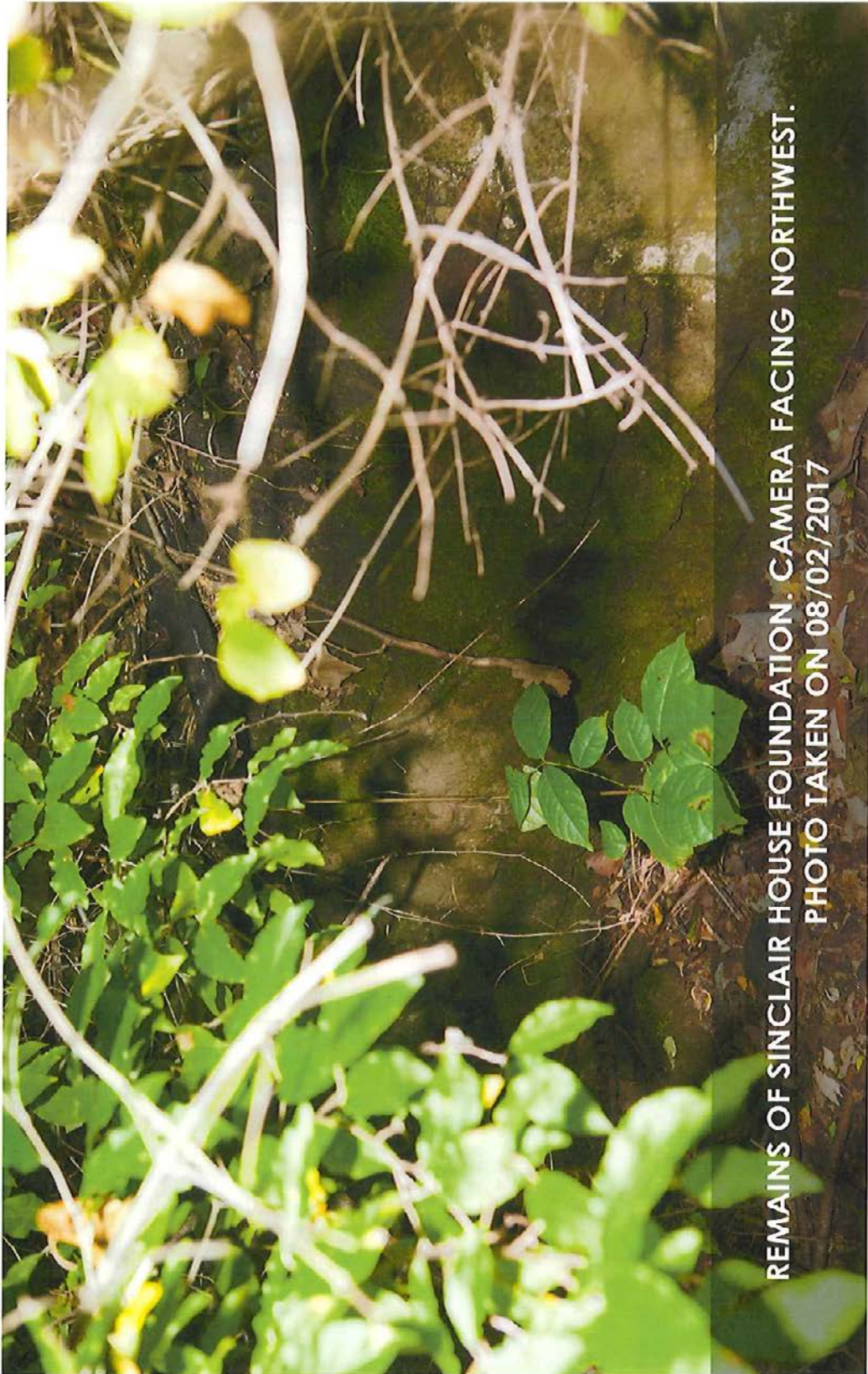






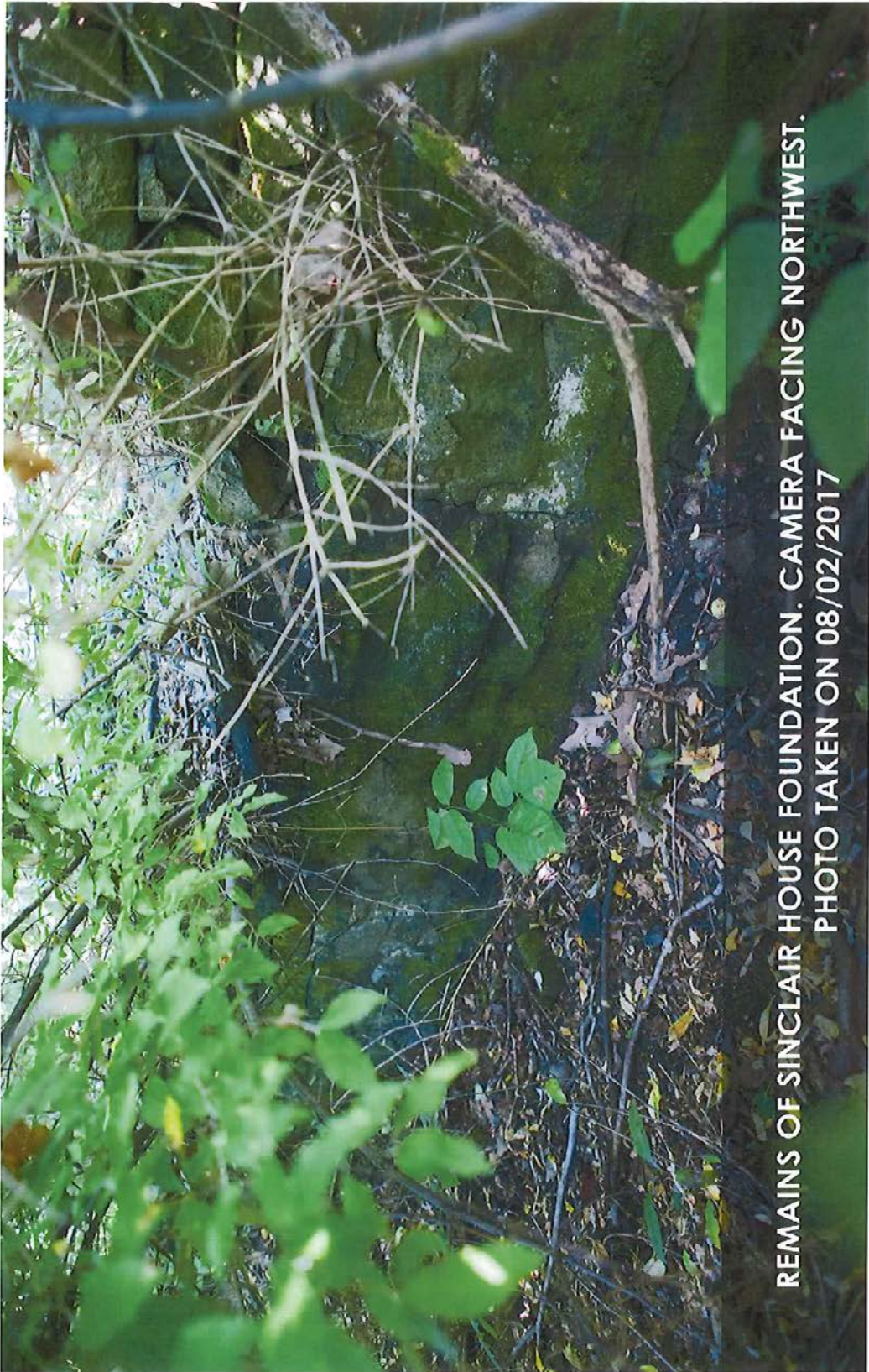
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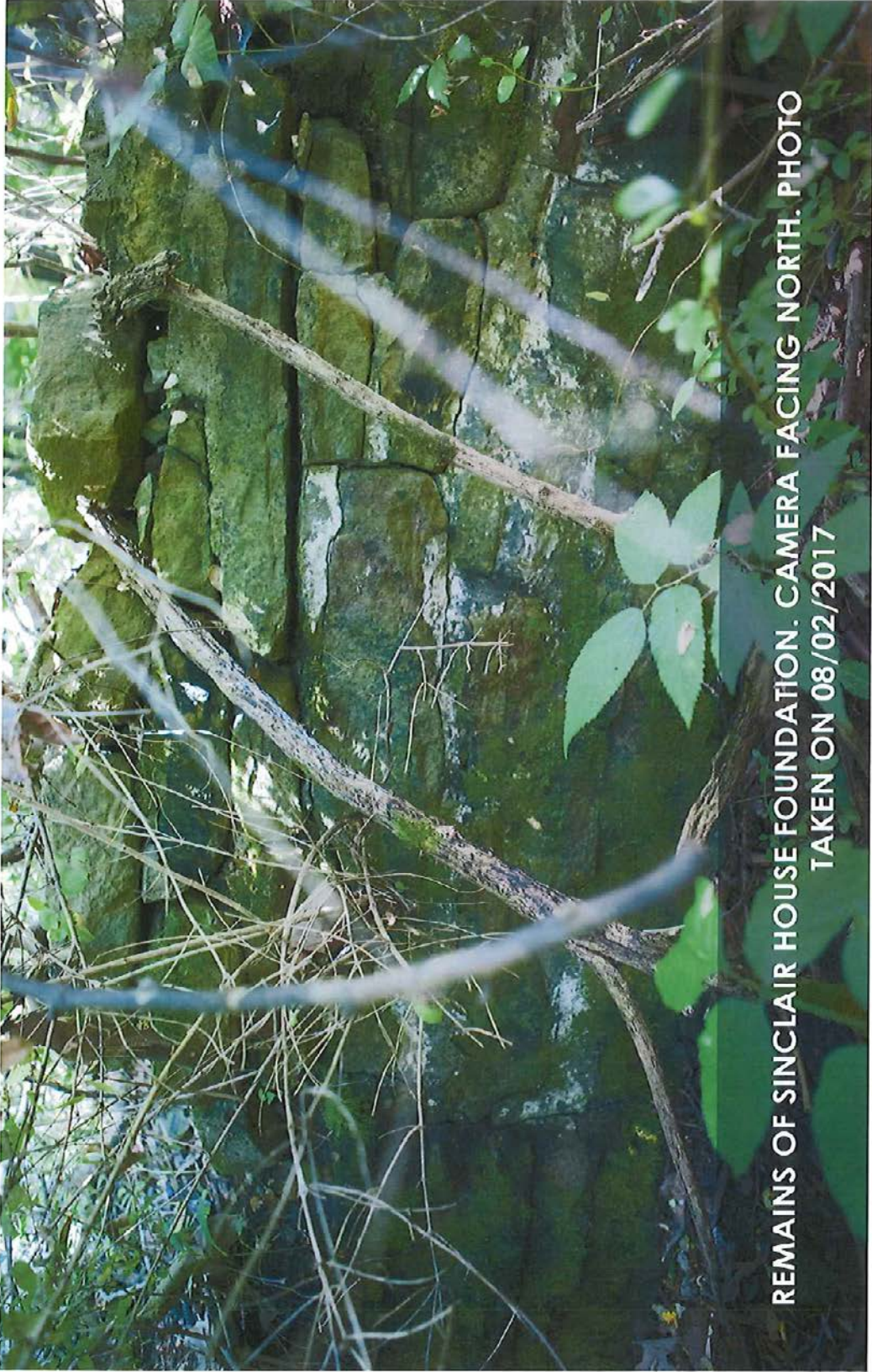
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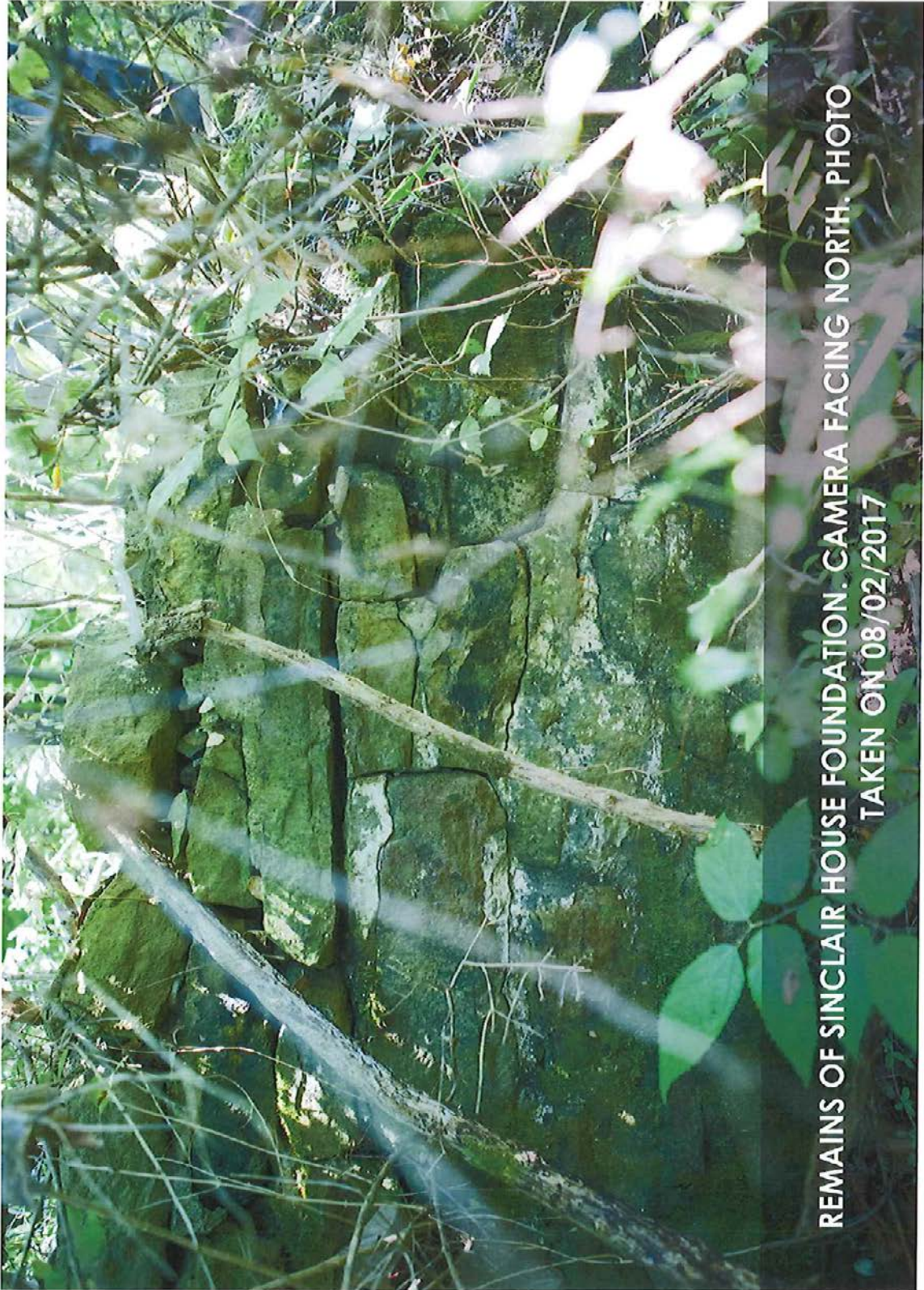
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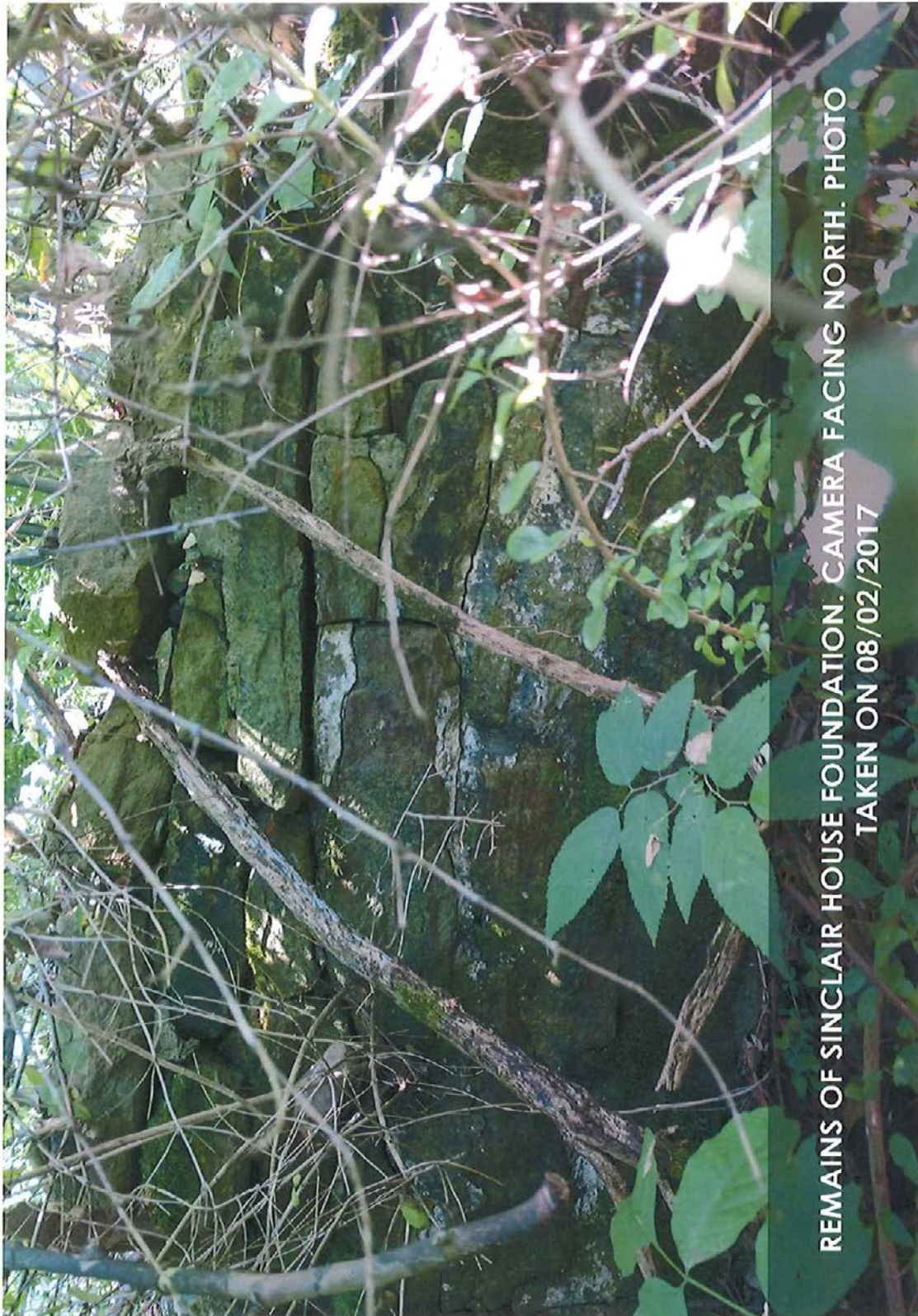
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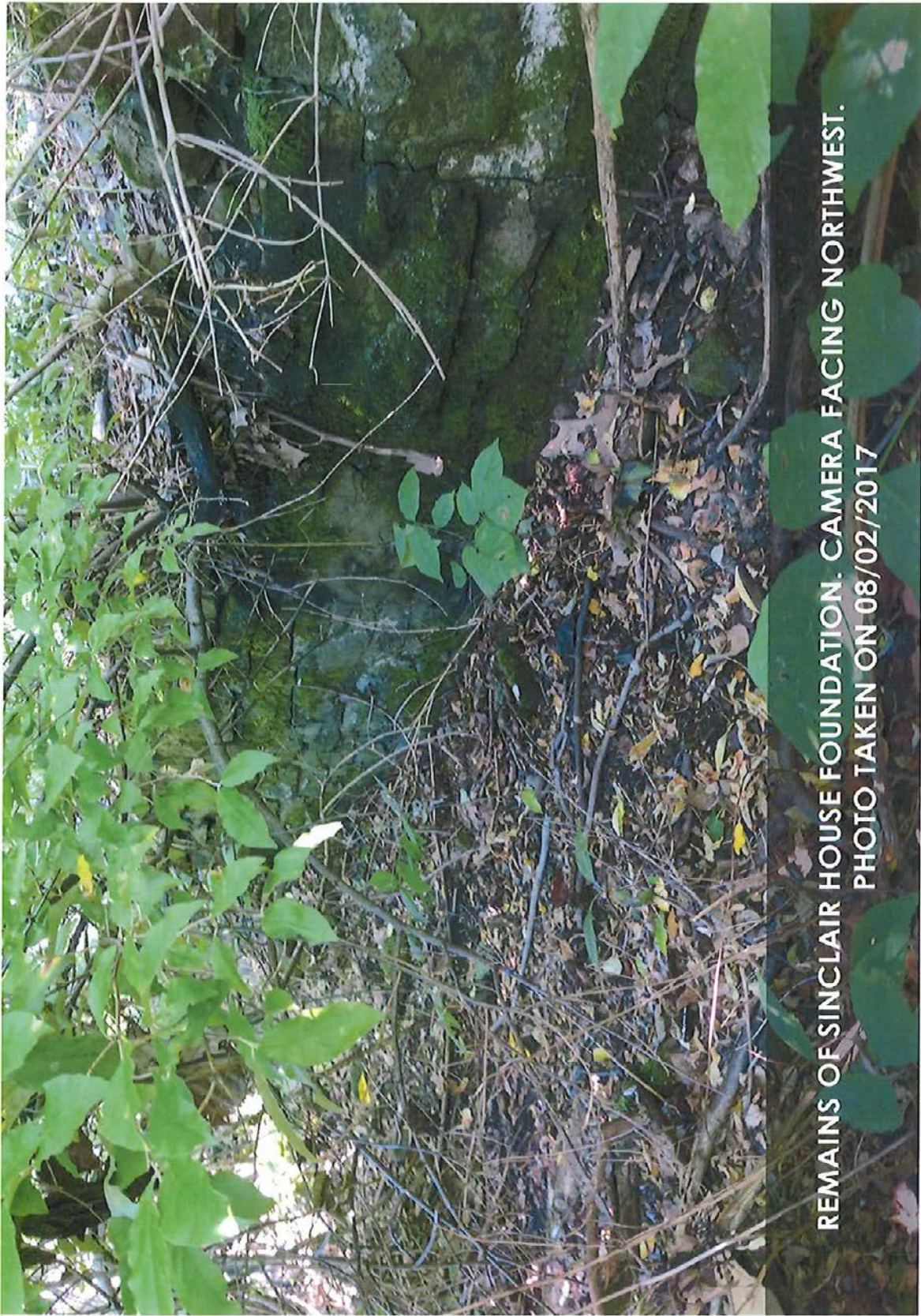
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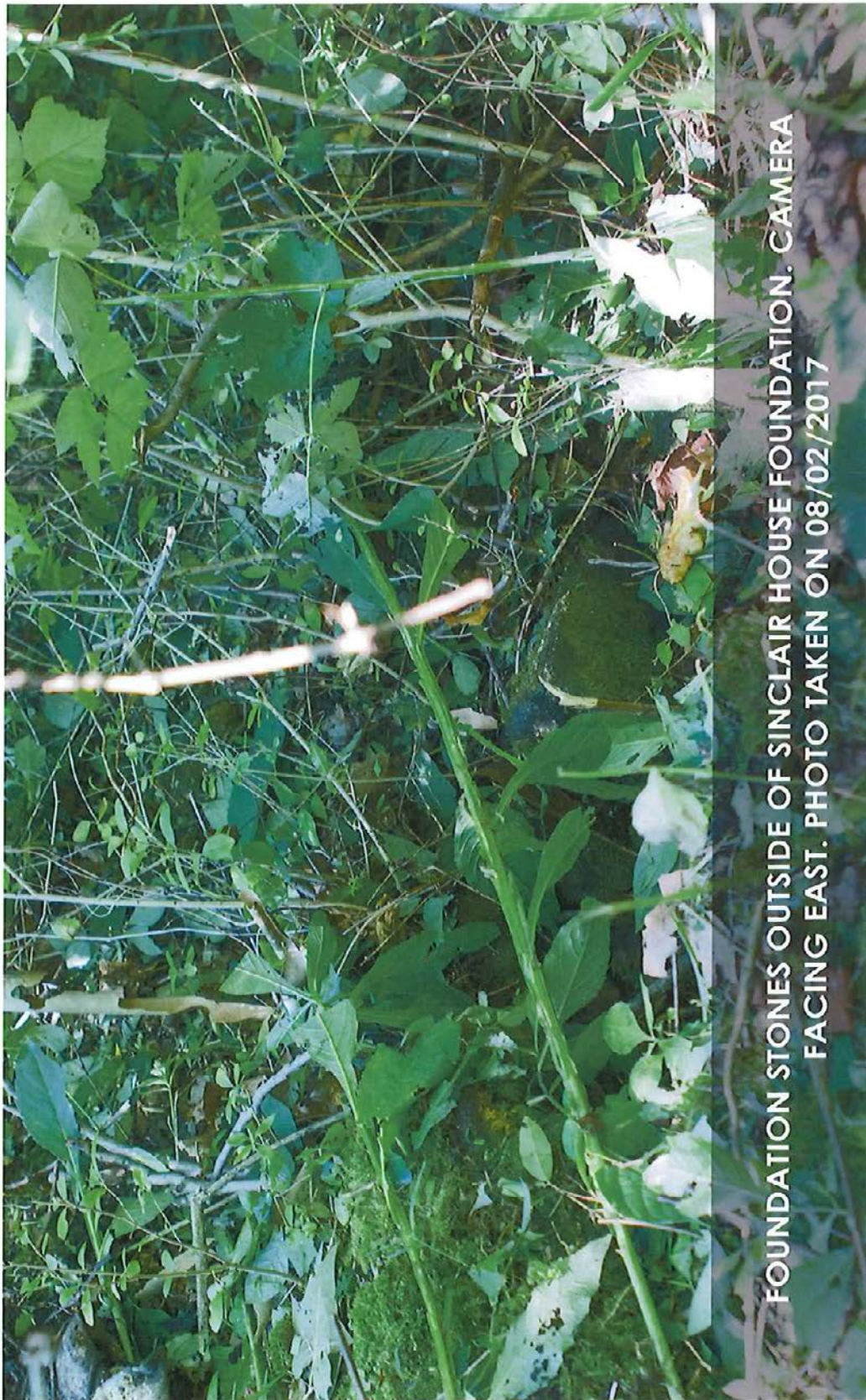
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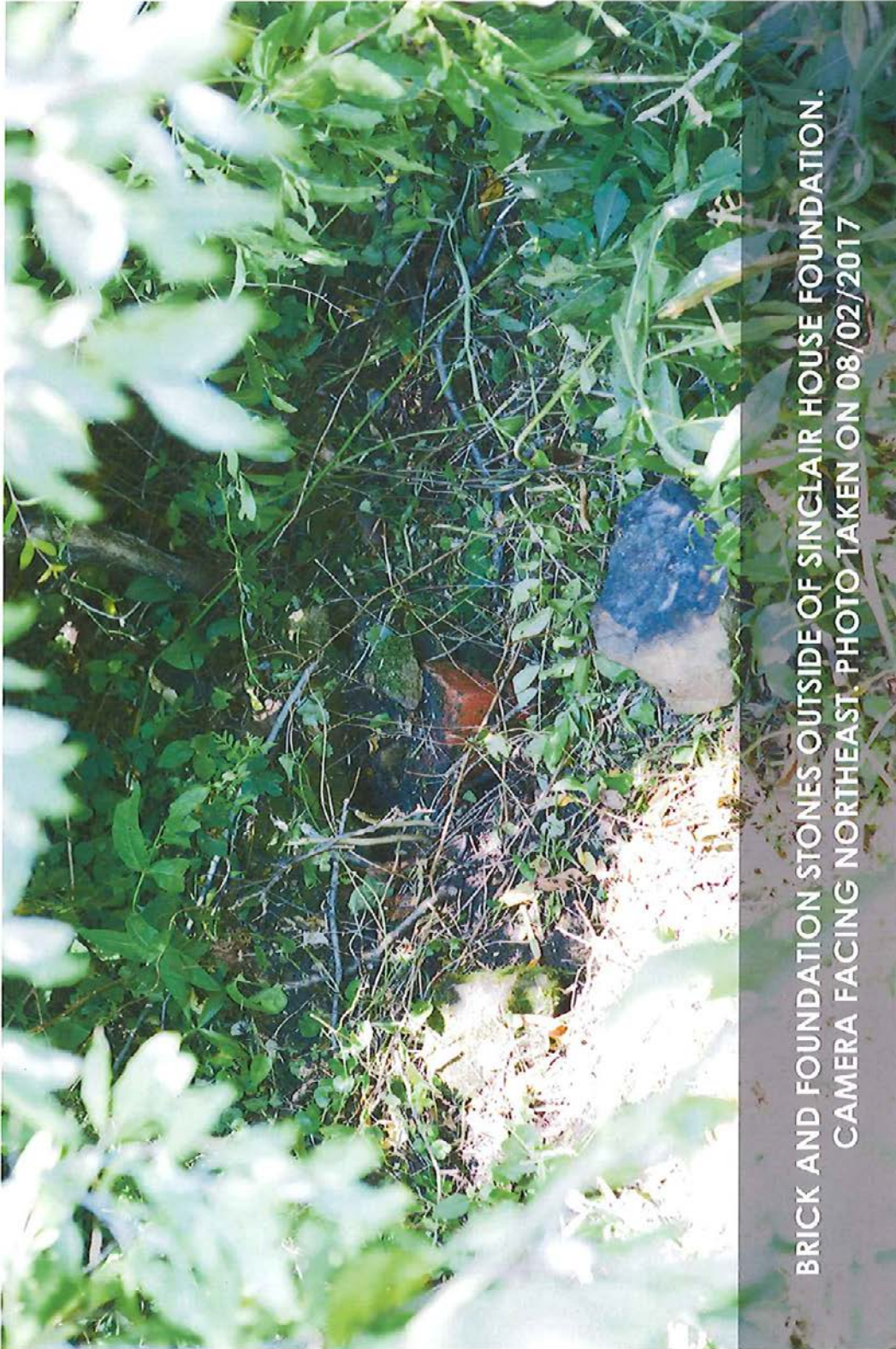


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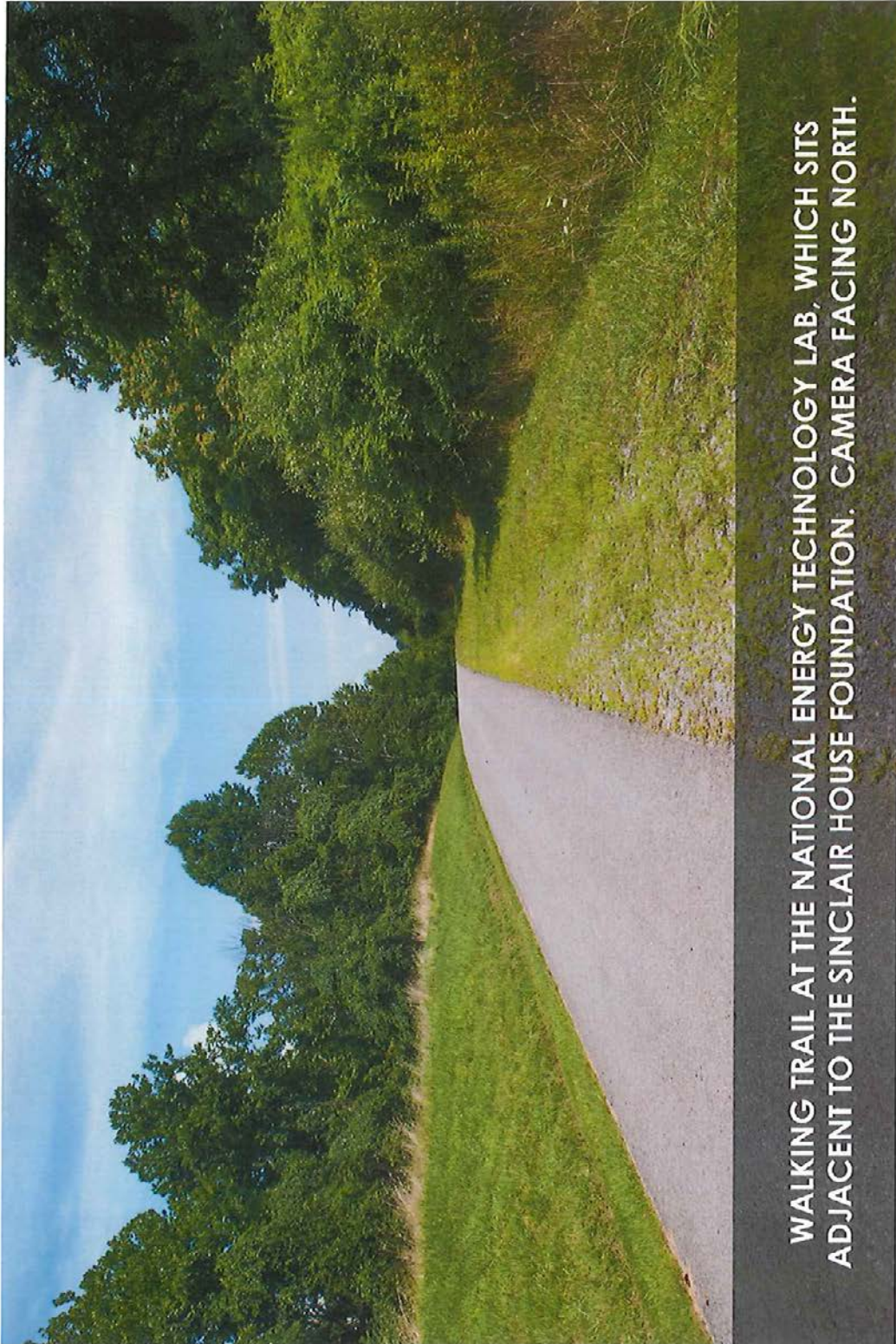






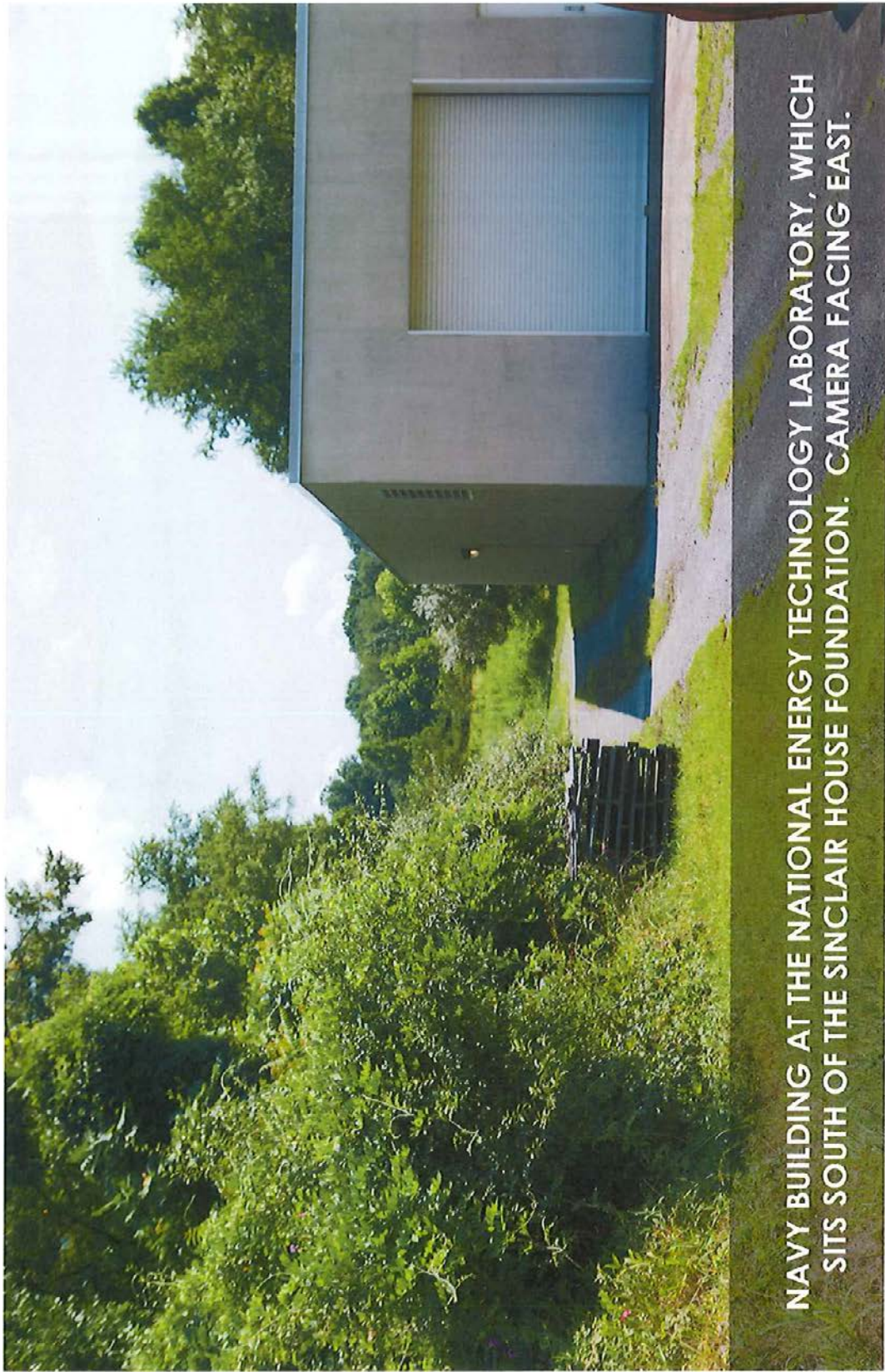
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CAMERA FACING NORTHEAST. PHOTO TAKEN ON 08/02/2017





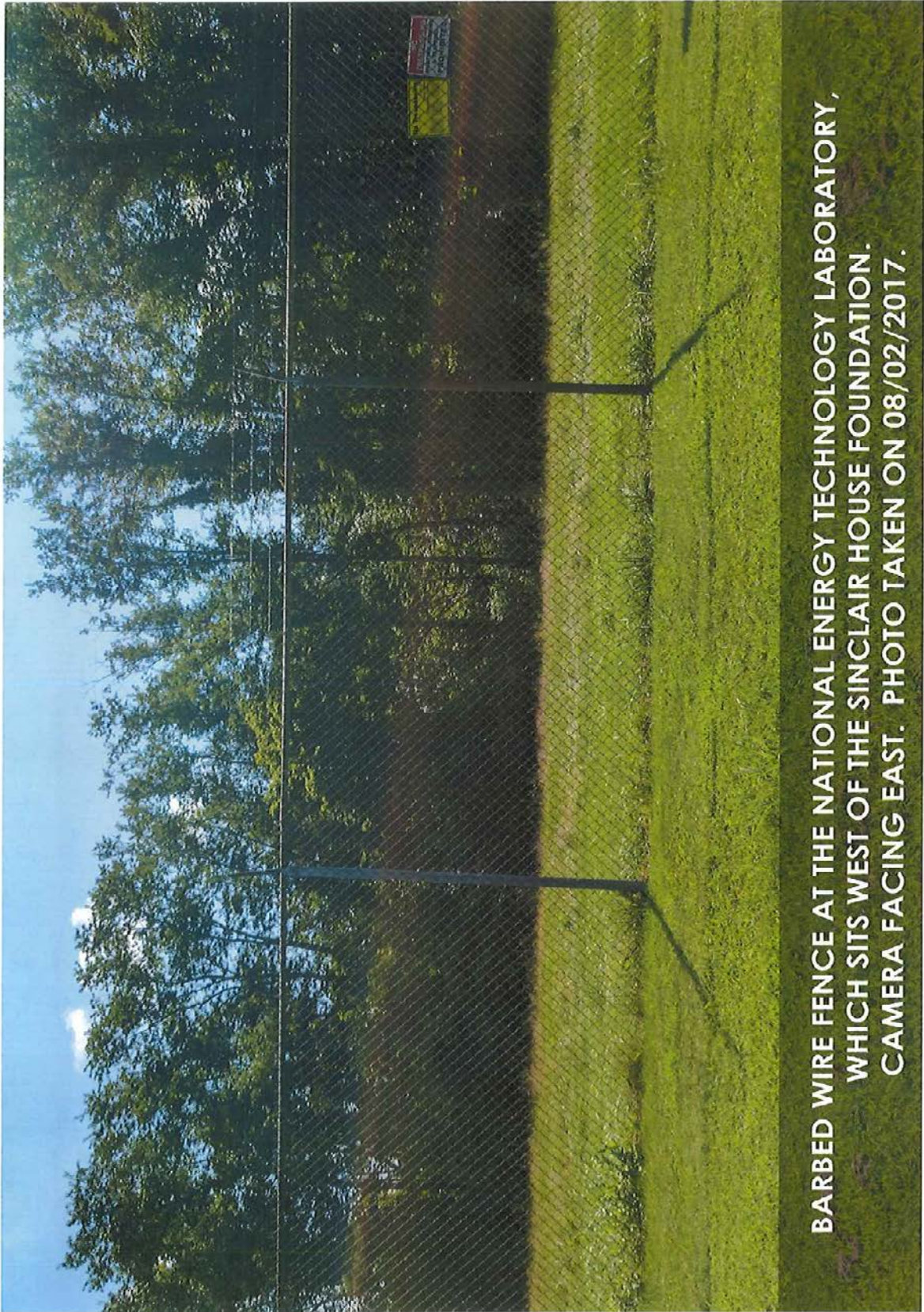
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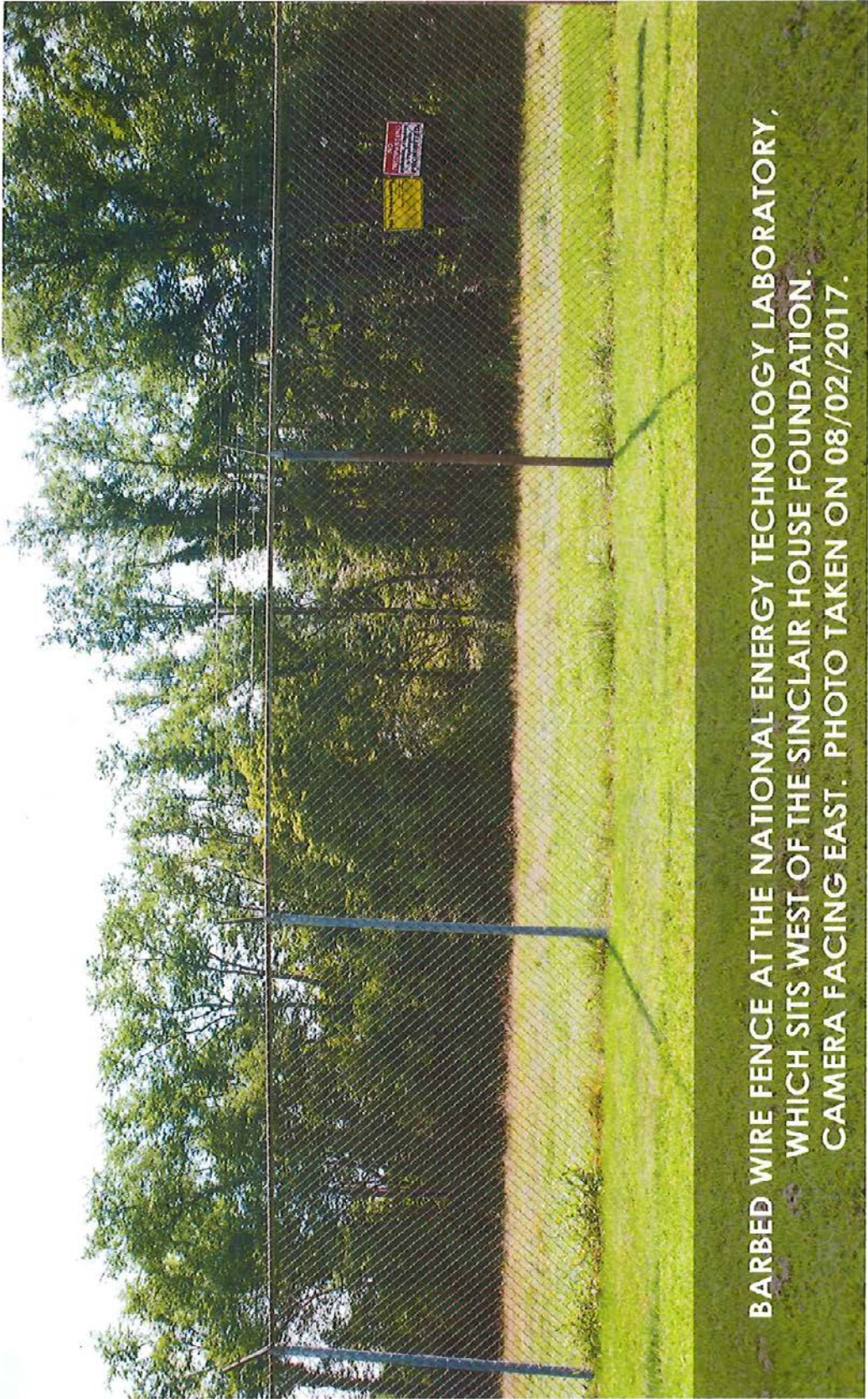
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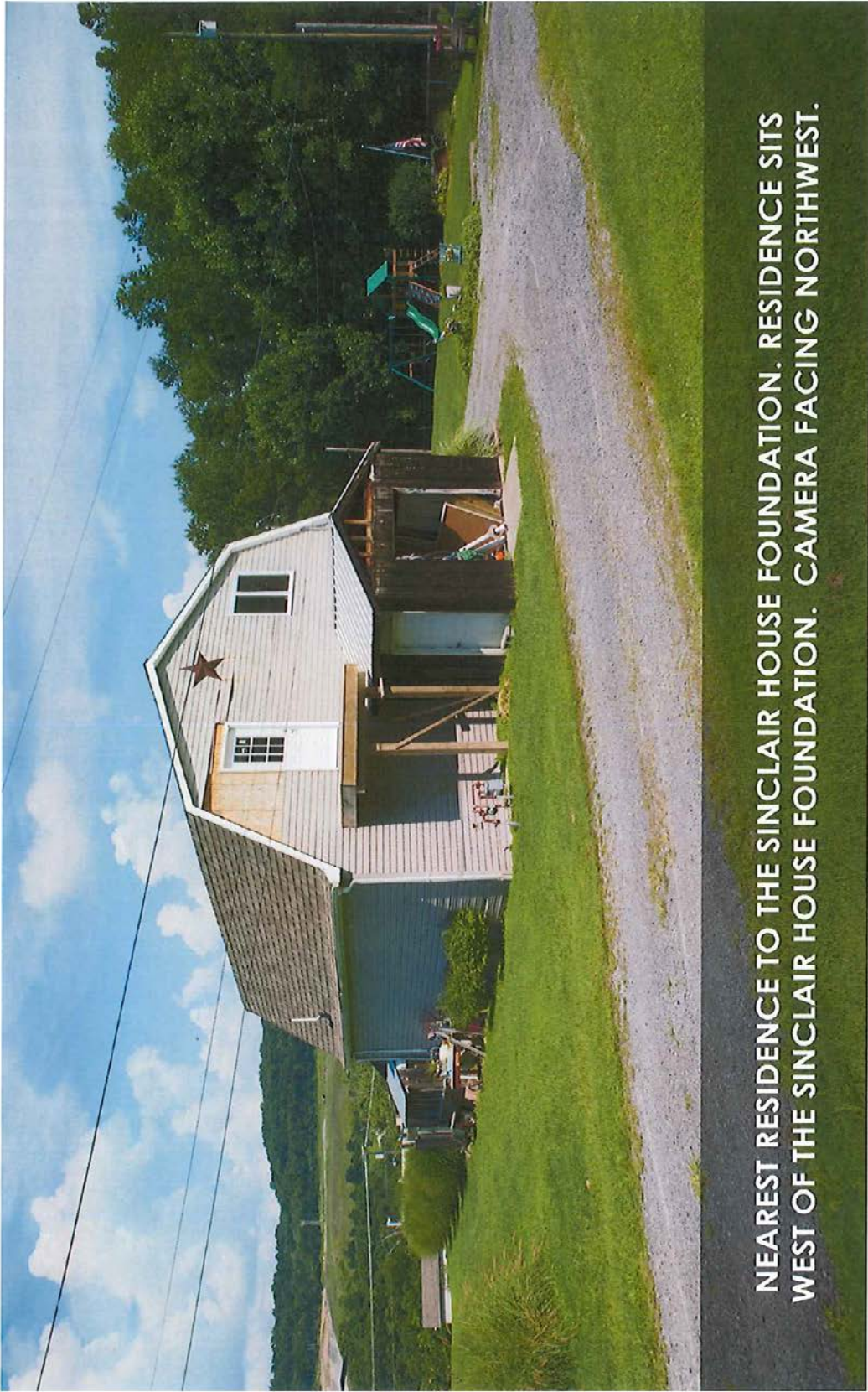
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CAMERA FACING EAST. PHOTO TAKEN ON 08/02/2017.**





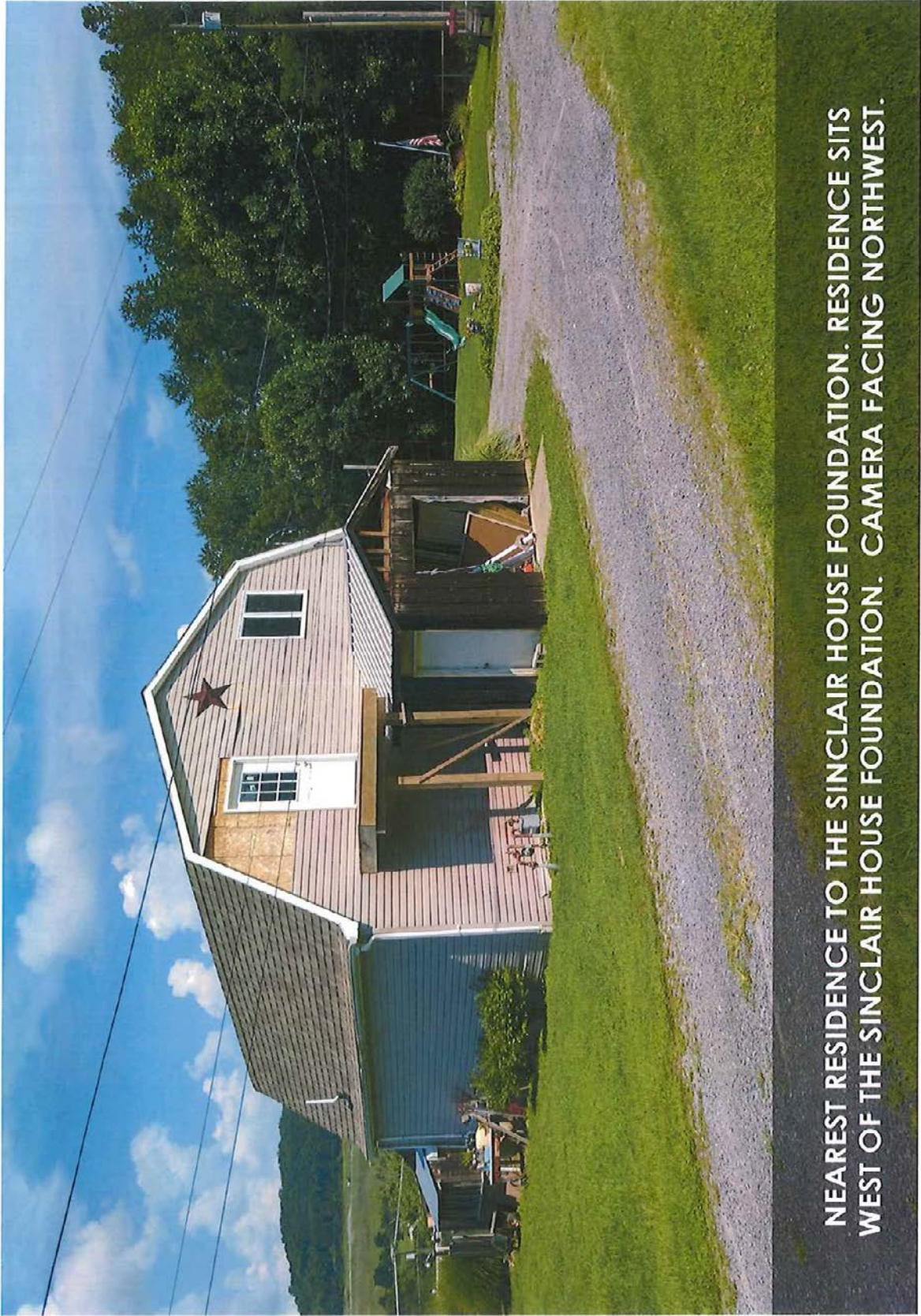
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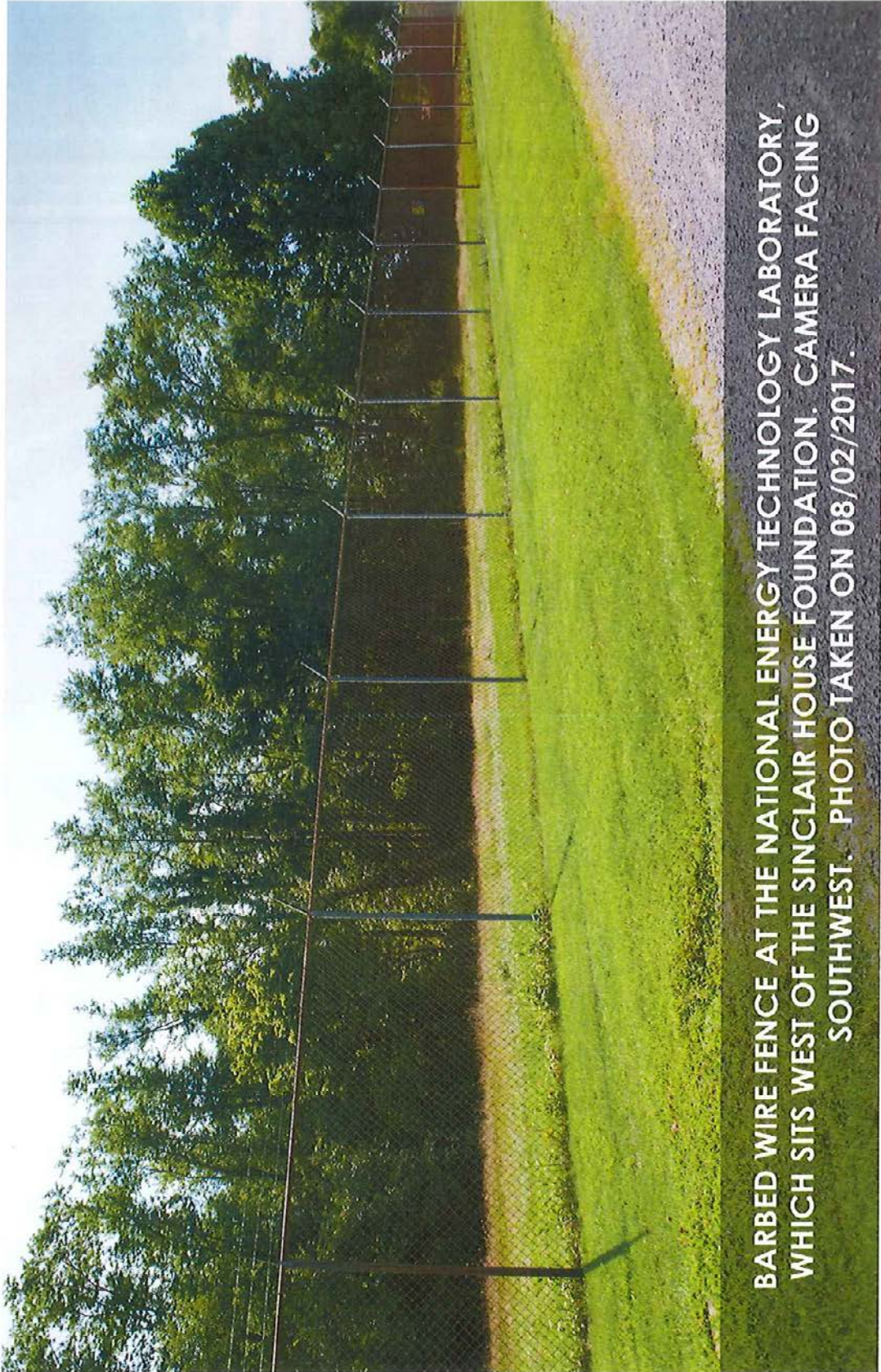
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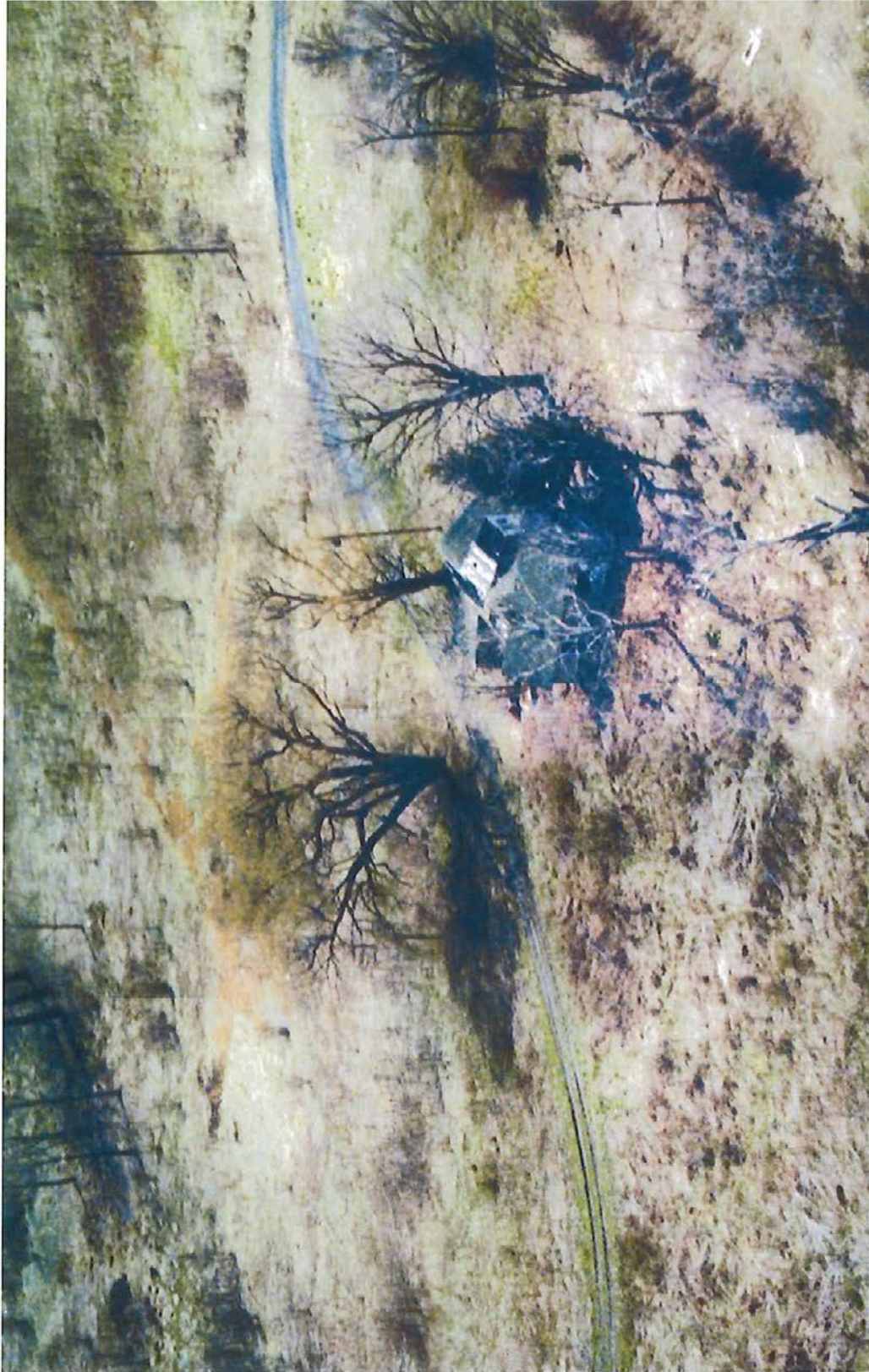
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SOUTHWEST. PHOTO TAKEN ON 08/02/2017.**





REMAINS OF SINCLAIR HOUSE FOUNDATION. CAMERA FACING NORTHEAST. EXACT DATE FOR WHEN THE PHOTO WAS TAKEN IS UNKNOWN. THE HOUSE WAS TORN DOWN BY THE NAVY/DOE AFTER ACQUISITION IN 1980. DATE RANGE ON THE PHOTO WOULD BE BETWEEN 1978 AND 1983.





**SINCLAIR HOUSE AERIAL SHOT. CAMERA FACING NORTHWEST. THE HOUSE WAS  
TORN DOWN BY THE NAVY/DOE AFTER ACQUISITION IN 1980. DATE RANGE ON THE  
PHOTO WOULD BE BETWEEN 1978 AND 1980.**

**From correspondence to Ms. Susan Pierce, State Historic Preservation Officer, West Virginia Division of Culture and History (April 19, 2018). [Click here for original correspondence.](#)**

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PHASE II ARCHAEOLOGICAL INVESTIGATIONS AT THE  
SINCLAIR FARMSTEAD SITE (46MG90), NATIONAL ENERGY  
TECHNOLOGY LABORATORY, MONONGALIA COUNTY, WEST  
VIRGINIA:  
FR# 17-732-MG



APRIL 2018

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PREPARED FOR

KEYLOGIC SYSTEMS, INC.  
3168 COLLINS FERRY ROAD  
MORGANTOWN, WV 26505

AND

UNITED STATES DEPARTMENT  
OF ENERGY  
NATIONAL ENERGY  
TECHNOLOGY LABORATORY  
3610 COLLINS FERRY ROAD  
MORGANTOWN, WEST  
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BY

MICHAEL BAKER  
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MOON TOWNSHIP,  
PENNSYLVANIA 15108

**Michael Baker**  
INTERNATIONAL



**PHASE II ARCHAEOLOGICAL INVESTIGATIONS AT THE SINCLAIR  
FARMSTEAD SITE (46MG90), NATIONAL ENERGY TECHNOLOGY  
LABORATORY, MONONGALIA COUNTY, WEST VIRGINIA**

FR# 17-732-MG

by

Kathryn M. Lombardi  
Brian R. Seymour

Submitted by

**Michael Baker International, Inc.**  
100 Airside Drive  
Moon Township, PA 15108

Prepared for  
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3168 Collins Ferry Road  
Morgantown, WV 26505

and

United States Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
Morgantown, WV 26505

***Principal Investigator***



*Kathryn M. Lombardi, M.A., R.P.A., Michael Baker International, Inc.*

April 2018

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## ABSTRACT

This report documents the results of Phase II archaeological investigations at the Sinclair Farmstead site (46MG90) located in Morgan District, Monongalia County, West Virginia. Site 46MG90 was identified during Phase I archaeological survey for the Naval Material Data System Group's (NMDSG) relocation of the Military Affiliate Radio Station (MARS), conducted by Ecology and Environment, Inc. in 1991. Although no further archaeological investigations were recommended at that time, the site was re-examined in 1992 by R. Christopher Goodwin and Associates as part of the preparation of the Morgantown Energy Technology Center's Cultural Resource Management Plan. Phase II investigations were recommended at that time based on the presence of a sandstone foundation, and the recovery of early nineteenth century artifacts. Additional survey was also conducted at the site of two concrete features identified during the 1992 survey. No additional archaeological work was recommended for these features.

Phase II investigations were conducted by Michael Baker International, Inc. (Michael Baker) on behalf of KeyLogic, Inc. and the U.S. Department of Energy, National Energy Technology Laboratory (NETL). The investigations followed a work plan prepared by Michael Baker in consultation with the West Virginia Division of Cultural and History (Pozzuto 2017). Investigations began with historic documentary research to reconstruct the land use history of the site area. Phase II excavations were conducted using observations at the site and information gathered during the historic research to place Test Units within the site boundary.

Historic research revealed that the site location was owned by "F.R. Sinclair" in 1886. F.R. Sinclair was a local farmer, minor government official, and Colonel in the Monongalia County Militia during the Civil War. The site was located within the more than 130 acres purchased by Franklin R. Sinclair between 1847 and 1882. Sinclair is believed to have owned the property and resided on it until his death in 1903. No will was found during the research, however, the property was divided between his four daughters. The original house was likely demolished ca. 1930 based on property tax records. The property remained in the family until 1956, when it was sold to a corporation who then sold it to a trading corporation who within a year, sold it to a housing development company. The parcel containing the site was never developed and it was sold to the Department of Energy in 1980. It is unclear when the structure associated with the foundation was constructed, however, historic aerial photographs and prior research suggest it was constructed post ca. 1939.

Following the historic research, Phase II excavations, consisting of the excavation of five 1 x 1 m (3.28 x 3.28 ft) test units to the north and east of the stone foundation were conducted March 12-16, 2018. Artifacts were recovered from four of the units, consisting of historic ceramics, glass, and metal. No features were identified in the units and no new surface features were identified. The 57 historic artifacts recovered from the site include both architectural and domestic items typically recovered from rural late nineteenth and early twentieth century domestic sites. Artifacts were recovered from disturbed strata associated with the construction and demolition of the house and construction activities conducted by the Department of Energy since 1980.

The 1992 survey documented a concrete block foundation and concrete pad approximately 30 m (100 ft) southeast of the Sinclair Farmstead, approximately 60 m (200 ft) east of Building B-42. A pedestrian reconnaissance was conducted and a single shovel test probe was excavated in an attempt to relocate these features. No features were identified in this portion of the Project Area. The features identified during the 1992 survey were likely destroyed during the construction of the MARS facility. No further archaeological work is recommended at this locus.



Based on the results of the Phase II investigations, the Sinclair Farmstead site (46MG90) is recommended as not eligible for the NRHP under Criterion B as it cannot be definitively linked to a person significant to the history of West Virginia or Criterion D, additional excavations will not yield information important to the history of this region. The site area appears to have contained at least two structures; the earlier house depicted on the 1886 map, and the post ca. 1939 house razed in 1980. With the exception of the foundation and an associated rubble pile, no features were encountered during Phase I survey and Phase II investigations. Few artifacts were recovered during Phase II investigations. And lastly, deed, census, and tax records for the parcel were inconclusive concerning the construction and demolition of structures. Therefore, it is recommended that no further archaeological investigations are warranted within the site boundaries.

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## INTRODUCTION

Michael Baker International, Inc. (Michael Baker) conducted Phase II archaeological investigations at the Sinclair Farmstead site (46MG90) on behalf of KeyLogic, Inc. and the U.S. Department of Energy, National Energy Technology Laboratory (NETL) in Monongalia County, West Virginia. The Project Area is located entirely within the *Morgantown North, W. Va. 7.5-minute quadrangle* (USGS 1994). Site 46MG90 is located on a ridgetop above the east bank of the Monongahela River and southwest of West Run (Figure 1). The historic locus consists of an infilled stone foundation and associated artifact scatter that dates from the mid-nineteenth to late twentieth century. It is located east of Perimeter Road on the NETL property. The identified site area measures approximately 30 x 45 m (100 x 150 ft) or 0.1 ha (0.3 ac). A second historic locus, consisting of two concrete features, identified during Phase I survey in 1991 was not reidentified.

The work was conducted following the Phase II work plan prepared in consultation with the West Virginia Division of Culture and History (WVDCH) pursuant to the instructions and intents set forth in Section 101(b)(4) of the National Environmental Policy Act of 1969; Section 1(3) and 2(b) of Executive Order 11593; Section 106 of the National Historic Preservation Act, as amended; 36CFR 800, as revised August 5, 2004; West Virginia Code § 29, as amended; and the *Guidelines for Phase I, II, and III Archaeological Investigations and Technical Reports* (Trader 2001), prepared by the West Virginia Division of Culture and History (WVDCH). Key Baker personnel involved in the effort meet appropriate professional standards as outlined in *Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines*, Federal Register, Vol. 48, No. 190-September 29, 1983, Pt. IV, and formerly published in 36CFR § 61.

### Summary of Previous Investigations at Site 46MG90

An Environmental Assessment was conducted in 1978, in preparation for the DOE's purchase of the property (USDOE 1978a). The site area was described as:

*A valve gas well and an abandoned, partially demolished stone house are located along the western edge of the site* (see Figure II-1) (Figure 12). *Neither has been used for approximately twenty years.* Fairlawn Homes has title to both facilities; these would be passed on to any future owner. *The house is not currently on the National Register of Historic Places, nor is it pending for inclusion on the Register. The house also has no known historical significance* (USDOE 1978a:31).

An earlier, preliminary draft of the Environmental Assessment described the site area as:

The land proposed for acquisition currently is not being used. Garbage and other debris are strewn about the site, and the southern edge has been used for garden plots by adjacent residents. *Approximately forty years ago, a small house was built on the upper portion of the site and a backyard farm was planted. The house is now abandoned and partially demolished and the fields overgrown. There does not appear to be any historical or archaeological significance associated with this house.* A capped gas well is also located on the midwestern edge of the site. It has not been in operation for an unknown number of years (USDOE 1978b).

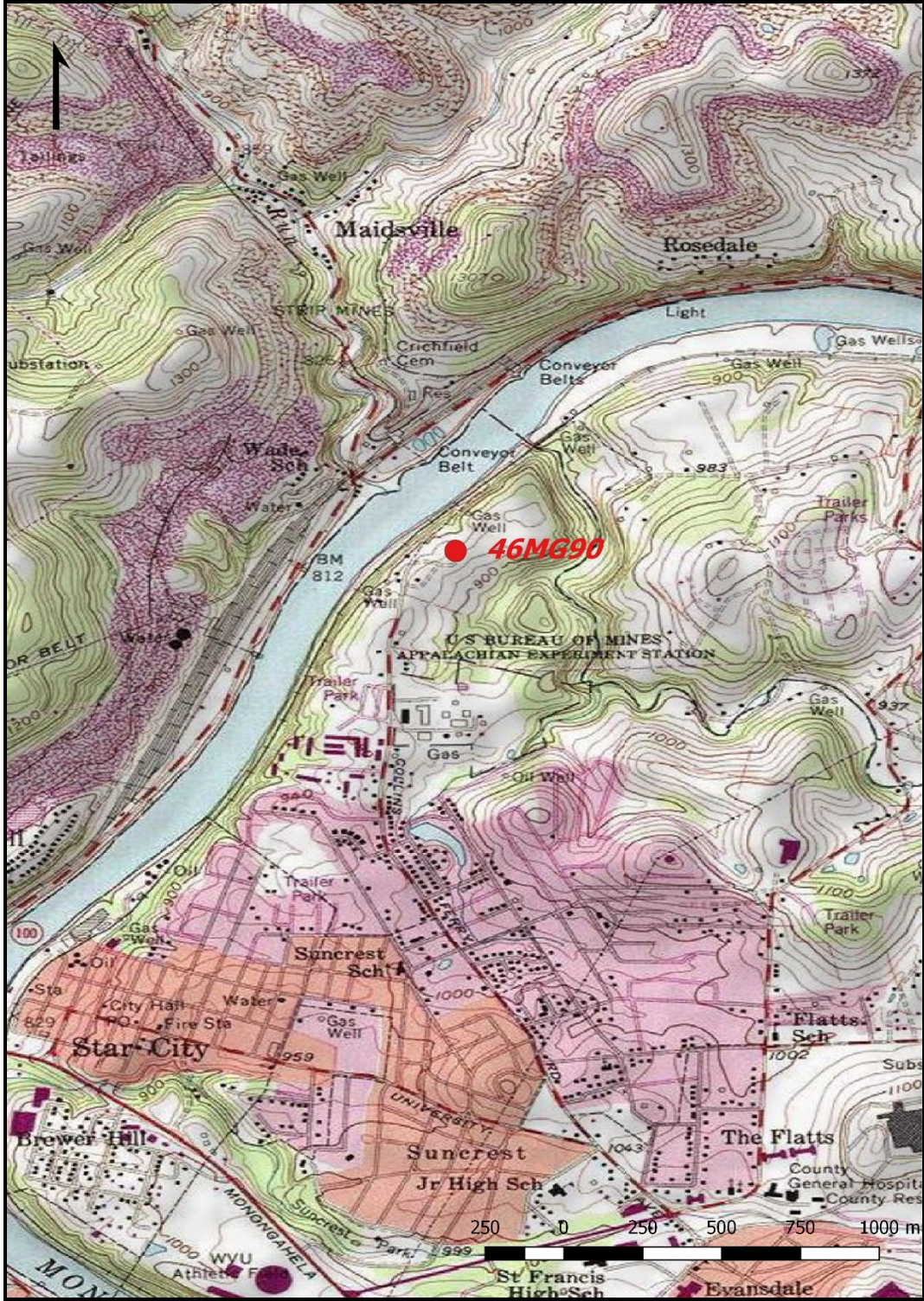


Figure 11: Location of Site 46MG90 on Morgantown North, W. Va. 7.5' U.S.G.S. topographic quadrangle.





**Figure 12: Aerial photograph of the house taken shortly before its demolition, ca. 1980, facing southeast (courtesy NETL).**

The Sinclair Farmstead site was first recorded in 1991 during a Phase I survey conducted as part of the Environmental Assessment for the Naval Material Data System Group's (NMDSG) Military Affiliate Radio Station (MARS) conducted by Ecology and Environment, Inc. At that time the site area was described as:

...a stone house foundation is visible in the southwest portion of the NMDSG tract (**Figure 13**). This foundation defines a rectangular basement (33 by 29 feet). It is built of mortared, roughly dressed sandstone blocks ranging in length from 0.5 foot to 1.5 feet. Remnants of electrical wires were observed entering the interior north wall of the basement approximately 1.5 feet below the uppermost course of the foundation. The interior of the basement contained fill that obscured 80% of the feature. Artifacts observed in proximity to the foundation included brick and metal fragments but no diagnostic materials.

The DOE demolished the existing structure following the acquisition of the tract in 1980 (Steele 1991). The basement was filled for safety reasons. Observations made during the archaeological reconnaissance were insufficient to determine whether or not this structure could be attributed a nineteenth century residence. Such a determination could be achieved only through analysis of artifacts recovered in the course of subsurface testing (Ecology and Environment, Inc. 1991:A5-1).





**Figure 13: Stone foundation as it appeared ca. 1991, at the time of the Ecology and Environment, Inc. survey (courtesy NETL).**

Historic artifacts were recovered from 10 shovel test probes (STPs) excavated in the vicinity of the stone foundation (see Figure 3). The assemblage consisted of kitchen, household, and architectural refuse consistent with a farmstead/rural residence. Diagnostic artifacts included undecorated whiteware sherds (ca. 1820+), hotelware (1880+), a clear glass bottleneck manufactured by an automatic bottle machine, an electric fuse with a patent date of 1920, a dog license collar tag dated 1935, and several modern items (i.e., plastic, aluminum foil, electrical insulator).

The stratigraphy of the site area was described as:

Stratigraphic interpretation of sediments adjacent to the stone foundation is wrought with uncertainty because this area contains an enormous volume of ash and coal dust that altered the texture and color not only of the original depositional planes but also of the underlying sediments through downward movement in the soil profile and clogging of the available pore space. Coal-induced discoloration was observed in shovel tests N1, N2, M2, O3, and O4. Those shovel tests in the vicinity of the foundation that lacked coal dust (i.e. O1, O2) revealed an unstratified fill matrix with a high degree of mottling (silty sand, 2.5YR 4/1 to 10YR 6/8).

It is not likely that the former residents of the house spread the coal dust intentionally over such a wide area (more than 100 feet in diameter) in direct proximity to the dwelling. In all probability, coal dust distribution is a result of the dislocation of a single self-contained repository (i.e., a bin or shed) by the blade of a bulldozer. The formation of the archaeological deposit near the stone foundation is attributed to a single brief episode of grading that followed the process that generated a pile of fill in the interior of the foundation.

The archaeological deposits adjacent to the foundation are the result of the tertiary depositional process and lack any integrity. They do not constitute a cultural resource eligible for nomination to the NRHP (Ecology and Environment, Inc. 1991:A6-5).

Additional Phase I survey was conducted as part of the preparation of the Cultural Resources Management Plan for the Morgantown Energy Technology Center, by R Christopher Goodwin and Associates in 1992 (Polglase et al. 1993) (**Figure 14** and **Figure 15**).

This survey consisted of the excavation of 11 STPs and a single 1 x 1 m (3.28 x 3.28 ft) test unit surrounding the stone foundation and filled cellar area (**Figure 15**). All of the STPs were located within 6 m (19.7 ft) of the foundation and cellar, and were placed 3-5 m (9.8-16.4 ft) apart. STPs excavated to the west of the foundation contained disturbance attributed to the construction of Perimeter Road, located approximately 7 m (23 ft) west of the foundation. STPs were excavated to a maximum depth of 43 cm (16.9 in). STPs excavated to the north, east and south of the foundation contained historic and modern artifacts, three of which, North STP 2, East STP 1, and South STP 3 contained artifacts that date to the early to mid-nineteenth century. Soil stratigraphy for these STPs is not discussed in the report.



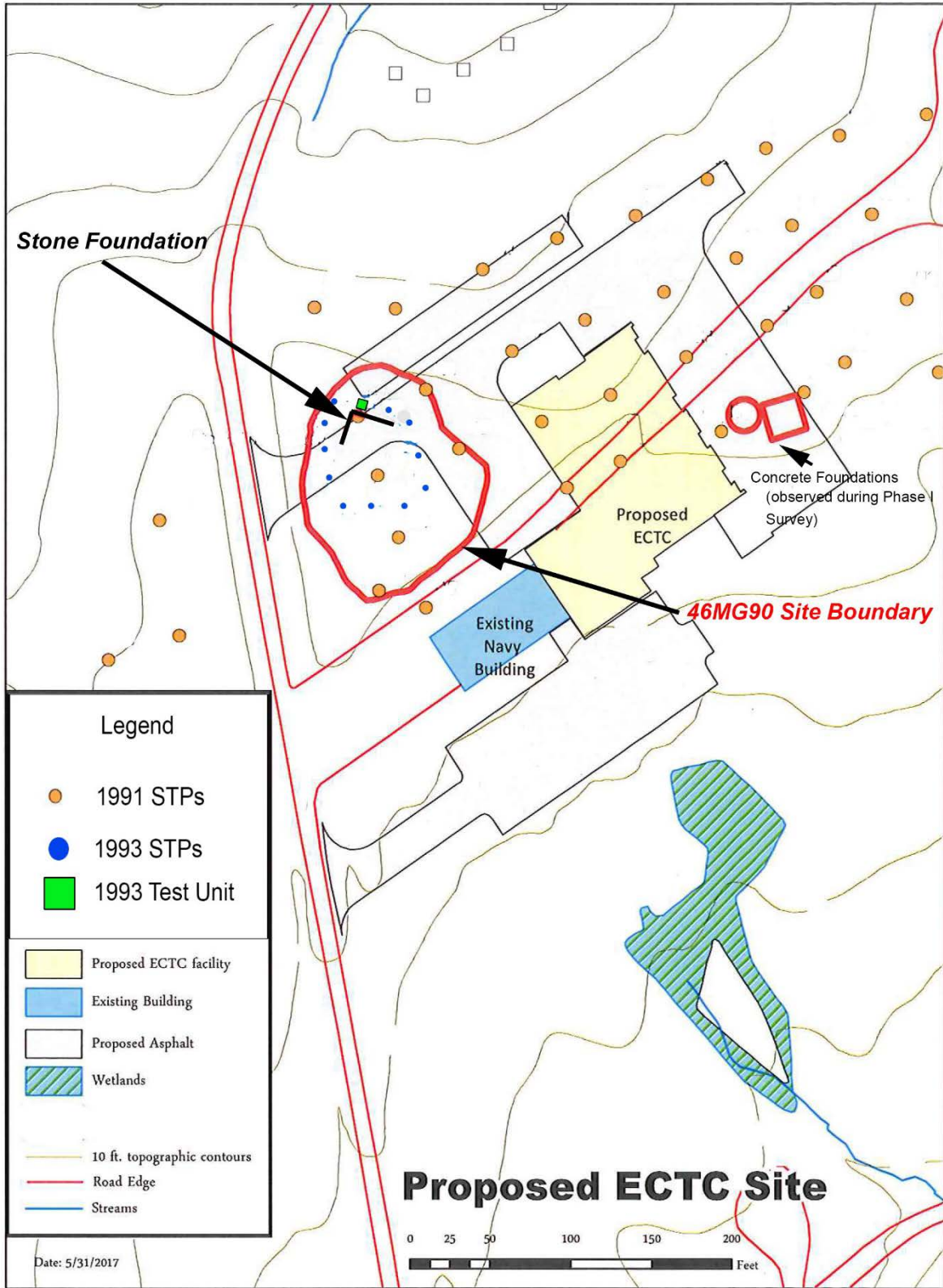


Figure 14: Proposed ECTC site plan showing previous archaeological surveys (adapted from Pozzuto 2017).

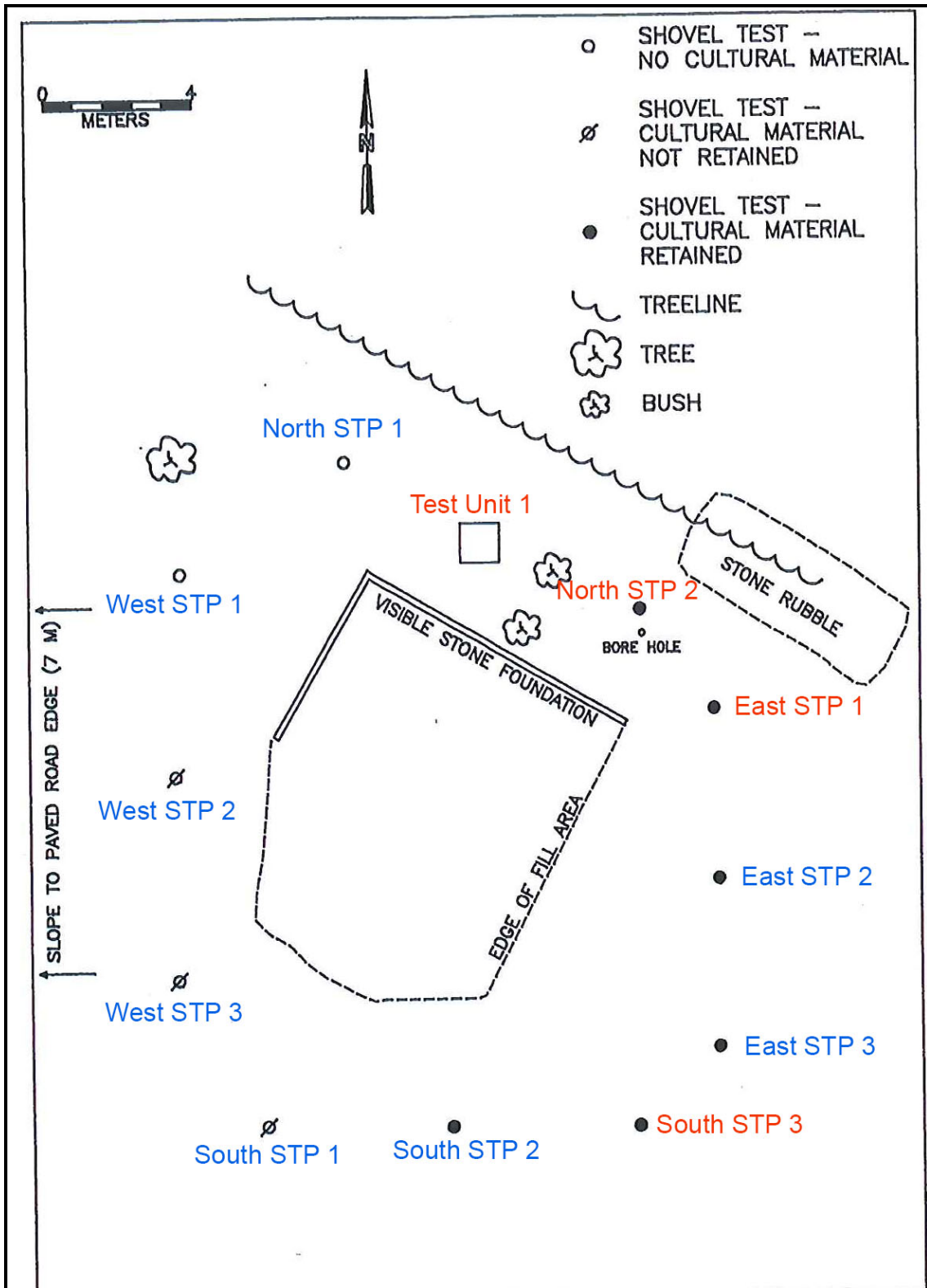


Figure 15: Map showing locations of 1992 STPs and Test Unit. STPs containing possible Antebellum artifacts are labeled in red (adapted from Polglase et al. 1993).



The excavations surrounding the foundation were described as:

During the archeological testing component of this study, the vicinity of the stone foundation was reexamined (Appendix I). A total of 11 shovel tests and one 1 x 1 m (3.28 x 3.28 ft) test unit were excavated around the perimeter of the feature. Although the shovel tests produced ambiguous data relative to the demolition impacts, the test unit revealed an intact historic occupation layer (Stratum III at a depth of 65 cm (25.6 in) below the surface (**Figure 16**). This occupation layer, which contained artifacts from the second and third quarters of the nineteenth century, apparently had been covered up during the razing of the subject [structure] or had been protected by a fill deposit of earlier vintage. Due to the presence of an apparently intact mid-nineteenth century component in association with the filled-in foundation, the 46MG90 may contain significant data relative to the historic occupation of Monongalia County. Evaluatory archaeological testing (Phase II) of this site should be undertaken if the site is to be impacted by the relocation of the MARS facility. Evaluatory testing also should be undertaken in accordance with Section 110 of the NHPA (Polglase et al. 1993:48).

Site 46MG90 consists of a stone foundation from a structure razed ca. 1980 with an associated artifact scatter dating from the mid-nineteenth century. Based on the early artifacts recovered during the 1992 survey, additional archaeological investigations were recommended to address the site's potential to contain significant information relating to antebellum settlement in the Monongahela Valley. In a response letter dated February 23, 1993, the WVDCH concurred with this recommendation, stating "In conclusion, we agree with the content of your letter. If the site is avoided, no further consultation is required according to the Section 106 review process. If there was to be a direct impact to the site, further evaluation would be required, but avoidance eliminates this requirement. (Appendix I: Farrar 1993).

In June 2017, the NETL informed the WVDCH of the planned construction of a new Energy Conversion Technology Center (ECTC) within the NETL complex (Appendix I: Pozzuto 2017). The ECTC and its associated parking lots will impact the Sinclair Farmstead site. The letter served to inform the WVDCH that an Environmental Assessment would be prepared for the project and to ask for WVDCH "input on a possible Phase II Archaeological Investigation."

The WVDCH response, dated June 21, 2017, stated that because it is no longer possible to avoid the site, "we request that the site undergo National Register evaluations prior to initiating construction activities in their locations. We will provide further comment upon receipt of a proposed Phase II scope of work for the site" (Appendix I: Pierce 2017).

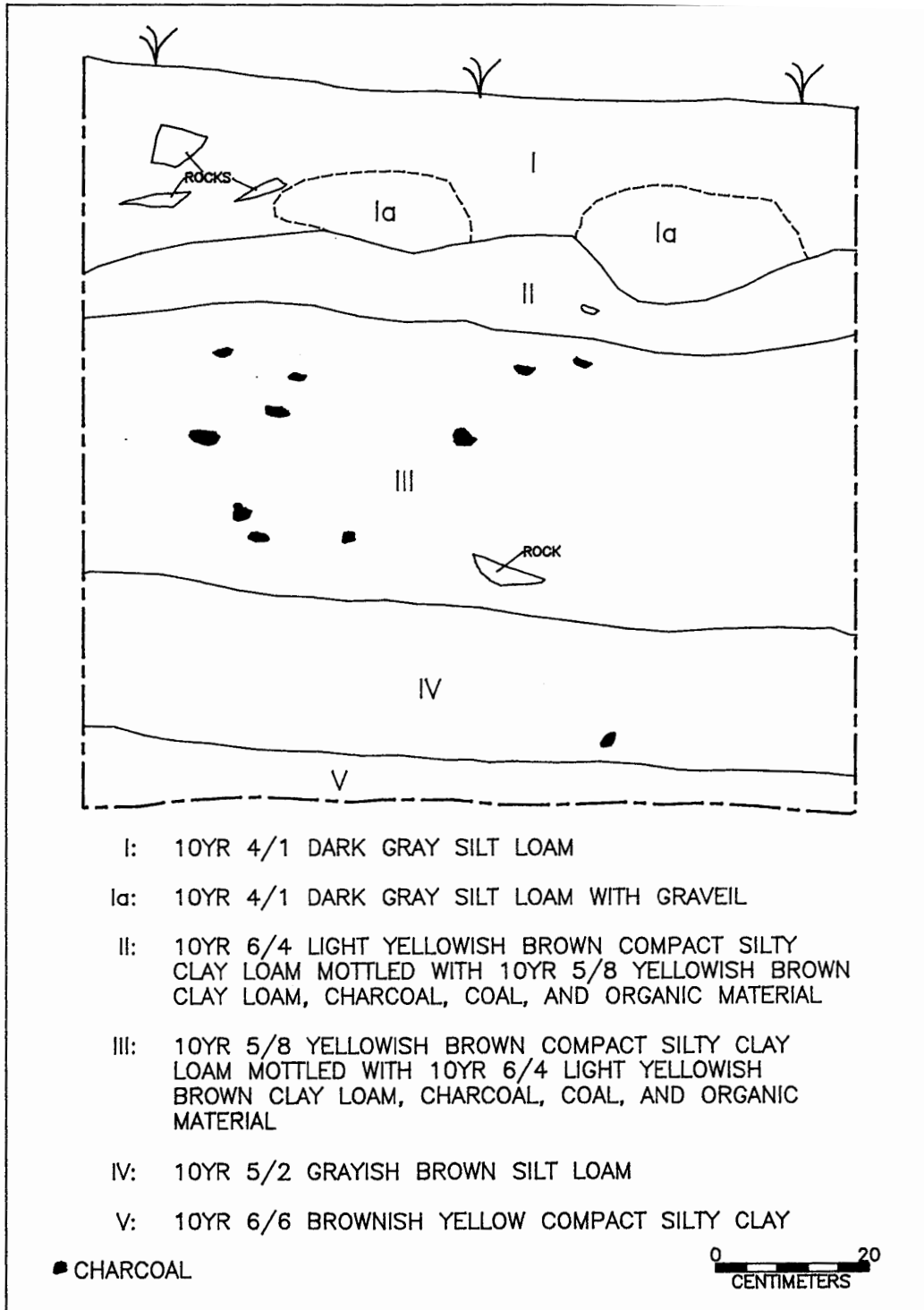


Figure 16: West Profile of Test Unit 1, excavated during 1992 Phase I (adapted from Polglase et al. 1993).

## **Phase II Work Plan**

Phase II investigations of site 46MG90 involved intensive documentary research and limited archaeological excavations in an effort to make recommendations as to the site's eligibility for nomination to the NRHP. Previous excavations recorded a moderate level of disturbance surrounding the foundation, particularly in the western portion of the site; recovered a limited number of artifacts; and recorded no features excepting the foundation and a rubble pile northeast of the foundation. Based on these results, Phase II investigations emphasized documentary research rather than intensive excavations. Information gathered during the documentary research and results of prior Phase I surveys informed the Phase II excavation plans. Michael Baker excavated five 1 x 1 m test units at locations where earlier artifacts were recovered, within the foundation area. The excavations identified the extent of the ante-bellum occupational horizon, no additional features were identified. The WVDCH approved this Phase II work plan in a letter dated December 15, 2017.



## HISTORICAL RESEARCH

Monongalia County was formed in 1776 from the District of West Augusta in northwestern Virginia. At this time, it also included what is now Tucker, Randolph, Harrison, and Barbour counties in West Virginia and portions of what are now Washington, Green, and Fayette counties in Pennsylvania. Morgantown, the county seat, was first settled in the early 1770s and named for Zackwell Morgan, an early settler. The county was originally divided into nine constabulary districts. In 1831, these were consolidated into four districts. The current divisions of seven numbered Magisterial Districts were delineated in 1852. These districts were given their current names in 1863 as townships and became districts in 1873: Morgan, Union, Cass, Clinton, Grant, Clay, and Batelle. Site 46MG90 is located in the northwestern corner of the Morgan District, east of Collins Ferry Road, the former Pennsylvania, Beverly and Morgantown Turnpike, which travelled from Collins Ferry through Morgantown to Evansville in Preston County (Wiley 1883) (**Figure 17**).

Detailed maps depicting the site area are rare. The first available map depicting the site area is John Wood's 1821 map of *Monongalia County*. The site area, located across the Monongahela River from the mouth of Robinsons Run, and west of Laurel Run (now West Run), is not labeled with any landowner names (**Figure 18**). Although several state maps were published in the mid-to late-nineteenth century, no county atlases were published until 1886. In *An Atlas of Marion and Monongalia Cos., West Virginia*, by J.M. Lathrop, H.C. Penny, and W.R. Proctor and published by D.J. Lake and Company, each magisterial district is shown on a separate page. The site area, within the Morgan District, is shown with a structure labeled "F.R. Sinclair" (**Figure 19**).

Franklin R. Sinclair was a farmer and minor government official in Monongalia County. He was born in 1821, probably in Harrison County, Virginia to Benjamin and Emily (Lister) Sinclair. Sinclair first appears in census records in 1850 where he was recorded in the Eastern District, Monongalia County as a 28-year old farmer married to Mariah, aged 25, with one son, Eugene, aged three. Franklin Sinclair and Mariah Joseph were married on February 16, 1845 in a ceremony officiated by the Reverend Charles McLane. Franklin and Mariah had a total of 10 children, four of whom (Ella, Sarah, Mary, and Helen) survived to adulthood (**Figure 20**).

Sinclair was chosen as a vice president of the delegation to the convention "to consult and determined upon such action as the people of North-western Virginia should take in the present fearful emergency", held May 13, 1861 in Wheeling (Wiley 1883:144). The convention was held to discuss the subject of secession. Eastern Virginia had already seceded by this time. West Virginia did not vote to secede from the Union and became a separate state in 1863.

He served as a Morgan District supervisor in 1863 and 1868; as President of the Board of Supervisors in 1869 and 1870; and as Justice of Cass District in 1876 (Wiley 1883:162, 312, 772, 652). Sinclair also served as a colonel, commanding the 3<sup>rd</sup> Brigade, 1<sup>st</sup> Division, 14<sup>th</sup> Regiment of the Monongalia County Militia during the Civil War (Wiley 1883:516). He was also a deacon at Morgantown Baptist Church in 1866 (Wiley 1883:595).

F.R. Sinclair is recorded as a resident of the Cass District in the 1880 census. At that time, he was listed as a farmer and lived with his wife and his four surviving daughters. The Lothrop, Penny, and Proctor Atlas page depicting the Cass District shows an “F.R. St. Clair” just west of the Monongahela River (**Figure 19**). Sinclair and St. Clair were used interchangeably during the late nineteenth and early twentieth centuries. The names of the surrounding landowners match those on the same census page as F.R. Sinclair. This information suggests that in 1880, Sinclair lived in the Cass District. The 1900 census records the family in the Morgan District. Mariah died in 1898 and Franklin is recorded as a widower and farmer living with his four unmarried daughters, none of whom are shown as having an occupation. Franklin died in 1903, as shown on a grave stone marking his, his wife’s, and seven of their children’s graves in Mt. Union Cemetery, outside of Morgantown (findagrave.com; **Figure 21**). No other record of his death, or a will, was found during research.



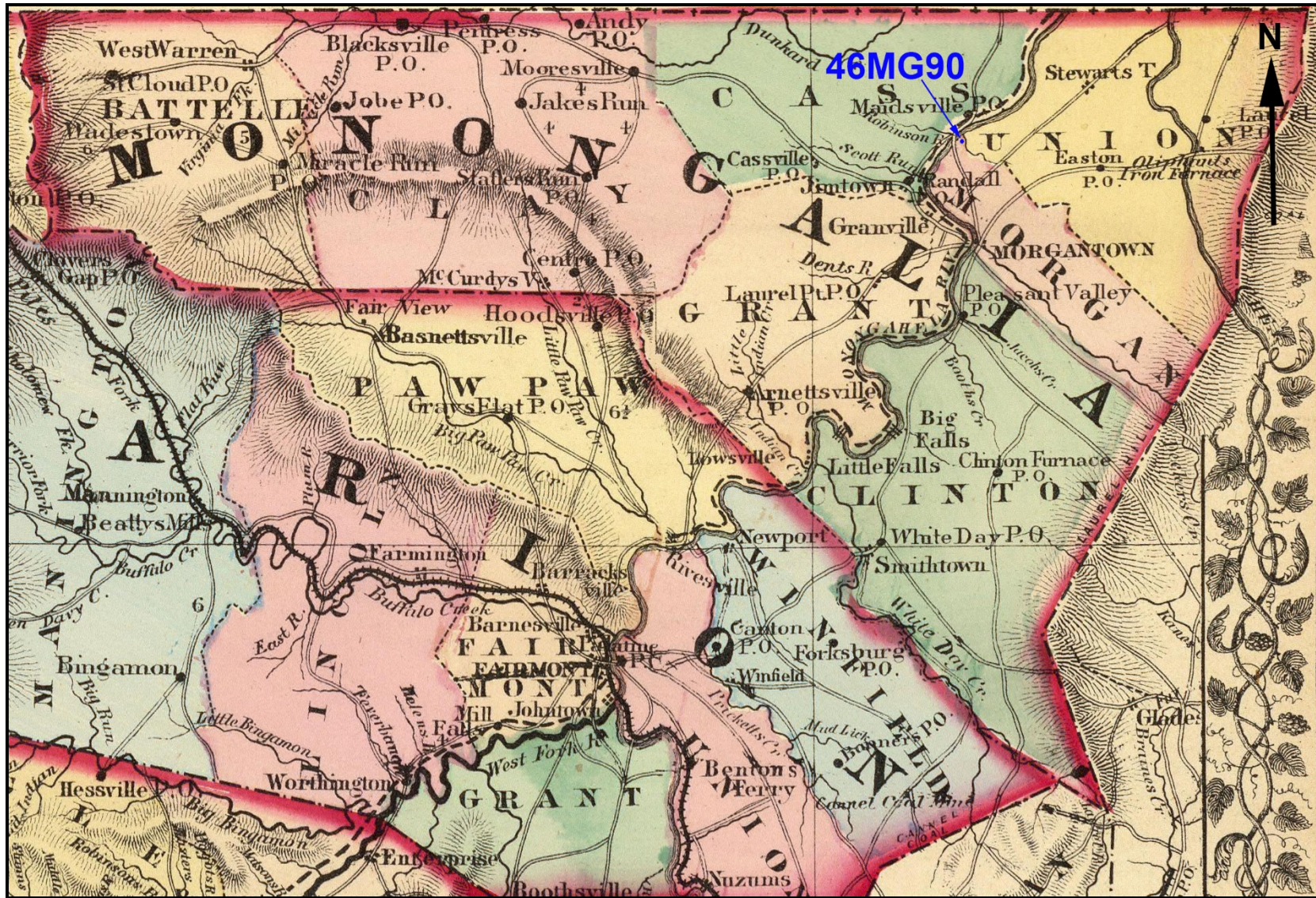


Figure 17: Site 46MG90 location within Morgan District, Monongalia County (White 1873).





Figure 18: Detail of 1821 map of Monongalia County showing the approximate site location (in blue) (Wood 1821).



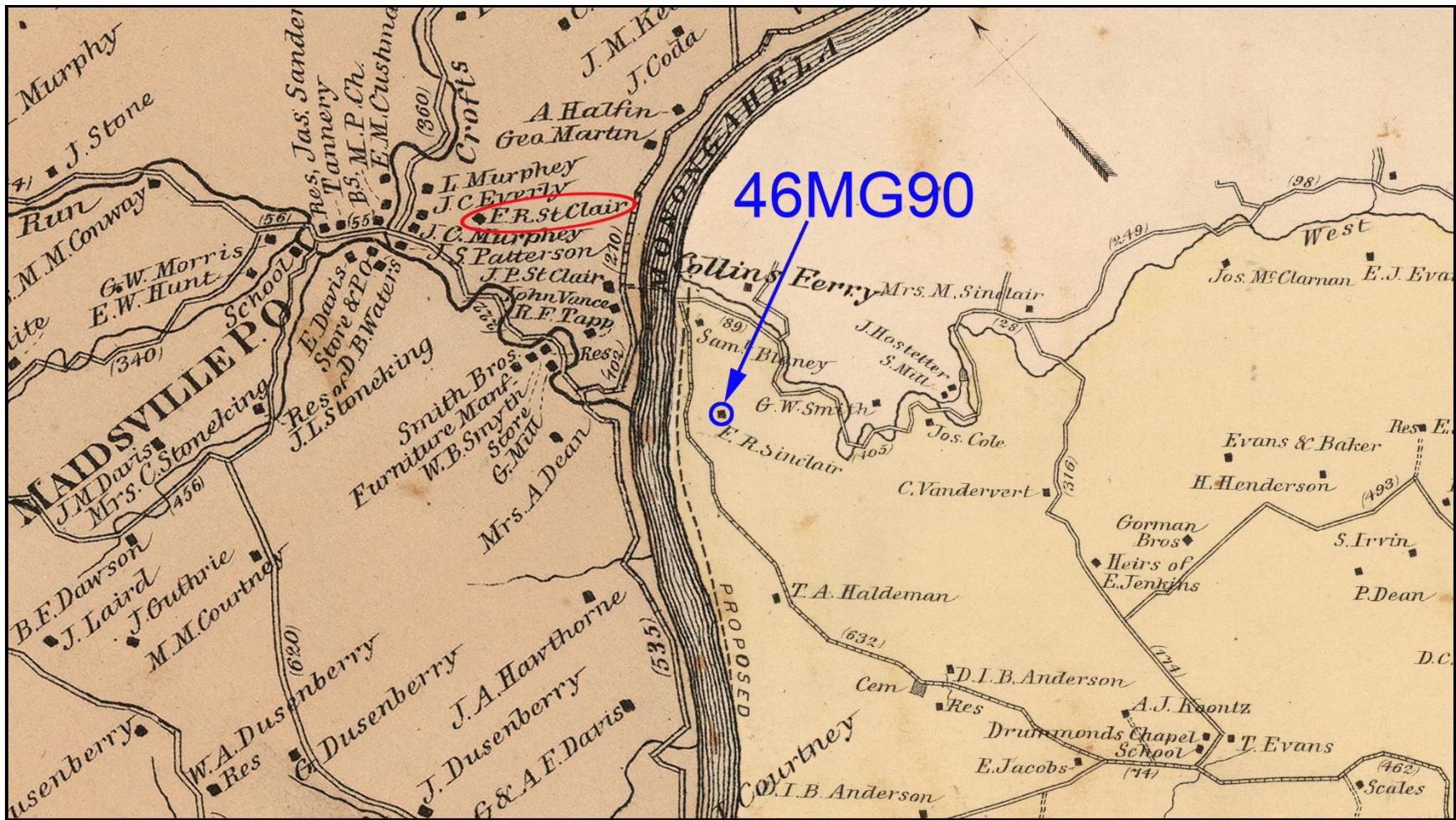
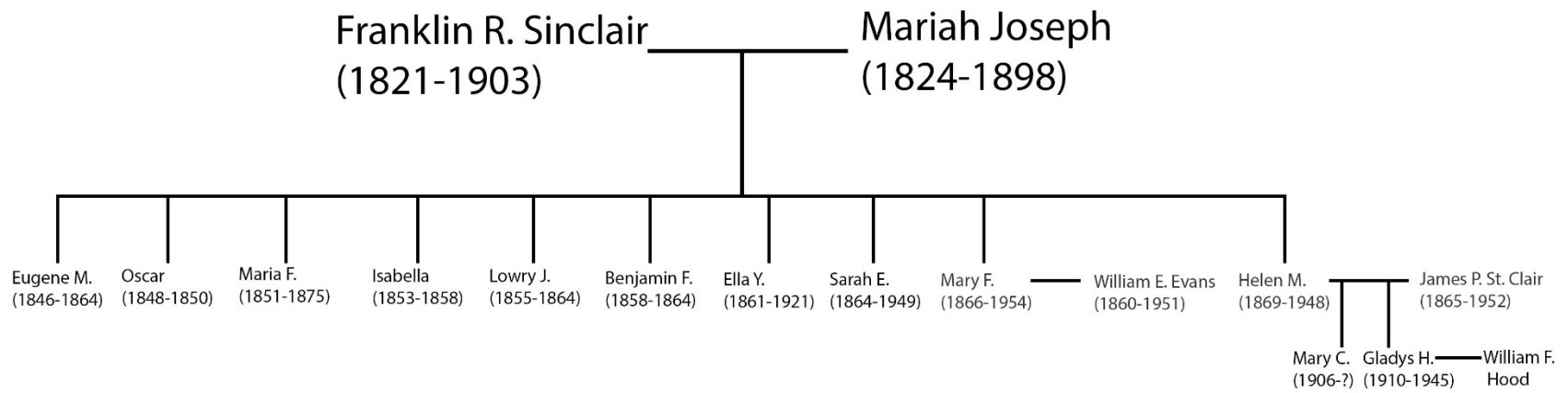


Figure 19: Detail of Cass and Morgan District pages from 1886 *Atlas of Marion and Monongalia Counties* (Lathrop, Penny, and Proctor 1886). Note location of site 46MG90 and landowner names.



**Figure 20: Sinclair family tree.**





**Figure 21: Sinclair family grave marker in Mt. Union Cemetery outside of Morgantown, West Virginia.**

Census records and city directories document the movements of F.R. and Mariah Sinclair’s daughters. The 1910 census records Mary F. and Sarah living on Stewart Town Road in Morgantown with their uncle, Jeremiah Joseph, a dairy farmer. The 1920 census recorded Mary F. as a servant working for a private family. Ella, Sarah, and Mary F. all resided with Jeremiah Joseph. Helen had married James P. St. Clair in 1903 and resided with him on Stewart Town Road. The St. Clair’s are recorded on Stewart Town Road in the 1920, 1930, and 1940 census. The 1920 census record the St. Clair’s with two daughters; Mary C., born in 1906 and Gladys, born in 1910. Helen died in 1948 at the age of 78. Ella died in 1921, while living with Jeremiah Joseph, and is buried in the family plot (see **Figure 21**). Mary F. Sinclair married William E. Evans in 1922 and lived with him along West Run until her death in 1954. Sarah never married and is recorded as living with the Evans’ as late as 1940. Sarah died in 1949, aged 84, and Mary died in 1954, aged 89.

An examination of deed records shows that Franklin R. Sinclair, also recorded as “Frank R. Sinclair,” F.R. Sinclair,” and “F. R. St. Clair,” purchased more than 130 acres of land in Monongalia County between

September 10, 1847 and February 14, 1882. This acreage likely included site 46MG90. No will was found in Monongalia County records. Although complete documentation is not available, it appears that F. R. Sinclair's four surviving daughters inherited his property. In a deed dated March 28, 1903, shortly after Sinclair's death, Helen M. Sinclair sold her share to her sister, Mary Frances. The sale involved "65 acres, more or less, and being all the real estate of which Franklin R. Sinclair died seized, and being the real estate conveyed to the said Franklin R. Sinclair and by deeds from Samuel Roderick, Eliza Felter, John G. Hayes, Margaret Ulry, William E. Rich, et al, by deeds of record" (MCDB 72:290).

The property was sold to Gladys Hood, Helen St. Clair's daughter, by the three surviving Sinclair children, in 1937 (MCDB 321:74). Ella Sinclair had died in 1921. Gladys married William F. Hood, an insurance agent, in 1934. A review of Monongalia County Land records suggests that the original structure was razed ca. 1930. The taxable value of the property decreased sharply between 1926 and 1930 (MCLB). The land records do not suggest, however, when the second house was built. Gladys Hood died in 1945. William sold the property in 1956 to the M & H Trading Corporation (MCDB 539:491).

The M & H Trading Corporation sold the property to Fairlawns Homes, Inc. in 1957 (MCDB 559:99). Fairlawns Homes appears to have been a real estate development company with plans to develop the property for a housing subdivision. The site area was not subdivided but was owned by Fairlawn Homes, Inc. until it was sold to the Department of Energy in 1980 as part of a larger parcel for \$750,000 (MCDB 846:673-679).

The first available aerial photograph of the site area was taken in 1939 (USDA AAAND 1939). At this time the site area appears to be within a large agricultural field (**Figure 22**). No buildings or other structures are visible. The next photograph, taken in 1960, clearly shows a building in the site area, with what appears to be a surrounding yard with several tall trees (**Figure 23**). The house and yard are also shown on the 1976 aerial photograph (**Figure 24**). At least three unpaved roads are evident in the photograph and little activity is apparent. This supports the statement that the house had been vacant for approximately 20 years by 1978 (USDOE 1978).

The U.S. Department of Energy purchased the parcel containing site 46MG90 in 1980 from a group of 15 people. It appears that some or all of these people comprised a corporation called Fairlawns Homes, Inc. Fairlawns Homes appears to have been a housing development company in the Morgantown area. The parcels involved in this transaction were purchased in the 1950s by the persons listed in the 1980 transaction.

The parcel was unused until 1992, when the Navy relocated their existing Naval Material Data Systems Group (NMDSG) Military Affiliate Radio Station (MARS) from its location in the east central portion of the DOE property to a "37-acre undeveloped parcel at the north end of the DOE/METC" (Ecology and Environment, Inc. 1992:3) (**Figure 25**). "The proposed action will involve the construction of a pre-engineered 3,200 square foot building (B-42) and installation of six communication antennas: one Granger Model 794 Monocone, one vertical omnidirectional broadband (VOBA), and four standard 35-foot whip antennas. All but the VOBA, which is a new antenna, will be relocated from the original site" (Ecology and Environment, Inc. 1992:3). Aerial photographs show that these structures were constructed by 1997 (**Figure 26**). The antennas were removed between 2013 and 2016 (**Figure 27**). The site area, located approximately 23 m (75 ft) north of building B-42, was not impacted by these activities.





Figure 22: 1939 aerial photograph showing the location of site 46MG90 (UDSA AAAND 1939).

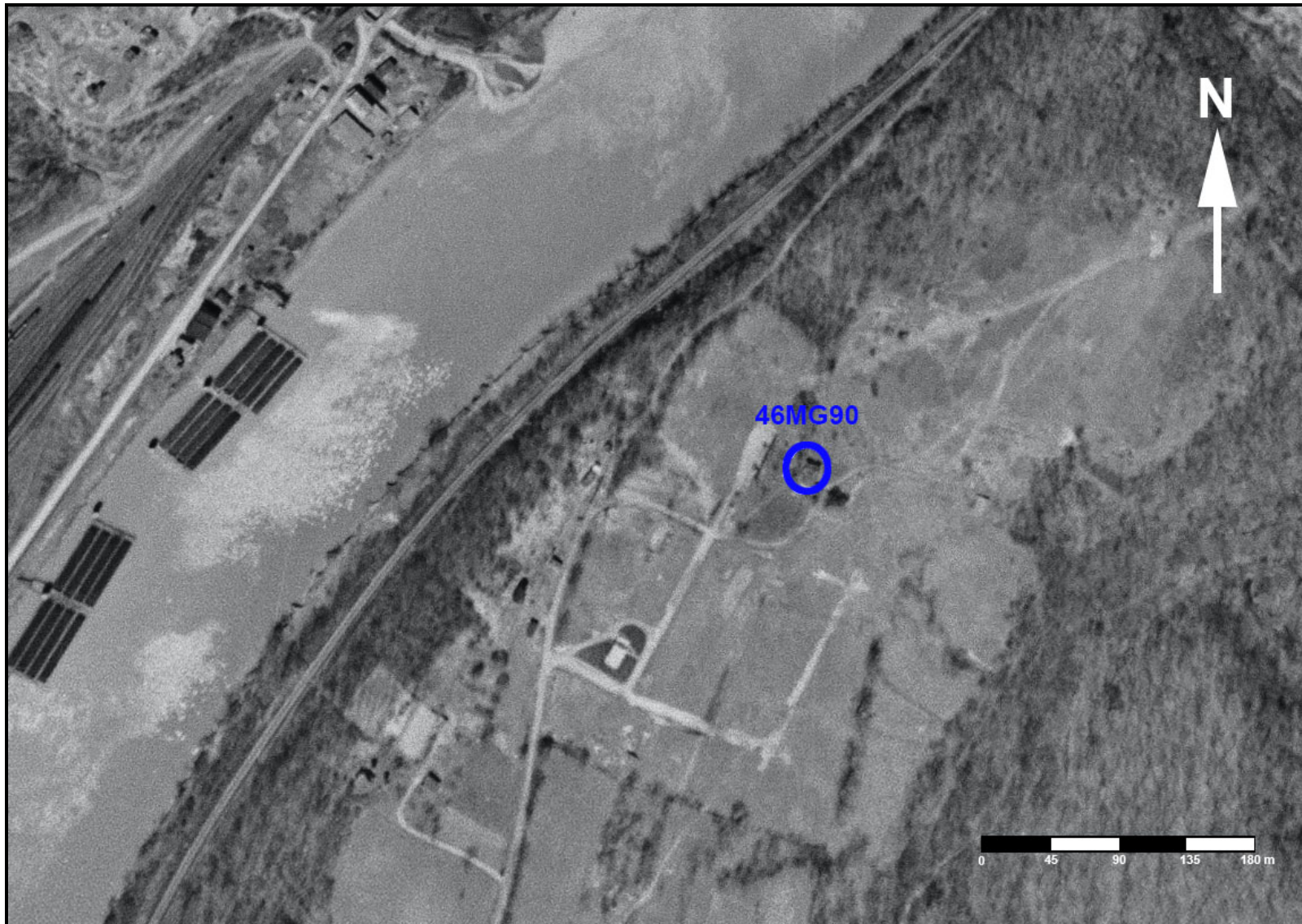


Figure 23: 1960 aerial photograph showing the location of site 46MG90 (USGS 1960).





Figure 24: 1976 aerial photograph showing the location of site 46MG90 (USGS 1976).





Figure 25: 1988 aerial photograph of site 46MG90 and vicinity prior to construction of the NMDSG MARS facility in 1993 (GoogleEarth 2018a).

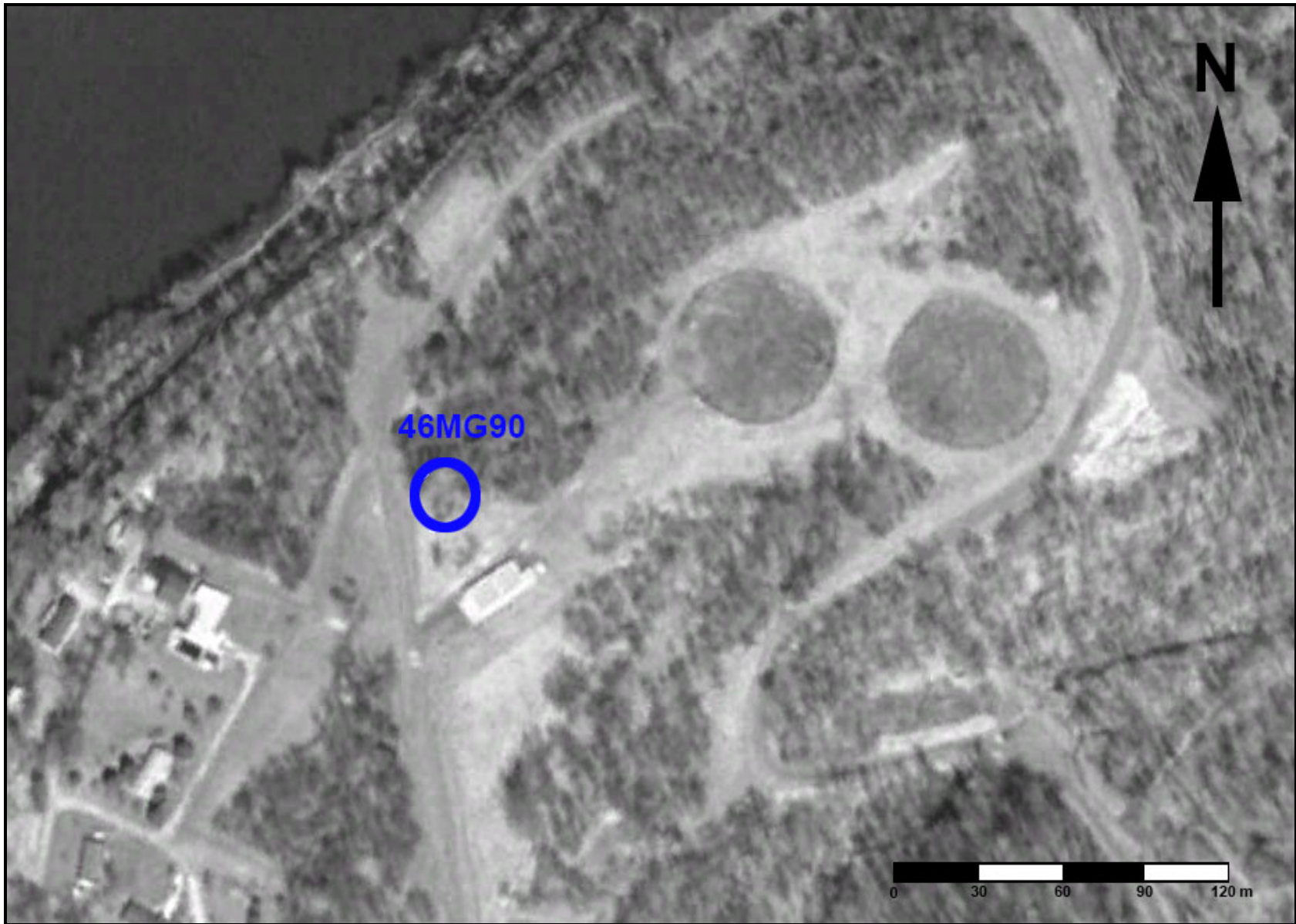


Figure 26: 1997 aerial photograph of site 46MG90 and vicinity following construction of the NMDSG MARS facility (GoogleEarth 2018b).





Figure 27: 2016 aerial photograph of site 46MG90 and vicinity following removal of the NMDSG MARS facility between 2013 and 2016 (GoogleEarth 2018c).



## PHASE II INVESTIGATION METHODS

### Field Methods

Following the Phase II Work Plan; the results of the Phase I survey and historic background research were used determine the locations of 1 x 1 m Test Units.

Test units measuring 1 x 1 m (3.3 x 3.3 ft) were excavated to further investigate potential cultural features. The soils were excavated in 10 cm (3.9 in) levels within natural strata. All soils were dry screened through 6.4 mm (0.25 in) hardware cloth to facilitate artifact recovery. Test Units were mapped in profile, and arbitrary designations ("F" numbers) were assigned to defined strata. Stratigraphy was defined based on subjective criteria such as texture, compaction, friability, apparent composition, and color (following Munsell Color, Inc. [1998] notations).

### Laboratory Methods

All artifacts recovered in the course of Phase II field work were processed according to *Guidelines for Submitting a Collection to the Archaeological Collections Facility of West Virginia* (Archaeological Collections Facility [ACF] 2002).

The provenience of all artifacts recovered from the test units was recorded by stratum. Upon receipt of artifacts from the field, each artifact lot was assigned a Field Specimen (FS) number associated with its provenience within a shovel test probe. All non-perishable artifacts were washed and gently brushed in water. Artifacts were allowed to air dry and bagged in clean, 4-mil, polyethylene zip-lock bags with their associated field tag.

Following assignation of the FS# and washing, the artifacts were analyzed by the appropriate analysts according to temporal period/material type (prehistoric lithic, prehistoric pottery, historic, bone). The results of the analyses were then input into an inventory, a listing of individual artifacts/quantities by field specimen number.

Subsequently, a catalog was generated for each site, thereby assigning a unique catalog number to each discrete provenience within the site. As per the ACF guidelines, each catalog number consists of the Smithsonian trinomial site number, a catalog (lot) number, and, where warranted, a specimen number. Smithsonian trinomial site numbers were provided by the ACF.

Finally, queries and artifact tables were generated for each site. A variety of queries were generated for sites as needed by the analysts in order to assist in site analysis. Artifact provenience tables including analysis data were generated for each site by excavation method. All data management, including creation of the catalogs, inventories, artifact tables, and queries was conducted using Microsoft Access 2010. Additional information regarding analytical terminology as it appears in the inventories is presented below.

- HISTORIC ARTIFACT ANALYSES

Historic-period artifacts were separated and analyzed according to material type, function, and diagnostic attributes (e.g., form, style, and decoration). Where applicable, date ranges and references for material types and diagnostic attributes are recorded. Each entry has a check box to indicate if the artifact(s) has been thermally altered or has a maker's mark. Additionally, the end of each entry has space for pertinent and descriptive written comments.

Ceramics - Historic ceramics were first separated based on ware type, including porcelains, stonewares, and earthenwares. Earthenwares were further divided into unrefined or coarse earthenwares (e.g., buff-bodied, terra cotta, and redware) and refined earthenwares (e.g., cream-colored, creamware, pearlware,

whiteware, ironstone, semi-vitreous, white earthenware, yellow ware, and ball clay). The porcelain group was less sub-divided (e.g., bisque, Parian, and porcelain). Following the assignation of a ceramic ware or sub-type, each artifact was examined for a full range of attributes: portion, type, method of manufacture, interior and exterior finished, decorative technique(s), decorative color(s), decorative pattern(s), and location of decoration. Unless otherwise noted, it was assumed that all ceramics, excluding brick, always had a clear glazed exterior and interior surface finish. As such, this attribute was recorded in the historic ceramic database.

*Glass* - Glass was first categorized by major functional group (i.e., container, tableware, closure, architectural/furnishing, lighting/electrical, personal/clothing, toy, and unidentified) followed by more specific subtypes (e.g., canning jar, tumbler, lid, lamp chimney, etc.). The glass artifacts were then examined according to method of manufacture, color, decoration (technique, type, and motif), and portion. If the artifact was a glass container, whether whole or a diagnostic fragment, another set of attributes was applied. This set included lip, bore, string rim, neck, shoulder, horizontal and vertical body shape, heel, resting point, base shape, and pontil mark.

*Metal* - All metal was first categorized by material type (e.g., iron, brass, lead, etc.). The metal, with the exception of nails, was separated into major functional groups: hardware, tools, architectural, wire, furniture, lighting, personal, clothing, kitchen, closure, arms, coin, animal related, vehicle related, and miscellaneous. The functional groups were then separated into specific artifact types (e.g., bolt, hinge, hook, etc.). Each artifact was then examined for method of manufacture, decoration, and portion.

Nails, although included with the metal group, were analyzed as an independent artifact group. After being categorized according to material type (e.g., iron, steel, brass, etc.) the next attribute recorded was method of manufacture: hand-wrought, cut, steel cut, UID cut, wire, and UID. Techno-chronological types as defined by Edwards and Wells (1993) were assigned, where applicable. These types were based on method of manufacture and manufacturing attributes. The nails were further subdivided by functional type (e.g., brad, roofing, framing, etc.) and portion. If the nail was whole, it was measured for total length in inches. Arbitrary length categories in 1.8 cm (0.5 in) increments begin at “<1” and end at “6 to <6.5”.

## PHASE II ARCHAEOLOGICAL RESULTS

### Site Description

The Sinclair Farmstead site (46MG90) is located on a high terrace approximately 173 m (566 ft) above the Monongahela River. It is situated 130 m (425 ft) due east of Collins Ferry Road and 460 m (1,510 ft) northeast of the main entrance to the NETL facility at an elevation of 286-288 m (938-945 ft) (see **Figure 11**). The site is located on a knoll north of Building B-42, a vacant concrete block building that is scheduled for reconstruction. The proposed project plans include enlarging Building B-42 (located approximately 10 m [33 ft]) south of the site, adding parking areas, and underground utilities (**Figure 28**). Current vegetation within the site area consists of a mix of conifers, deciduous trees, grasses, and vegetation consistent with disturbed soils (**Figure 29 - Figure 31**). Several large clusters of daffodils typically found at residential sites were observed within the site area. One soil classification has been identified within and surrounding the site. Monongahela silt loam, 8 to 15 percent slopes, is found on terraces and stream terraces, and is described as moderately well drained, showing no evidence of flooding. Depth to the water table is reported as 56 cm (22 in) (CRSL 2018).

The site area measures 0.19 ha (0.46 ac). These boundaries were defined during the 1992 Phase I survey by the presence of a stone foundation and artifact recovery from STPs and a single Test Unit (Polglase 1992). The site extends approximately 3 m (10 ft) north of the foundation, where the landform slopes down toward an old road. A large rubble pile was observed on the slope, approximately 5 m (16.4 ft) northeast of the foundation (**Figure 32**). This rubble pile contains brick fragments, concrete, and metal pipe fragments and is likely related to the demolition of the post ca. 1939 house. The eastern portion of the site includes the possible yard area, a level area sparsely covered with weeds and clumps of grass. The southern and western portions of the site are severely overgrown with saplings and thorny vines. Beyond the foundation and the rubble pile, no surface features were observed in these areas.

Large portions of the stone foundation are present, primarily along the north and east walls (**Figure 33** and **Figure 34**). Seven courses of mortared, uncut sandstone are visible in the north wall of the foundation, measuring 8.7 m (28.5 ft). Much of this wall is overgrown with small trees and other vegetation. Three to four courses of mortared, uncut sandstone are visible along the east wall, measuring 11.4 m (37.4 ft). Portions of the south and west foundation walls are present (**Figure 35** and **Figure 36**). The west wall includes a small extension into the center of the foundation, likely the location of a basement entry. These areas slope down into the foundation center, which appears to have been filled with demolition debris when the house was razed (**Figure 37** and **Figure 38**).



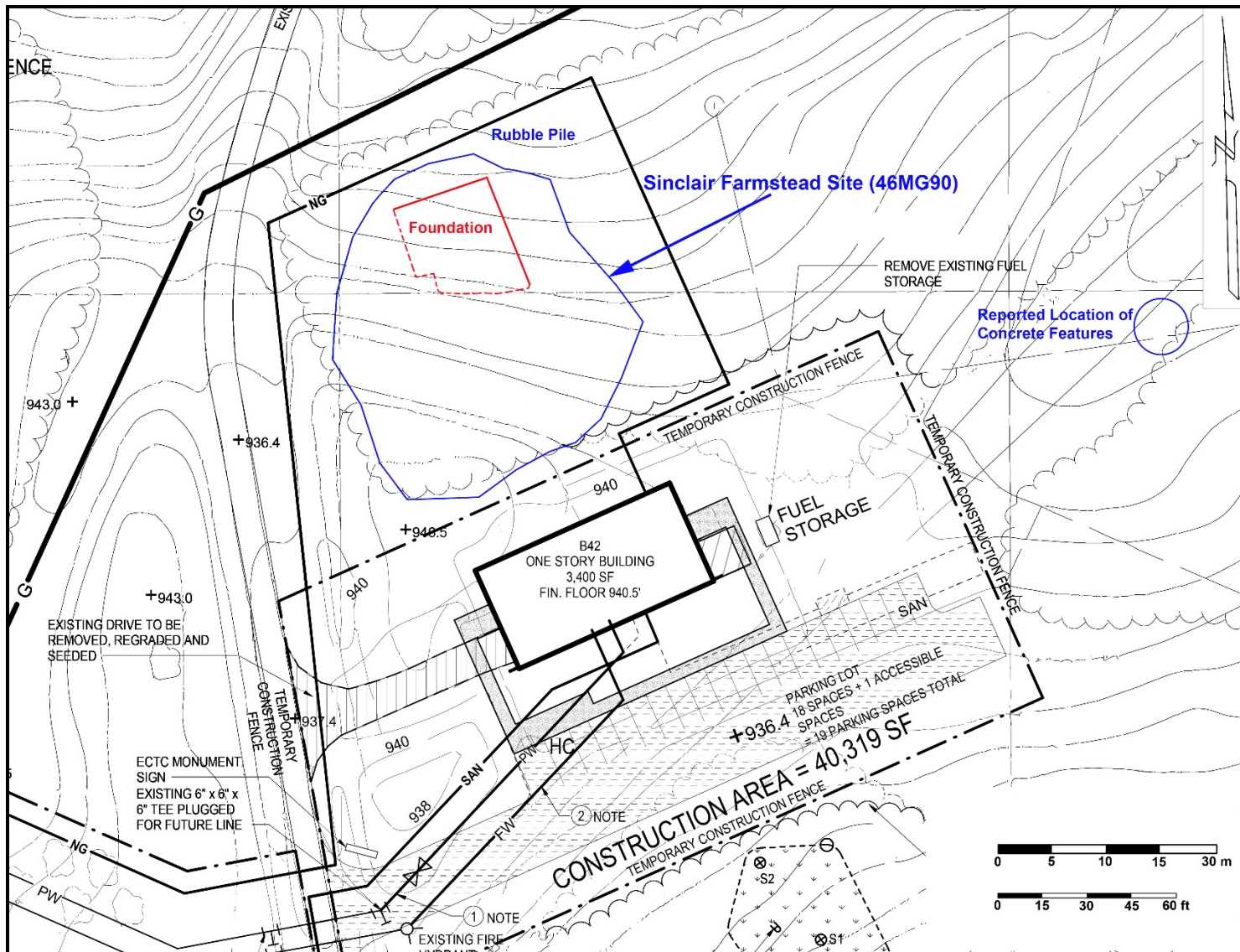


Figure 28: Sinclair Farmstead site shown on proposed project plans.





**Figure 29: Site area facing southwest. Note south foundation wall in center of photograph.**



**Figure 30: Site area facing east.**





**Figure 31: Clusters of daffodils in site area, facing southwest.**



**Figure 32: Rubble pile on slope northeast of foundation, facing east.**





**Figure 33: North foundation wall, facing northeast.**



**Figure 34: East foundation wall, facing north.**





**Figure 35: South foundation wall, facing southwest.**



**Figure 36: West foundation wall, facing south. Note interior portion of foundation in center of photograph.**





**Figure 37: Foundation interior, facing west.**



**Figure 38: Rubble within the foundation.**



## Test Units

Five 1 x 1 m (3.3 x 3.3 ft) test units were excavated during Phase II investigations. The test units were concentrated in the northern and eastern portions of the site where ante-bellum artifacts were recovered during the Phase I survey (**Figure 39**).

Test Unit 1 was placed 50 cm (20 in) northwest of the northwest corner of the stone foundation and 2 m (6.6 ft) south of the edge of the slope (see **Figure 39**). The unit was oriented to the northeast to explore both the western and northern edges of the site. Prior investigations state that the western portion of the site had been disturbed by construction of the paved road located approximately 7 m (23 ft) to the west. The unit datum was measured at 10 cm (3.98 in) above ground surface in the southwest corner of the unit. Soils in Test Unit 1 consist of several layers of historic fill (Table 7, Figure 40). The fill layers are consistent with the disturbance described in the 1992 Phase I survey report, caused by demolition of the house ca. 1980, construction of the paved road to the west, and the Navy activity during the 1990s. Test Unit 1 was excavated to a depth of 95 cm (37 in) below datum. Eight historic artifacts were recovered from Stratum F5, Level 2.

Test Unit 2 was placed 1 m (3.28 ft) west of the northeastern corner of the stone foundation; 60 cm (24 in) north of the north foundation wall and 2 m (6.6 ft) south of the edge of the slope (see **Figure 39**). The unit is in the vicinity of the test unit excavated during the Phase I survey in 1992 (Polglase 1992) (see **Figure 14**). The unit datum was measured at 7 cm (2.8 in) above ground surface in the southwest corner of the unit. Soils in Test Unit 2 consist of four historic fill layers representing the demolition disturbance of the post ca. 1939 structure (Field Designations F8 and F9) overlying soils redeposited during construction of the house (Field Designations F10 and F11) (**Figure 41**). The two soils identified at the base of the unit, Field Designations F12 and F13, were identified as the original intact A horizon (Field Designation F12) and B horizon (Field Designation F13). Test Unit 2 was excavated to a depth of 105 cm (41 in) below datum. No artifacts were recovered from Test Unit 2.

Test Unit 3 was placed approximately 60 cm (24 in) east of the east foundation wall, 40 cm (16 in) south of the northeast corner of the foundation (see **Figure 39**). The unit datum was measured at 5 cm (2 in) above ground surface in the southwest corner of the unit. As in Test Unit 2, soils in Test Unit 3 consist of four historic fill layers representing the demolition disturbance of the ca. 1940s structure (Field Designations F8 and F9) overlying soils redeposited during construction of the house (Field Designations F10 and F11) (**Figure 42**). The two soils identified at the base of the unit, Field Designations F12 and F13, were identified as the original intact A horizon (Field Designation F12) and B horizon (Field Designation F13). Test Unit 3 was excavated to a depth of 105 cm (41 in) below datum. Nineteen historic artifacts were recovered from Test Unit 3, F10, Level 1.

Test Unit 4 was placed approximately 3 m (10 ft) east of the east foundation wall, 6 m (20 ft) south of the northeast corner of the foundation (see **Figure 39**). The unit datum was measured at 5 cm (2 in) above ground surface in the southwest corner of the unit. Soils in Test Unit 4 represent the intact, natural soil stratigraphy of the site (**Figure 43**). The uppermost soil, Field Designation F14, is an Ap horizon described as a very dark grayish brown (10YR 3/2) silt loam with a moderate amount of coal and ash. Underlying F14 is a B horizon soil described as a pale yellow (10YR 7/4) silty clay (Field Designation F15). Excavation of Test Unit 4 was terminated at 34 cm (14 in) below datum. Two historic artifacts were recovered from F14, Level 2.

Test Unit 5 was placed approximately 2.5 m (8.2 ft) east of the east foundation wall, 9.5 m (31 ft) south of the northeast corner of the foundation (see **Figure 39**). The unit datum was measured at 8 cm (3 in) above ground surface in the southwest corner of the unit. As in Test Unit 4, soils in Test Unit 5 represent the intact, natural soil stratigraphy of the site (**Figure 44**). Excavation of Test Unit 5 was terminated at 40 cm (16 in) below datum. Twenty-nine historic artifacts were recovered from F14, Level 2.

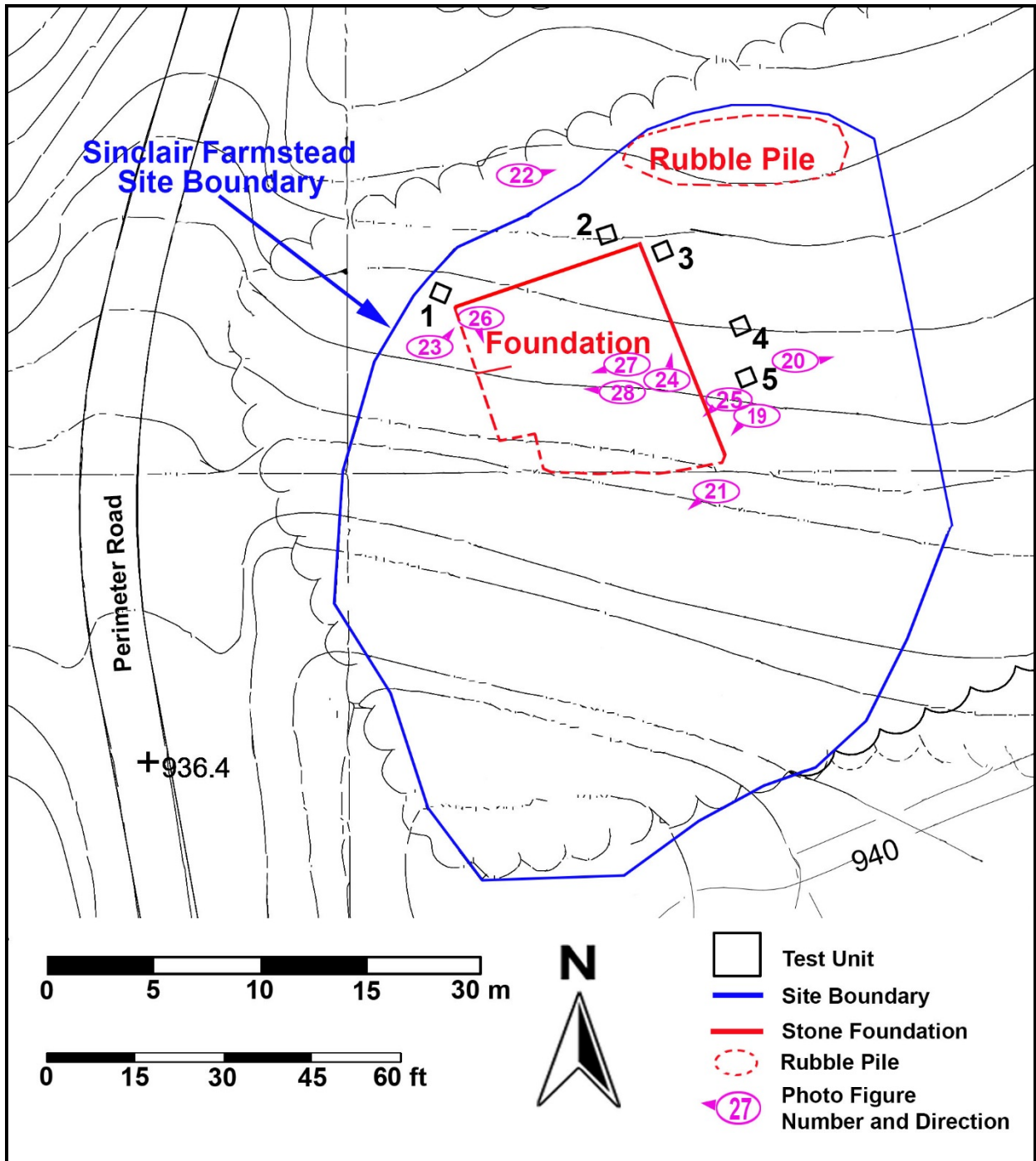


Figure 39: Sinclair Farmstead site plan showing the locations of features and excavated Test Units.

**Table 7: Soil Stratigraphy Observed during Phase II excavations at Site 46MG90**

Field Designation	Description	Location	Comments
F3	Very dark brown (10YR 2/2) silt loam	Test Unit 1	Recent humic layer
F4	Brown (10YR 4/3) mottled with grayish brown (10YR 5/2) silty clay with trace amounts of sand	Test Unit 1	Fill dating to DOE era
F5	Strong brown (7.5YR 5/6), pale yellow (10YR 7/4), and olive yellow (10YR 6/6) mottled clay	Test Unit 1	Fill dating to DOE era Eight historic artifacts
F6	Dark yellowish brown (10YR 4/4), yellowish brown (10YR 5/4), dark brown (10YR 3/3) silty clay loam	Test Unit 1	Fill dating to DOE era
F7	Yellowish brown (10YR 5/8) clay	Test Unit 1	B horizon
F8	Dark yellowish brown (10YR 4/6) mottled with a yellowish brown (10YR 5/8) silty clay loam	Test Units 2 and 3	Fill dating to demolition of house
F9	Dark grayish brown (10YR 4/2) silty clay loam with brick fragments, charcoal, ash and coal	Test Units 2 and 3	Fill dating to demolition of house 19 artifacts recovered
F10	Yellowish brown (10YR 5/8) compact silty clay mottled with light yellowish brown (10YR 6/4) clay loam with charcoal, coal, and ash	Test Units 2 and 3	Fill dating to demolition of house
F11	Light yellowish brown (10YR 6/4) clay	Test Units 2 and 3	Fill dating to demolition of house
F12	Grayish brown (10YR 5/2) silt loam	Test Units 2 and 3	Possible pre-demolition surface
F13	Brownish yellow (10YR 6/6) silt loam silty clay	Test Units 2 and 3	B horizon
F14	Very dark grayish brown (10YR 3/2) silt loam with coal	Test Units 4 and 5	Possible pre-demolition surface 31 artifacts recovered
F15	Pale yellow (10YR 7/4) silty clay	Test Units 4 and 5	B horizon



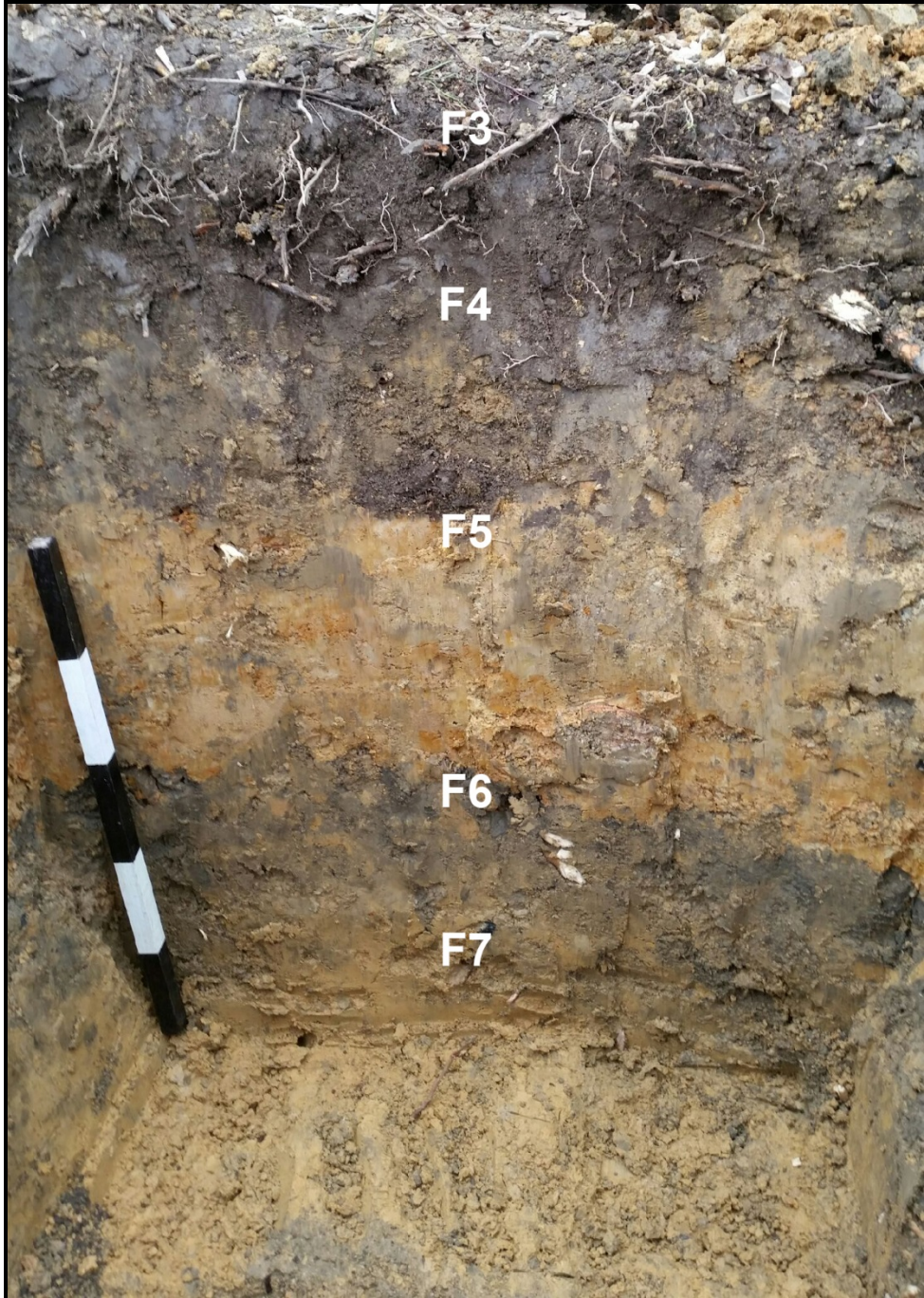


Figure 40: West wall profile of Test Unit 1.





Figure 41: North wall profile of Test Unit 2.





Figure 42: West wall profile of Test Unit 3.





Figure 43: West wall profile of Test Unit 4.

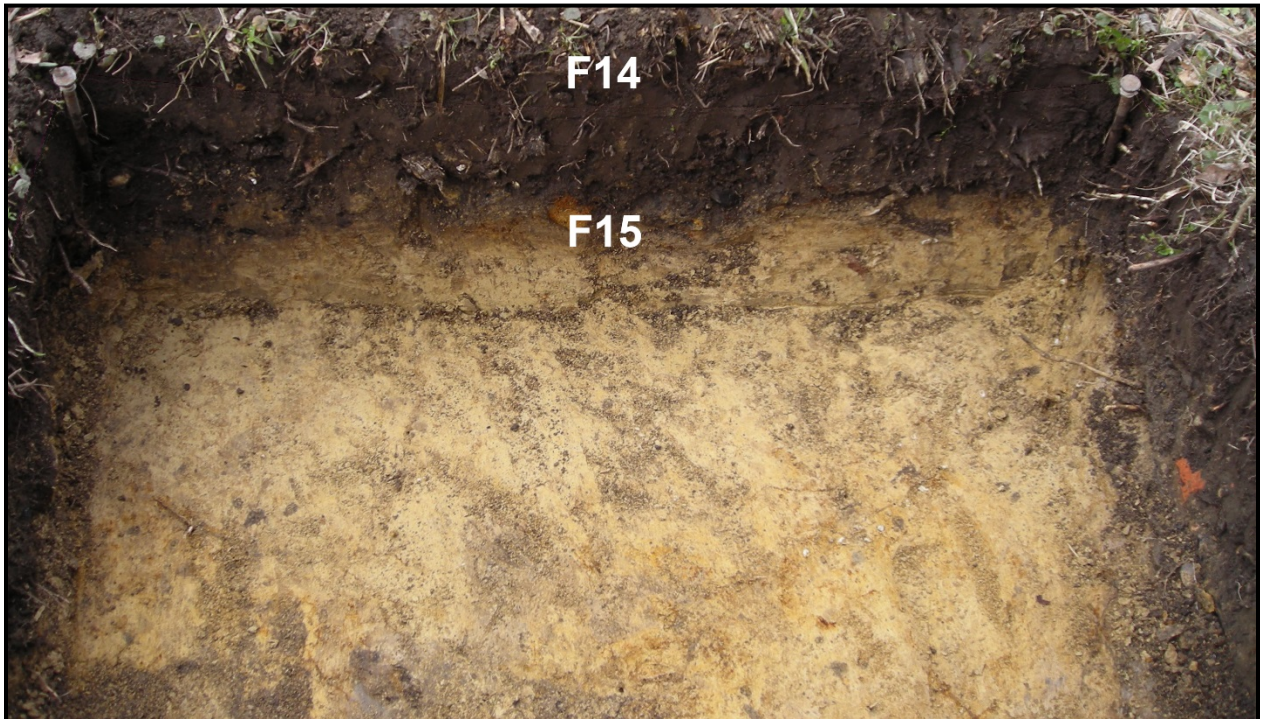


Figure 44: South wall profile of Test Unit 5.

## Site Stratigraphy

Thirteen separate soil strata were identified during Phase II excavations at the Site 46MG90. Based on the observed stratigraphy, the site was divided into three separate areas. The western portion of the site, represented by Test Unit 1, shows evidence of disturbance from construction activities dating from the early 1980s when the Department of Energy purchased the land, through construction of Building B-42 by the Navy in the 1990s, to the present. Soil in Test Unit 1 appears to be a series of fill layers to a depth of nearly 90 cm (35 in) below datum (see **Figure 40**). These soils are capped by what appears to be a recently accumulated humic layer. Little to none of the original A horizon was observed in Test Unit 1.

The northern portion of the site, represented by Test Units 2 and 3, appears to be where the majority of the detritus resulting from the demolition of the Sinclair house was redeposited. Soils in the upper 80 cm (31.5 in) of these test units are described as mottled clay and silt loams, containing coal, charcoal, brick fragments, and historic artifacts (see **Figure 41** and **Figure 42**). Interestingly, no architectural debris (i.e., nails, asphalt shingles) were recovered from the upper levels of these units, as they were during the Phase I survey. The bottom two strata in these units likely represent the natural soil profile of the site, consisting of a grayish brown silt loam and a brownish yellow silty clay. No artifacts were recovered from F12 and F13, the lower strata, thought to date to the original occupation (ca. 1886).

The eastern portion of the site was likely the yard area. Soils in this portion of the site, represented in Test Units 4 and 5, appear to be the original Ap and B horizon soils (see **Figure 43** and **Figure 44**). The uppermost soil in this portion of the site, described as a very dark grayish brown silt loam, contained several historic artifacts along with a moderate amount of coal, cinders, and ash.

The site stratigraphy has been disturbed by the construction and demolition of two structures between the 1880s and the 1960s. Additional disturbance occurred post 1980, when the DOE purchased the property. Portions of the site, to the east of the foundation, do appear to exhibit intact, undisturbed Ap horizon soils. Few artifacts were recovered from the units excavated in this area, and no features were observed.

## Artifacts

Artifacts recovered during Phase II excavations at the site 46MG90 include historic domestic and architectural items dating from the mid-nineteenth through the mid-twentieth century. The assemblage consists of 57 ceramic, glass, and metal artifacts related to the occupation of the site, ca. 1886 to 1960 (Table 2). Artifacts were recovered from three strata: F5, F9, strata related to various demolition and construction disturbances; and F14, the intact AP horizon east of the foundation feature.

The 31 ceramic sherds include 26 whiteware, 3 redware, and 2 porcelain sherds. The whiteware includes crossmending sherds from five separate vessels. The assemblage includes vessels with decorative techniques such as hand painted floral designs, transfer printed designs, and flow blue transfer printed designs (**Figure 45** and **Figure 46**). The redware and porcelain sherds do not exhibit any diagnostic attributes.

The 23 glass artifacts include 11 container fragments, five window pane fragments, two canning jar lid liner fragments, a marble, a glass “jewel,” and three unidentified fragments.

The container fragments include two whole, large beer bottles from the Schmulbach Brewing Company of Wheeling, West Virginia (**Figure 47**). Henry Schmulbach, a German immigrant, purchased the Nail City Brewing Company in 1882, changing the name to the Schmulbach Brewing Company (**Figure 48**). After increasing production throughout the 1880s and 1890s, the company constructed its own bottling plant in 1899. Schmulbach became one of the largest breweries in the area, also operating its own ice plant, West Virginia’s largest. In 1914, West Virginia enacted its own prohibition law, Yost’s Law, making it a dry state, and Schmulbach Brewing Company was forced to close, likely dating these bottles to ca. 1899-1914 (abandonedonline.net 2018).

In addition to the beer bottles, two glass artifacts can be assigned refined date ranges based on their production or maker’s mark. A whole opaque white glass canning jar lid liner exhibits a maker’s mark of the Hazel Atlas Glass Company. This mark, consisting of a stylized “H” over an “A” was used by the company ca. 1920-1964 (Toulouse 1971:239). The large glass orange and white marble resembles the “Royal” style manufactured by the Akro Agate Company. The company began in Akron, Ohio in 1910 and moved to Clarksburg, West Virginia in 1914, where it operated until 1951. This style of marble was manufactured for the company’s entire existence, dating it to ca. 1910-1951 (www.marblecollecting.com 2018). Few metal artifacts were recovered during the Phase II investigations. These include an unidentified nail, a .243 shell casing (post ca. 1955; Barnes 2014), and a nail and a porcelain insulator used in knob and tube wiring.

The artifact assemblage contains domestic artifacts dating from the nineteenth to the mid-twentieth century. The small assemblage was recovered from construction and demolition strata in Test Units 1 and 3, and the AP horizon in Test Units 4 and 5. No artifacts were recovered from F12, believed to be the original surface in the northeastern portion of the site, covered by construction and demolition strata. Few of the artifacts date any earlier than the mid-nineteenth century. While the artifacts date to the earlier occupation (ca. 1886-1930), they are not confined to a specific stratum and were recovered from several strata throughout the site.



**Table 8: Artifacts Recovered during Phase II Excavations at the Sinclair Farmstead Site**

Material	Ware Type	Artifact Type	Diagnostic Attribute	Date Range	References	Qty.
Ceramic	Redware	UID				3
	Porcelain	UID Tableware				1
	Porcelain	UID				1
	Whiteware	Bowl	Ware Type	post ca. 1820	Ramsay 1947:152-153; Miller and Hunter 1990:114-117	2
	Whiteware	Plate	Ware Type; Hand painted Design	post ca. 1820	Ramsay 1947:152-153	11
	Whiteware	Plate	Molded, Hand painted design	post ca. 1820	Ramsay 1947:152-153	2
	Whiteware	UID Tableware		post ca. 1820 - early 1900s	Ramsay 1947:152-153; Miller 1991:9; Samford 1997: 4	1
	Whiteware	UID Tableware		ca. 1820 - early 1900s	Ramsay 1947:152-153; Miller 1991:9; Samford 1997: 4	2
	Whiteware	UID Tableware	Flow Blue Transfer Printed Design	ca. 1835 - early 1900s	Snyder 1994:7; Williams 1981:7	4
	Whiteware	UID Tableware		post ca. 1820	Ramsay 1947:152-153	4
Glass	Flat Glass	Window Glass				5
		Lid liner	Maker's mark	ca. 1920-1964	Toulouse 1971:239	1
		Lid Liner	Manufacture date	post 1869	Toulouse 1977:116	1
		Beer Bottle Fragment				3
		Beer Bottle	Manufacture date	ca. 1899-1914	abandonedonline.net 2018	2
		UID Bottle Fragment				2
		UID Container				4
		Molded, faceted Jewel				1
		Marble	Manufacture date	ca. 1910 - 1951	www.marblecollecting.com 2018	1
		UID Fragment				3
Metal		UID Nail				1
		Winchester .243 Shell casing	Manufacture date	post ca. 1955	<a href="https://en.wikipedia.org/wiki/.243_Winchester">https://en.wikipedia.org/wiki/.243_Winchester</a> 2018	1

Misc.		Knob and Tube Insulator with nail				1
<b>Total</b>						<b>57</b>



Figure 45: Decorated whiteware and a heavily oxidized nail recovered during Phase II excavations.



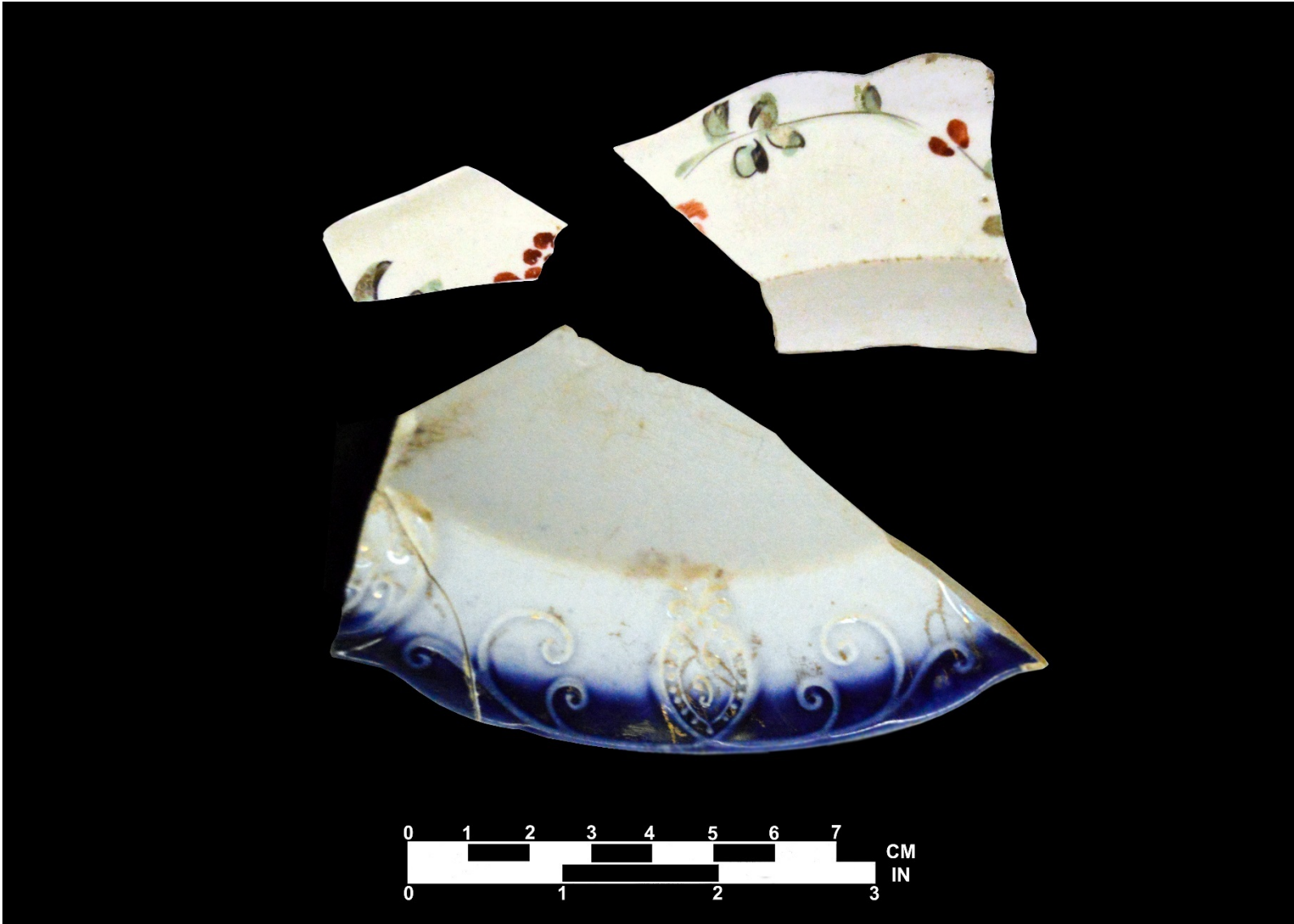


Figure 46: Decorated whiteware recovered during Phase II excavations.



Figure 47: Bottles from the Schmulbacher Brewing Company of Wheeling, West Virginia recovered during Phase II excavations.



Figure 48: Portion of the abandoned Schmulbach Brewing Company building in Wheeling, West Virginia (courtesy abandonedonline.net).



### Concrete Block Foundation and Concrete Pad Features

The 1991 Phase I archaeological survey identified two features in the vicinity of the Site 46MG90 (see **Figure 14** and **Figure 28**). These features were described as:

“...a foundation composed of concrete and cinderblocks (38 by 30 feet) and a concrete pad (12 by 10 feet) were found within the area of proposed impact, to the south of Antenna 2 (see Figure A5-1). Numerous artifacts in direct association with these features (i.e., chrome-plated car trimmings, green and clear bottle glass, synthetic windowshade fragments, a vulcanized rubber shoe sole, etc.) indicate a young age for these features (mid-twentieth century) (Ecology and Environment 1992: A5-1).”

A pedestrian reconnaissance was conducted over this area in an attempt to relocate these features. Additionally, a single STP was excavated in the vicinity of the feature location. No remains of the features were observed in the area, now overgrown with thick grasses (**Figure 49-Figure 51**). It is likely the features were removed during construction of the MARS facility in the early to mid-1990s.



**Figure 49: Excavation of the STP at the reported location of the concrete features, facing southwest.**





**Figure 50: Facing east from STP 1 in the vicinity of the concrete features.**



**Figure 51: Facing west from STP 1 in the vicinity of the concrete features.**

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## CONCLUSIONS AND RECOMMENDATIONS

Phase II archaeological investigations for the Sinclair Farmstead site (46MG90) in Morgan District, Monongalia County, West Virginia, utilized archival research and Phase II excavations to assess the site's eligibility for nomination to the NRHP.

Phase II investigations were conducted following a work plan created in consultation with the WVDCH. Investigations began with historic documentary research to reconstruct the land use history of the site area. Test Units were placed based on information gathered during previous Phase I surveys and the documentary research.

Beginning with an examination of historic maps, the site area was owned by F.R. Sinclair in 1886 (Lathrop, Penny, and Proctor 1886; see Figure 8). Sinclair (1821-1903) was a landowner, farmer, minor government official, and Civil War veteran who purportedly lived on the property between ca. 1886 and his death in 1903. The property remained in the Sinclair family until it was sold to a development company in 1956. Although F. R. Sinclair was locally prominent, little information was available on his life or the life of his descendants, with the exception of an early history of Monongalia County (Willey 1883) and county deed and land books. No obituary was found during research. Therefore, the Sinclair Farmstead site is recommended as not eligible for nomination to the NRHP under Criterion B. While F. R. Sinclair owned over 130 acres in this part of Monongalia County, with the exception of the 1886 map, documentary research and archaeological excavations were unable to definitively link F.R. Sinclair to the site, and his significance to the history of Monongalia County and West Virginia.

Historic research revealed that at least two structures were located on the site. The first was likely built by F.R. Sinclair ca. 1886. An 1886 map shows a structure labeled with his name (see **Figure 19**). Detailed historic maps of the area are rare and no other maps noting the names of landowners were found. F.R. Sinclair died in 1903 and the parcel remained in the family until 1956. A 1939 aerial photograph of the site area does not appear to show a building at this location, suggesting the Sinclair house had been razed by that time. This supports the 1978 Environmental Assessment which states that the house was built "about 40 years ago." A house is shown on the 1960 aerial photograph. The house was reportedly abandoned in the 1960s and razed ca. 1980.

Phase II excavations consisted of the excavation of five 1 x 1 m (3.3 x 3.3 ft) Test Units placed to the north and east of the stone foundation, where reportedly ante-bellum artifacts were recovered during the Phase I survey. The units revealed three separate activity areas within the site. Test Unit 1 reflects disturbance consistent construction and demolition activities including the two houses, Perimeter Road, and the Navy Building B-42 and the NMDSG. Test Units 2 and 3 reflect disturbances caused by the demolition of the ca. 1886 house and the construction and demolition of the post ca. 1939 house. Test Units 4 and 5 exhibit the least disturbance and are located in the yard area east of the foundation. With the exception of the previously identified foundation and rubble pile, no additional features were identified during the Phase II excavations. No evidence of a privy or well were observed on the surface or in the test units.

Historic artifacts recovered from three of the test units consist of ceramic sherds, glass fragments, brick fragments, and metal artifacts. The majority of the assemblage consists of domestic items; ceramic sherds and container glass often associated with nineteenth and early twentieth century rural sites. The artifacts were recovered from fill layers related to construction and demolition of the structures. Artifacts were also recovered from the intact Ap horizon in the eastern portion of the site. No temporally discrete strata were identified within the test units. Artifacts were recovered from three strata: F5, a fill layer dating to the DOE era; F9, a fill layer dating to the demolition of the post ca. 1939 house; and F14, the intact Ap horizon in the yard area east of the foundation. However, all artifacts recovered from the test units can be dated to ca.

pre-1960, supporting the statement in the 1978 EA that the property had been abandoned for around twenty years.

Based on the results of the Phase II investigations, the Site 46MG90 is recommended as not eligible for the NRHP under Criterion D, additional excavations would not be expected to yield information important to the history of this region. Therefore, it is recommended that no further archaeological investigations are warranted within the site boundaries.

A pedestrian reconnaissance was conducted to the west of Building B-42 in attempt to locate two concrete features identified during the 1991 survey. The area is now overgrown with thick grass. No foundation remains were observed during an intensive search of the area. It is likely the features were removed during construction of the MARS facility in the early to mid-1990s. No additional work is recommended in this portion of the Project Area.

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**APPENDIX I: AGENCY CORRESPONDENCE**

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WEST VIRGINIA DIVISION OF  
CULTURE AND HISTORY

February 23, 1993

John Ganz  
Environmental Manager  
Morgantown Energy Technology Center  
P.O. Box 880  
Morgantown, WV 26507-0880

RE: Navy Antenna Relocation Project  
FR#: 93-531-MG

Dear Mr. Ganz,

We have received your letter of January 28 regarding the construction site at the Morgantown Energy Technology Center and are aware of the conflict that has arisen regarding the foundations of the demolished house. The enclosed reports have interpreted Section 106 of the National Historic Preservation Act; these differing interpretations appear to have led to the conflict. The review process requires the identification of historic resources that may be impacted by a federal undertaking. The two surveys have identified two historic sites known as METC-1 and METC-2. These remain unevaluated for National Register status; however, shovel testing has delineated the extent of these sites.

The second step of the review process assesses the effects on the resources. If a site is avoided, there is no effect to the resource. If the extent of the site has been identified, there is no need to continue archaeological testing. It is our understanding that METC plans to avoid the two sites during construction; therefore, there will be no effect to the cultural resources. However, if during construction, any archaeological artifacts are discovered, the Section 106 review process requires the postponement of any further construction until our office has had an opportunity to evaluate the discovery.

In conclusion, we agree with the content of your letter. If the site is avoided, no further consultation is required according to the Section 106 review process. If there was to be a direct impact to the site, further evaluation would be required, but avoidance eliminates this requirement.

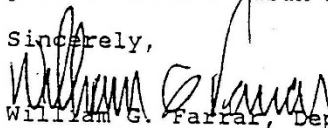
THE CULTURAL CENTER • 1900 KANAWHA BOULEVARD, EAST • CHARLESTON, WEST VIRGINIA 25305-0300  
TELEPHONE 304-558-0220 • FAX 304-558-2779 • TDD 304-558-0220

(Encl 2) 6

Page 2  
John Ganz  
February 23, 1993

We appreciate the opportunity to comment. If you have any questions,  
please contact Susan Pierce, Director of Review and Compliance.

Sincerely,

  
William G. Farrar, Deputy  
State Historic Preservation Officer

WGF/SMP:ps



June 1, 2017

Ms. Susan Pierce, State Historic Preservation Officer  
West Virginia Division of Culture and History  
The Culture Center - Capitol Complex  
1900 Kanawha Boulevard East  
Charleston WV 25305-0300

**Subject: Request for consultation under NEPA on proposed federal project at the National Energy Technology Laboratory (NETL) Monongalia County, West Virginia**

Dear Ms. Pierce,

The United States Department of Energy's (DOE) National Energy Technology Laboratory (NETL) is proposing to construct and operate a new Energy Conversion Technology Center (ECTC) to be located at the NETL facility at 3610 Collins Ferry Road, Morgantown, West Virginia. The ECTC will be a multi-use, high pressure combustion facility.

"The proposed building of approximately 16,800 square feet will be composed of two structural systems. The area of the blast resistant test cells will be constructed of reinforced, cast-in-place concrete and the remainder of the building will be conventional steel framing and masonry construction. As an exterior skin, the concrete structure of the test cell will be exposed expressing the function of this component, while the remainder of the steel frame building will be clad with an aluminum panel system."

Please refer to attachments (*9 sheets total*) indicating the proposed ECTC site with super-imposed archeological data from previous studies.

In 1992 an Environmental Assessment (EA) was completed by the Chesapeake Division Naval Facilities Engineering Command for construction of the B-42 Navy facility that was to be used by the Navy (*property leased from DOE to the Navy*) for the Navy Material Data Systems Group (NMDSG) Military Affiliate Radio Station (MARS). This EA concluded that the site files of the West Virginia Division of Culture and History, Historic Preservation Section, contained no references to prehistoric, historic, or architectural resources within the boundary of NETL-Morgantown site and the proposed action would not impact significant cultural properties.

In association with this EA, Ecology and Environment (1992) completed a Phase 1A/B cultural resource investigation. Ecology and Environment, Inc. identified a stone foundation, a twentieth century cinderblock/concrete foundation, and a concrete pad within the northern portion of the NETL-Morgantown property during Phase I archaeological investigations. Subsurface testing of the parcel identified two clusters of historic artifacts. Shovel tests produced non-diagnostic materials in one sampling area and kitchen, household, and architectural materials that dated from the nineteenth century to modern times in a second area. The study concluded that the deposits



lacked integrity and were not eligible for nomination to the National Register of Historic Places. To date, the site has not been listed formally with the West Virginia Division of Culture and History.

In 1993, it was determined by the West Virginia Division of Culture and History that despite differing interpretations which appear to have led to a conflict at that time, the site with potential cultural significance was to be avoided for the original Navy project, and therefore there would be no effect to the resource, and the Navy proceeded.

DOE is committed to its stewardship responsibilities for managing cultural resources on DOE-owned land and property impacted by DOE operations. In keeping with that responsibility, the DOE developed a comprehensive program of Cultural Resources Management and completed a site-wide cultural resources report later in 1993. The primary purpose of this site-specific cultural resource management plan was to integrate historic preservation requirements with ongoing operations and maintenance of the facility for compliance with relevant statutes and regulations. This Cultural Resources report did identify cultural and prehistoric resources in proximity to the proposed ECTC facility at the former Navy Site. Phase II evaluator investigations were deemed warranted should this area be impacted in the future; such evaluation also is assumed under the necessities of compliance with Section 110 of the NHPA (National Historic Preservation Act).

As part of DOE's coordination and consultation responsibilities, and to comply with provisions implementing Section 106 of the National Historic Preservation Act of 1966, we would appreciate receiving any additional information you have regarding historic or cultural properties in the project area. In addition, we look forward to receiving your input on a possible Phase II Archaeological Investigation.

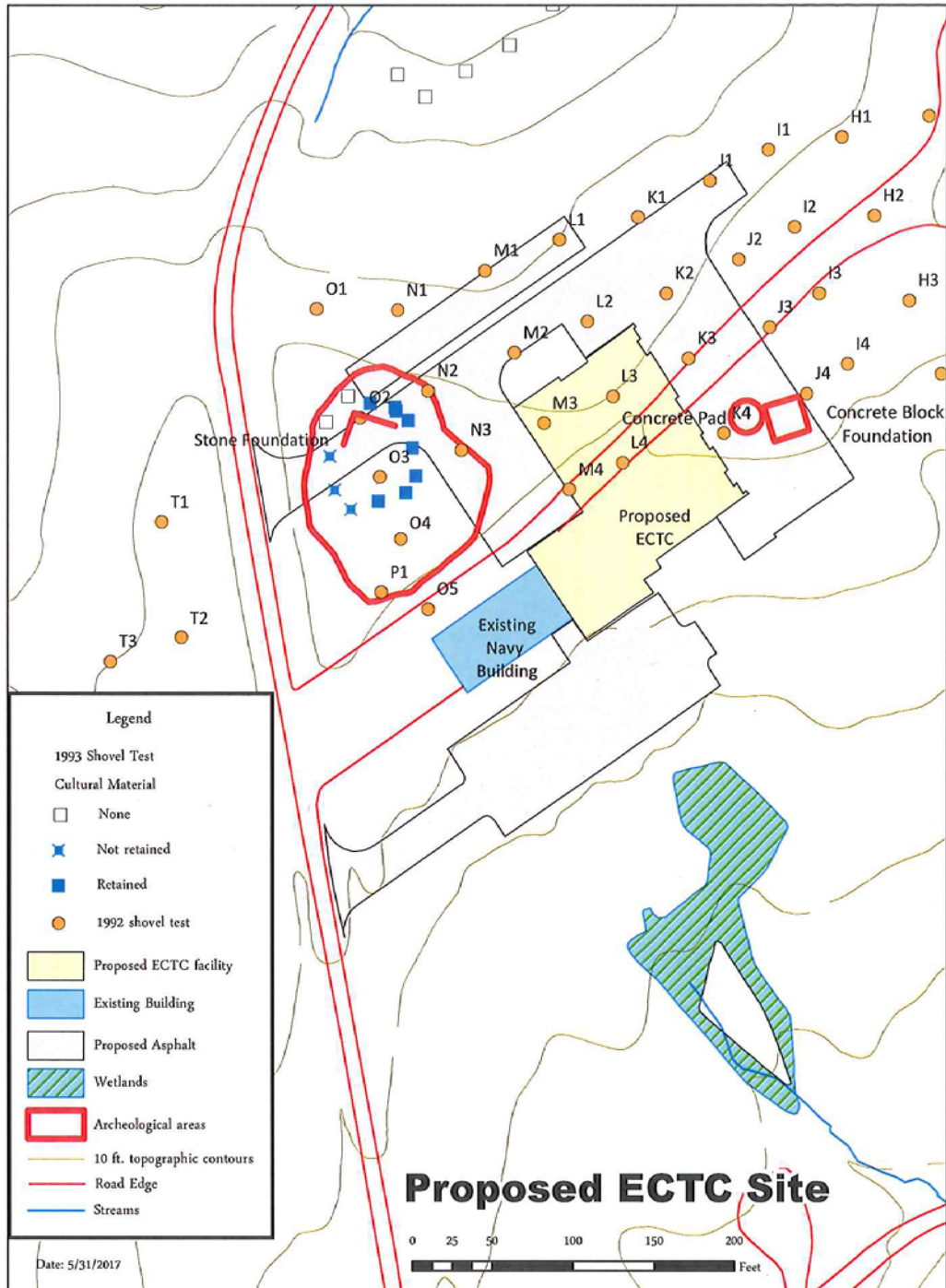
Based on the scope of the proposed ECTC project, DOE plans to prepare an Environmental Assessment (EA) in accordance with requirements of the National Environmental Policy Act to analyze, document, and disseminate information on the potential environmental consequences of the project. Information that you provide will be incorporated and appropriately addressed in the EA. Moreover, when the Draft EA is circulated for public comment, your office will be sent an electronic and hard copy where you make provide any further comments.

Thank you for your assistance. Should you require additional information, please call me at (304) 285-5219, send faxes to (304) 285-4403 or send e-mail to [fred.pozzuto@netl.doe.gov](mailto:fred.pozzuto@netl.doe.gov). Please address written correspondence to:



Mr. Fred Pozzuto, Acting Associate Director  
NEPA Compliance Office  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880 MS B07  
Morgantown, West Virginia 26507-0880

w/Attachments



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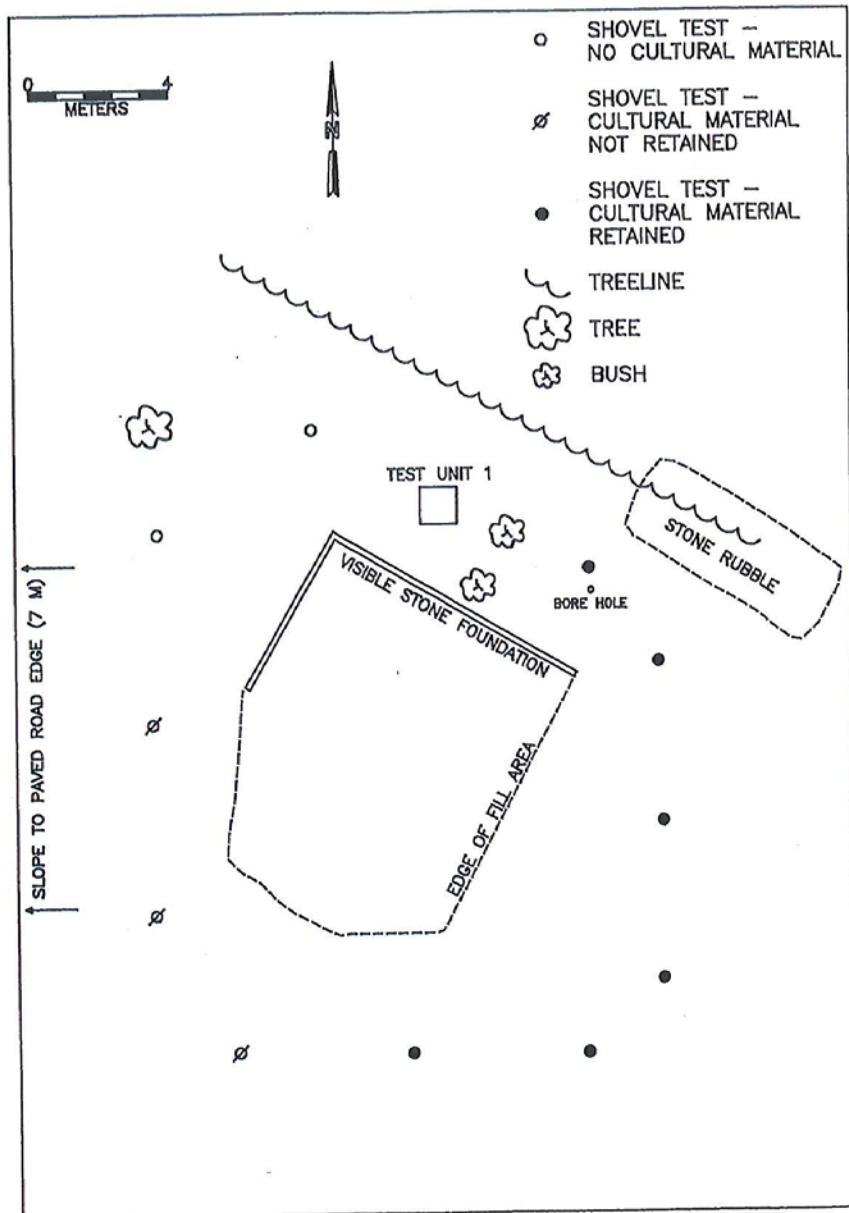


Figure 11. Site Plan of Stone Foundation and Testing Pattern in Area 9.



# REFERENCE GOLD CIRCLES

Table A6-2		
NMDSG PHASE IB SURVEY HISTORICAL ARTIFACTS		
Shovel Test	Depth of Artifacts (Inches)	Artifacts
I2	6 - 12	1 Brown glass fragment
		1 Metal wire fragment
		1 Hotelware fragment (1880 - present)
J3	0 - 3 (Mottled fill)	2 Clear glass fragments
K4	3 - 10	1 .410 gauge shotgun shell brass rim
M1	0 - 11	4 Hotelware fragments (1880 - present)
M2	0 - 15 Fill	1 Multicolored plastic cup, "Dairy Guild of America"
		1 plastic fragment
		1 Automatic bottle machine clear glass bottle neck fragment (post-1903)
		1 Hotelware fragment (1880 - present)
		1 Aluminum foil fragment
		1 "Monteagle County Dog Tag, No. 1009, 1935"
		15 Clear bottle glass fragments
1 Electrical fuse, inscribed "Economy Fuse & Manufacturing Company, 125 V., Chicago USA, Patented August 18, 1920, February 27, 1917, June 22, 1920"		
M4	0 - 8	1 Brown glass fragment
N1	0 - 10 (Mottled fill)	1 Cream jar fragment
		1 Grommet
N2	0 - 15 (Mottled fill)	1 Large mammal left mandible fragment (possibly <u>Suldae</u> )
		1 Large mammal left scapula fragment ( <u>Bostaurus</u> )
		1 Large mammal left mandible fragment ( <u>Bostaurus</u> )
		8 Small bone fragments
		1 Plain whiteware fragment (1820 - present)
		1 Electrical insulator
		2 Hotelware fragments (1880 - present)
		5 Coal fragments

A6-7

# REFERENCE GOLD CIRCLES

Table A6-2		
NMDSG PHASE IB SURVEY HISTORICAL ARTIFACTS		
Shovel Test	Depth of Artifacts (Inches)	Artifacts
01	0 - 12 (Mottled fill)	1 Brown glass fragment
		1 Clear glass fragment
		1 Roofing nail
03	0 - 15	6 Plain whiteware fragments (1820 - present)
		3 Brick fragments
		5 coal fragments
		1 Clear glass fragment
04	0 - 4 (Mottled fill)	1 Roofing nail
		3 Slag fragments
05	0 - 11	2 Brick fragments
		1 Brown glass fragment
		1 Earthenware (?) fragment
T2	0 - 10 (Mottled fill)	1 Clay bird fragment
		1 Glazed clay marble
		1 fireproof tile fragment

Source: Ecology and Environment, Inc. 1991.

ST = Small Test  
 00100 = 011 boxed central

Page No. 3  
 11/25/92

MORGANTOWN METC  
 PHASE 1  
 ARTIFACT INVENTORY

FS#	FUNCTIONAL GROUP	MATERIAL CLASS	ARTIFACT TYPE	DESCRIPTION	COMMENTS	COUNT	DATE RANGE
	* Subsubtotal *					6	
* TRANSECT 09	ST 03	LEVEL 02 11-26CMBS	UNMODIFIED	NON-CORTEX	COARSE, GRAY CHERT	1	
	6 FLAKE	CHERT				1	
	* Subsubtotal *					18	
** Subtotal **							
** AREA 09							
* EAST	ST 01	LEVEL 01 00-33CMBS		Undecorated		1	1820-PRESENT
	12 Kitchen	Ceramic	Whiteware	Dark Brown/ Black Glaze		1	
	12 Kitchen	Ceramic	Redware	Overglaze China Export	BASE, RED	2	1600-1850+
	12 Kitchen	Ceramic	Early Porcelain Type	Clear		5	1898-PRESENT
	12 Kitchen	Glass	Machine Made Bottle				
	* Subsubtotal *						
* EAST	ST 02	LEVEL 01 00-56CMBS		Window Glass		1	
	13 Architecture	Glass	Architectural Element			1	
	* Subsubtotal *						
* EAST	ST 05	LEVEL 01 00-40CMBS		Embossed Pattern		3	1820-PRESENT
	14 Kitchen	Ceramic	Whiteware	Decal	GREEN & PINK, GILT RIM	1	1880-PRESENT
	14 Kitchen	Ceramic	Whiteware	Amber		2	1898-PRESENT
	14 Kitchen	Glass	Machine Made Bottle	Sheet Metal		1	
	14 Miscellaneous	Metal	Unidentified Object				

REFERENCE BLUE SQUARES



# REFERENCE BLUE SQUARES

Page No. 4  
11/25/92

MORGANTOWN METC  
PHASE I  
ARTIFACT INVENTORY

FS#	FUNCTIONAL GROUP	MATERIAL CLASS	ARTIFACT TYPE	DESCRIPTION	COMMENTS	COUNT	DATE RANGE
* Subsubtotal *							
* NORTH ST 02 LEVEL 01 00-420BS							
9	Architecture	Ceramic	Miscellaneous	Ceramic Tile		1	
9	Furniture	Ceramic	Miscellaneous	Flower Pot		2	
9	Kitchen	Ceramic	Pearlware	Underglaze Blue Hand-Painted	HOLLOW WARE	2	1779-1820
9	Kitchen	Glass	Machine Made Bottle	Amber		1	1898-PRESENT
9	Kitchen	Glass	Machine Made Bottle	Clear		1	
9	Personal	Metal	Personal Use	Other	LIGHTER, "PROMSON"	1	
* Subsubtotal *							
* SOUTH ST 02 LEVEL 01 00-220BS							
10	Architecture	Glass	Architectural Element	Window Glass		3	
10	Architecture	Metal	Construction Hardware	Bolt and/or Bracket	BOLT HEAD	1	
10	Kitchen	Glass	Machine Made Bottle	Amber		1	1898-PRESENT
* Subsubtotal *							
* SOUTH ST 03 LEVEL 01 00-180BS							
11	Architecture	Glass	Architectural Element	Window Glass		20	
11	Kitchen	Ceramic	Redware	Dark Brown/ Black Glaze	HOLLOW WARE, INTERIOR GLAZE	2	
11	Kitchen	Ceramic	Redware	Dark Brown/ Black Glaze		1	
11	Kitchen	Ceramic	Redware	Brown Glaze		1	
11	Kitchen	Ceramic	Miscellaneous Stoneware	Refined Red, Glazed	HOLLOW WARE RIM	1	
11	Kitchen	Ceramic	Pearlware	Green Shell-Edged	RIM	3	1780-1830
11	Kitchen	Ceramic	Pearlware	Underglaze Floral Polychrome	HOLLOW WARE, BROWN BLUE & YELLOW	2	1795-1815
11	Kitchen	Ceramic	Whiteware	Cream-Colored Earthenware		10	1820-PRESENT

MORGANTHAU METC  
PHASE I  
ARTIFACT INVENTORY

FS#	FUNCTIONAL GROUP	MATERIAL CLASS	ARTIFACT TYPE	DESCRIPTION	COMMENTS	COUNT	DATE RANGE
11	Kitchen	Ceramic	Whiteware	Cream-Colored Earthenware	FLAT WARE RIM, POSS. CREAMWARE	2	1820-PRESENT
11	Kitchen	Ceramic	Unidentified Ceramic	Unidentified Earthenware	SOFT PINK PASTE, CLEAR GLAZE	1	
11	Kitchen	Glass	Glass Tipped Pentil	Dark Green	CASE BOTTLE	4	1700's-c.1870
11	Kitchen	Glass	Unidentifiable Bottle Glass	Clear		3	
11	Kitchen	Glass	Blown in Mold	Aqua	THIN	3	
11	Kitchen	Glass	Unidentifiable Fragment	Milk Glass	THIN	1	
	* Subtotal					54	
	* UNIT 01					16	
LEVEL 01 00-100MBS							
15	Architecture	Glass	Architectural Element	Window Glass		16	POST 1890
15	Architecture	Metal	Wire Nail, Common	2-4"		6	POST 1890
15	Architecture	Metal	Wire Nail, Finish	< 2"		3	POST 1890
15	Architecture	Metal	Wire Nail, Common	< 2"		6	POST 1890
15	Architecture	Metal	Wire Nail, Common	Fragment		2	1820-PRESENT
15	Kitchen	Ceramic	Whiteware	Undecorated		17	1898-PRESENT
15	Kitchen	Glass	Machine Made Bottle	Amber		9	1898-PRESENT
15	Kitchen	Glass	Machine Made Bottle	Clear		1	
15	Kitchen	Metal	Miscellaneous	Can		1	
15	Miscellaneous	Synthetic	Miscellaneous	Plastic/Other		1	
15	Activities	Metal	Miscellaneous	Other	PULLEY, PROB. FOR CLOTHESLINE	1	
15	Activities	Synthetic	Miscellaneous	Plastic Toy	BINGO CHIP	1	
	* Subtotal					79	
	* UNIT 01					3	
LEVEL 02 10-250MBS							
16	Architecture	Glass	Architectural Element	Window Glass		1	
16	Architecture	Metal	Construction Hardware	Electrical Hardware	INSULATED WIRE	20	POST 1890
16	Architecture	Metal	Wire Nail, Common	2-4"		6	POST 1890
16	Architecture	Metal	Wire Nail, Common	< 2"		6	POST 1890

REFERENCE BLUE SQUARES

# REFERENCE BLUE SQUARES

MORGANTOWN METC  
PHASE I  
ARTIFACT INVENTORY

FS#	FUNCTIONAL GROUP	MATERIAL CLASS	ARTIFACT TYPE	DESCRIPTION	COMMENTS	COUNT	DATE RANGE	
16	Architecture	Metal	Wire Nail, Finish	< 2"		3	POST 1890	
16	Architecture	Metal	Wire Nail, Common	Fragment		5	POST 1890	
16	Architecture	Synthetic	Miscellaneous	Roofing Shingle, Tar Paper		1		
16	Furniture	Metal	Miscellaneous Hardware	Other	BED SPRINGS	18		
16	Furniture	Metal	Miscellaneous Hardware	Other	IRON DOT WEBBING	1		
16	Furniture	Metal	Miscellaneous Hardware	Drawer/Door Pull		1		
16	Furniture	Metal	Miscellaneous Hardware	Ring		1		
16	Kitchen	Ceramic	Redware	Brown Glaze	HOLLOW WARE, MOTTLED GLAZE	7	1898-PRESENT	
16	Kitchen	Glass	Machine Made Bottle	Silk Screened	"7-Up", GREEN	1	POST 1850	
16	Kitchen	Glass	Pressed Glass (Polished)	Amythest		7	1898-PRESENT	
16	Kitchen	Glass	Machine Made Bottle	Clear		6	1898-PRESENT	
16	Kitchen	Glass	Machine Made Bottle	Amber		1	POST 1869	
16	Kitchen	Glass	Lid Liner	Milk Glass		1		
16	Kitchen	Metal	Miscellaneous	Can		1		
16	Miscellaneous	Metal	Unidentified Object	Iron/Steel		1		
16	Miscellaneous	Synthetic	Miscellaneous	Plastic/Other	"SPECIAL"	1		
16	Arms	Metal	Projectile Part	Centerfire Cartridge .38		1		
16	Arms	Metal	Miscellaneous	Lamp Glass		1		
16	Activities	Glass	Toy	Marble		2		
16	Activities	Glass	Miscellaneous Hardware	Screw		1		
16	Activities	Metal	Miscellaneous Hardware	Non-Electrical Wire		1		
16	Activities	Metal	Miscellaneous Hardware	Plastic Toy	BINGO CHIP	1		
* Subtotal *							92	
* UNIT 01								
17	Architecture	Glass	LEVEL 03 25-33CMBS	Window Glass		1		
17	Kitchen	Ceramic	Architectural Element	Late White Stoneware		1		
17	Kitchen	Ceramic	Industrial Stoneware	Green Slip	BLUISH GREEN	1		
17	Kitchen	Glass	Buff-Bodied Earthenware	Silk Screened	"7-Up", GREEN	4	1898-PRESENT	



# REFERENCE BLUE SQUARES

Page No. 7  
11/25/92

MORGANTOWN METC  
PHASE I  
ARTIFACT INVENTORY

FS#	FUNCTIONAL GROUP	MATERIAL CLASS	ARTIFACT TYPE	DESCRIPTION	COMMENTS	COUNT	DATE RANGE	
17	Kitchen	Glass	Machine Made Bottle	Clear		2	1898-PRESENT	
17	Miscellaneous	Stone	Miscellaneous Stone	Graphite		2		
* Subtotal *							11	
* UNIT 01								
LEVEL 05 43-67CMB								
18	Kitchen	Ceramic	Pearlware	Other Transfer-Printed	BLUE	1	1792-1840	
18	Kitchen	Ceramic	Pearlware	Transitional (Pearl/White)	FLAT WARE	1	c. 1810-1840	
* Subtotal *							2	
* UNIT 01								
LEVEL 06 67-77CMB								
19	Architecture	Glass	Architectural Element	Window Glass		3		
19	Architecture	Manufactured	Brick	Fragment		1		
19	Architecture	Metal	Unidentified	Nail		1		
19	Kitchen	Ceramic	Redware	Dark Brown/ Black Glaze		2		
19	Kitchen	Ceramic	Domestic Gray Stoneware	Albany Slip on Grey	HOLLOW WARE, BLUE DECORATION	1	1800-1900	
19	Kitchen	Ceramic	Pearlware	Underglaze Blue Hand-Painted		2	1779-1820	
19	Kitchen	Ceramic	Industrial Stoneware	Late White Stoneware	W/SLIP	1		
19	Miscellaneous	Metal	Unidentified Object	Iron/Steel		4		
* Subtotal *							15	
* UNIT 01								
LEVEL 07 77-87CMB								
20	Architecture	Manufactured	Brick	Fragment		6		
20	Architecture	Metal	Unidentified	Cut/Wrought Nail		2		
20	Architecture	Metal	Unidentified	Nail		1		
20	Kitchen	Ceramic	Redware	Dark brown/ Black Glaze	HOLLOW WARE, INTERIOR GLAZE	4		
20	Kitchen	Ceramic	Redware	Clear Glaze, Plain	POSS. SLIP DECORATION	6		



*The Culture Center*  
1900 Kanawha Blvd., E.  
Charleston, WV 25305-0300

**Randall Reid-Smith, Commissioner**

Phone 304.558.0220 • www.wvculture.org  
Fax 304.558.2779 • TDD 304.558.3562  
EEO/AA Employer

June 21, 2017

Mr. Fred Pozzuto  
Acting Associate Director  
NEPA Compliance Office  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880 MS B07  
Morgantown, West Virginia 26507

RE: Proposed Project at the National Energy Technology Laboratory (NETL)  
Near Morgantown, Monongalia County, West Virginia  
FR: 17-732-MG

Dear Mr. Pozzuto:

We have reviewed the information that was submitted for the aforementioned project. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

According to the submitted information, the U.S. Department of Energy, National Energy Technology Laboratory (NETL) proposes to construct and operate a new Energy Conversion Technology Center (ECTC) at its NETL facility located at 3610 Collins Ferry Road, Morgantown, Monongalia County, West Virginia. The proposed building will be approximately 16,800 square feet in size.

Archaeological Resources:

As indicated in the submitted materials, archaeological investigations were conducted in 1991 and 1992 in advance of the then proposed relocation of the Military Affiliate Radio Station facility. This resulted in the identification of two archaeological sites, 46MG90, an historic era stone foundation and artifact scatter associated with the Sinclair Farmstead, and 46MG91, a prehistoric stone tool and debitage scatter possibly dating to the Middle Woodland Period. Site 46MH90 was initially identified by Ecology and Environment and determined to have been disturbed when the structure was demolished. However, later survey efforts by Goodwin and Associates determined that intact deposits lie beneath the disturbed soils. Goodwin and Associates also identified 46MG91. In their 1992 cultural resource management plan, Goodwin recommends that both sites undergo evaluation for inclusion in the National Register of Historic Places. To our knowledge, the National Register evaluations were not conducted. Although the status and condition of these sites is currently unknown, it is our understanding that the Department of Energy has avoided impacting their locations in the past. Because this is no longer possible with the currently proposed project, we request that these sites undergo National Register evaluations prior to initiating construction activities in their locations. We will provide further comment upon receipt of a proposed Phase II scope of work for each site.

June 21, 2017  
Mr. F. Pozzuto  
FR: 17-732-MG  
Page 2

Architectural Resources:

We cannot complete our review with the information provided. Based on the submitted documentation, there are properties located within sight of the proposed project area, some of which may be eligible for inclusion in the National Register of Historic Places. To evaluate the proposed project's indirect and visual effects on architectural properties, we request you forward to our office color photographs and original dates of construction of all properties that are forty-five (45) years or older and will have a line of sight of the proposed project area, including access roads. Your photographs need to be keyed to a USGS topographic or aerial map and should accurately depict from various angles any architectural resources, building or structural details, and outbuildings. Your photographs also need to document the project area by showing general views, known disturbances, and any rock outcrops. Panoramic shots of surrounding landscapes and viewsheds are also necessary for us to complete our review. Be sure to include images of the proposed project area from the position of the individual properties. If nearby buildings or structures are less than forty-five (45) years old or will not be within the line of sight of the proposed project, please confirm in writing.

We also ask that you provide our office with detailed maps and project plans, including engineering or architectural drawings, so that we may better evaluate any effects the undertaking may have on nearby architectural properties.

We will provide additional comments upon receipt of the requested information; however, we reserve the right to request additional information, including the completion of Historic Property Inventory forms.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Lora A. Lamarre-DeMott, Senior Archaeologist, or Mitchell K. Schaefer, Structural Historian, at (304) 558-0240.*

Sincerely,



Susan M. Pierce  
Deputy State Historic Preservation Officer

SMP/LLD/MKS





November 17, 2017

ATTN: Ms. Susan Pierce, State Historic Preservation Officer  
West Virginia Division of Culture and History  
The Cultural Center - Capitol Complex  
1900 Kanawha Boulevard East  
Charleston, WV 25305-0300

**Subject: NETL Morgantown, Phase II Work Plan for the Sinclair Farmstead site (46MG90),  
Monongalia County, West Virginia FR# 17-732-MG**

Ms. Pierce,

As part of the Environmental Assessment (DOE/EA-2066D) for the Energy Conversion Technology Center located at the Department of Energy's (DOE) National Energy Technology Laboratory (NETL) Morgantown campus and following our consultants suggested Cultural Resource Management Plan, please find enclosed a proposed Phase II Work Plan for the Sinclair Farmstead site (46MG90). This Phase II work plan was prepared by our archeological consultant Michael Baker International, Inc. (Michael Baker) due to the potential for impacts to the site that could result from the proposed development.

Our office had previously outlined this project in a letter to the WVDCH dated June 1, 2017. The site is located within the National Energy Technology Laboratory property located in Morgantown, West Virginia and was first identified in 1992. The investigations will assist in making recommendations as to the eligibility of the Sinclair Farmstead site for nomination to the National Register of Historic Places by conducting intensive documentary research and limited archaeological excavations within the site boundary established during Phase I survey in 1992.

Phase II investigations of the Sinclair Farmstead site will involve intensive documentary research and limited archaeological excavations to make recommendations as to the site's eligibility for nomination to the NRHP. Previous excavations recorded a moderate level of disturbance surrounding the foundation, particularly in the western portion of the site; recovered a limited number of artifacts; and recorded no features excepting the foundation. Based on these results, Phase II investigations will emphasize documentary research rather than intensive excavations. Information gathered during the documentary research and results of prior Phase I surveys will inform the Phase II excavation plans. Michael Baker will excavate up to five (5) 1m x 1m test units at locations where earlier artifacts were recovered, within the foundation, and at the locations of any outbuildings or other features noted in historic documentation. The excavations will serve to identify the extent of the ante-bellum occupational horizon, including any cultural features.

The proposed work will be conducted pursuant to the instructions and intents set forth in Section 101(b)(4) of the National Environmental Policy Act of 1969; Section 1(3) and 2(b) of Executive Order 11593; Section 106 of the National Historic Preservation Act, as amended; 36CFR 800, as revised August 5, 2004; West Virginia Code § 29, as amended; and the *Guidelines for Phase I, II, and III Archaeological Investigations and Technical Reports* (Trader 2001), prepared by the West

Virginia Division of Culture and History (WVDCH). Key Michael Baker personnel will meet appropriate professional standards as outlined in *Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines*, Federal Register, Vol. 48, No. 190-September 29, 1983, Pt. IV, and formerly published in 36CFR § 61.

These Phase II efforts will be accomplished in six (6) Tasks as further explained in the attachment.

Further, under a separate cover letter we (NETL) will be sending a photographic package to a Mr. Mitchell Schaefer, Structural Historian of your office for his further review.

If you have any questions on the overall project or of an administrative nature, please call me at (304)285-5219 or email at [fred.pozzuto@netl.doe.gov](mailto:fred.pozzuto@netl.doe.gov). If you have any questions on the archeological aspects of the project or require additional information, please contact Ms. Kathryn Lombardi, M.A.,R.P.A with Michael Baker by phone at 412-269-4615 or e-mail at [klombardi@mbakerintl.com](mailto:klombardi@mbakerintl.com).



Mr. Fred Pozzuto, Acting Associate Director  
NEPA Compliance Office  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880, M/S B07  
Morgantown, West Virginia 26507-0880

w/attachments

Ms. Lombardi (w/o attachments) ✓



November 20, 2017

ATTN: Mr. Mitchell Schaefer, Structural Historian  
West Virginia Division of Culture and History  
The Cultural Center - Capitol Complex  
1900 Kanawha Boulevard East  
Charleston, WV 25305-0300

**Subject: NETL Morgantown, Phase II Photo documentation of Sinclair Farmstead site (46MG90), Monongalia County, West Virginia FR# 17-732-MG**

Mr. Schaefer,

As part of the Environmental Assessment (DOE/EA-2066D) for the Energy Conversion Technology Center located at the Department of Energy's (DOE) National Energy Technology Laboratory (NETL) Morgantown campus and following our consultants suggested Cultural Resource Management Plan, please find enclosed our photo documentation for the Sinclair Farmstead site (46MG90). A Phase II work plan was prepared by our archeological consultant Michael Baker International, Inc. (Michael Baker) and sent to Ms. Susan Pierce for her review under a separate cover letter dated November 17, 2017.

As you may recall, our office had previously outlined this project in a letter to the WVDCH dated June 1, 2017. The site is located within the National Energy Technology Laboratory property located in Morgantown, West Virginia and was first identified in 1992. The investigations will assist in making recommendations as to the eligibility of the Sinclair Farmstead site for nomination to the National Register of Historic Places by conducting intensive documentary research and limited archaeological excavations within the site boundary established during Phase I survey in 1992.

Please provide any comments upon your review to our photo documentation concerning viewshed and any potential visual impacts that may be of concern.

If you have any questions on the overall project or of an administrative nature, please call me at (304)285-5219 or email at [fred.pozzuto@netl.doe.gov](mailto:fred.pozzuto@netl.doe.gov). If you have any questions on the archeological aspects of the project or require additional information, please contact Ms. Kathryn Lombardi, M.A.,R.P.A with Michael Baker by phone at 412-269-4615 or e-mail at [klombardi@mbakerintl.com](mailto:klombardi@mbakerintl.com).

Mr. Fred Pozzuto, Acting Associate Director  
NEPA Compliance Office



U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880, M/S B07  
Morgantown, West Virginia 26507-0880

w/attachments

Ms. Lombardi (w/attachments) ✓

**PROPOSED WORK PLAN FOR  
PHASE II ARCHAEOLOGICAL INVESTIGATIONS  
AT THE SINCLAIR FARMSTEAD SITE (46MG90),  
NATIONAL ENERGY TECHNOLOGY LABORATORY,  
MONONGALIA COUNTY, WEST VIRGINIA  
FR: 17-732-MG**

**INTRODUCTION**

This work plan outlines Phase II archaeological investigations at the Sinclair Farmstead site (46MG90), in Monongalia County, West Virginia. The investigations will combine extensive documentary research and limited archaeological excavations in an effort to make recommendations for eligibility for the site's nomination to the National Register of Historic Places (NRHP). The site is located on a ridgetop above the east bank of the Monongahela River and southwest of West Run (Figure 1). The historic locus consists of an infilled stone foundation and associated artifact scatter that dates from the mid-nineteenth to late twentieth century. It is located east of Perimeter Road on the National Energy Technology Laboratory (NETL) property. The identified site area measures approximately 30 x 45 m (100 x 150 ft) or 0.1 ha (0.3 ac).

The site was first identified in 1992 during a Phase I survey for the Naval Material Data System Group conducted by Ecology and Environment, Inc. Historic artifacts were recovered from 10 shovel test probes (STP) excavated in the vicinity of a stone foundation (Figure 2). The assemblage consisted of kitchen, household, and architectural refuse consistent with a farmstead/rural residence. Diagnostic artifacts included undecorated whiteware sherds (ca. 1820+), hotelware (1880+), a clear glass bottleneck manufactured by an automatic bottle machine, an electric fuse with a patent date of 1920, a dog license collar tag dated 1935, and several modern items (i.e, plastic, aluminum foil, electrical insulator). A large area was also identified as having dense amounts of ash and coal dust within the stratigraphic column. The ash and coal episode was attributed to the 1980 demolition of the structure. The report recommended that the deposits adjacent to the stone foundation were the result of "a tertiary depositional process and lacked integrity." Therefore, the site was recommended as not eligible for nomination to the NRHP.

The area was resurveyed by R Christopher Goodwin and Associates in 1992 and the results were included in the Morgantown Energy Technology Center's 1993 Cultural Resource Management Plan (Polglase et al. 1993) (Figures 2 and 3).

This survey consisted of the excavation of 11 STPs and a 1 x 1 m (3.3 x 3.3 ft) test unit surrounding the stone foundation and filled cellar area (Figure 3). All of the STPs were located within 6 m (19.7 ft) of the foundation and cellar, and were 3-5 m (9.8-16.4 ft) apart. STPs excavated to the west of the foundation contained disturbance attributed to the construction of Perimeter Road, located approximately 7 m (23 ft) west of the foundation. STPs were excavated to a maximum depth of 43 cm (16.9 in). STPs excavated to the north, east and south of the foundation contained historic and modern artifacts, three of which, North STP 2, East STP 1, and South STP 3 contained artifacts that date to the early to mid-nineteenth century. Soil stratigraphy for these STPs is not discussed in the report.

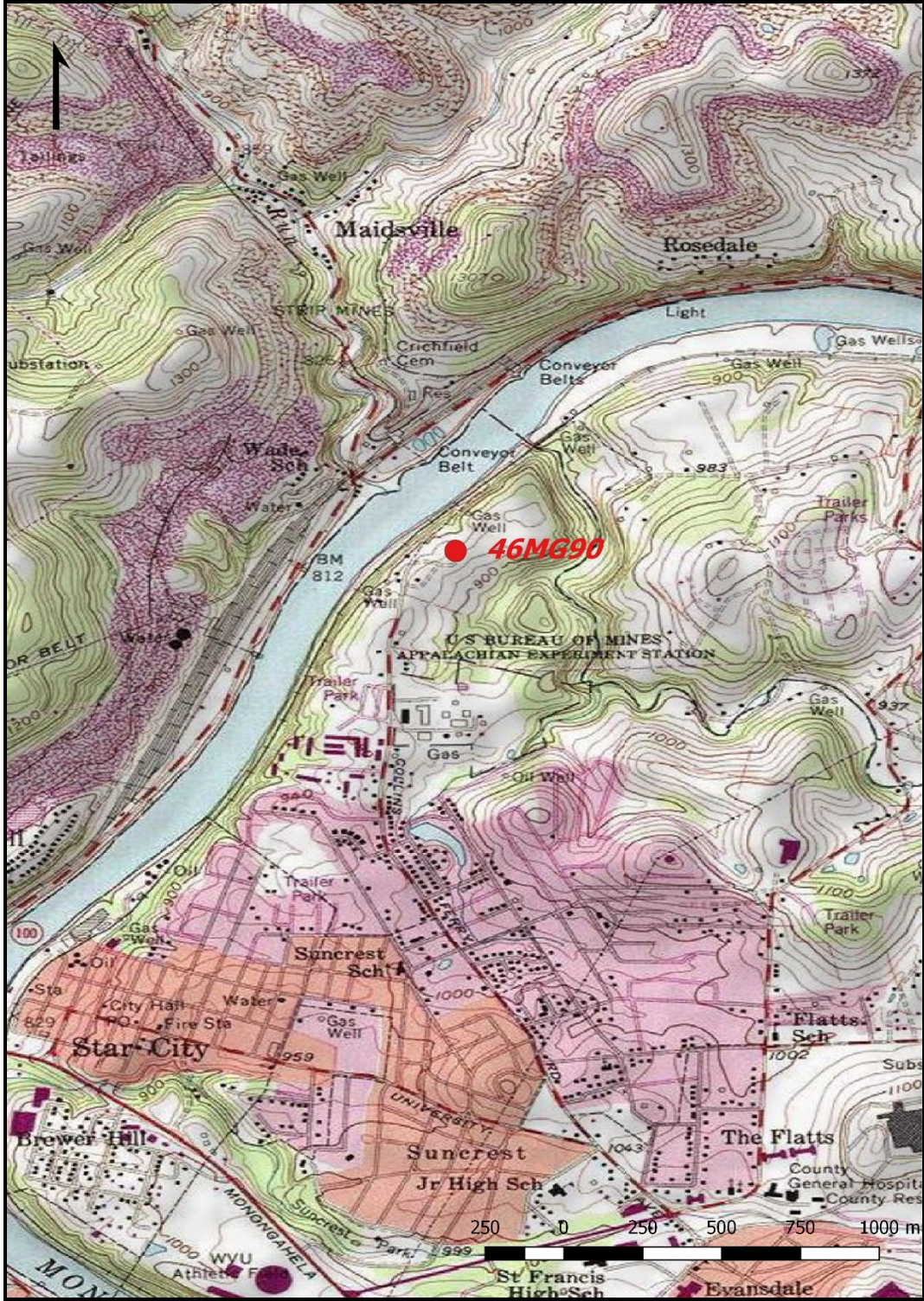


Figure 1. Location of Site 46MG90 on Morgantown North, W. Va. 7.5' U.S.G.S. topographic quadrangle.



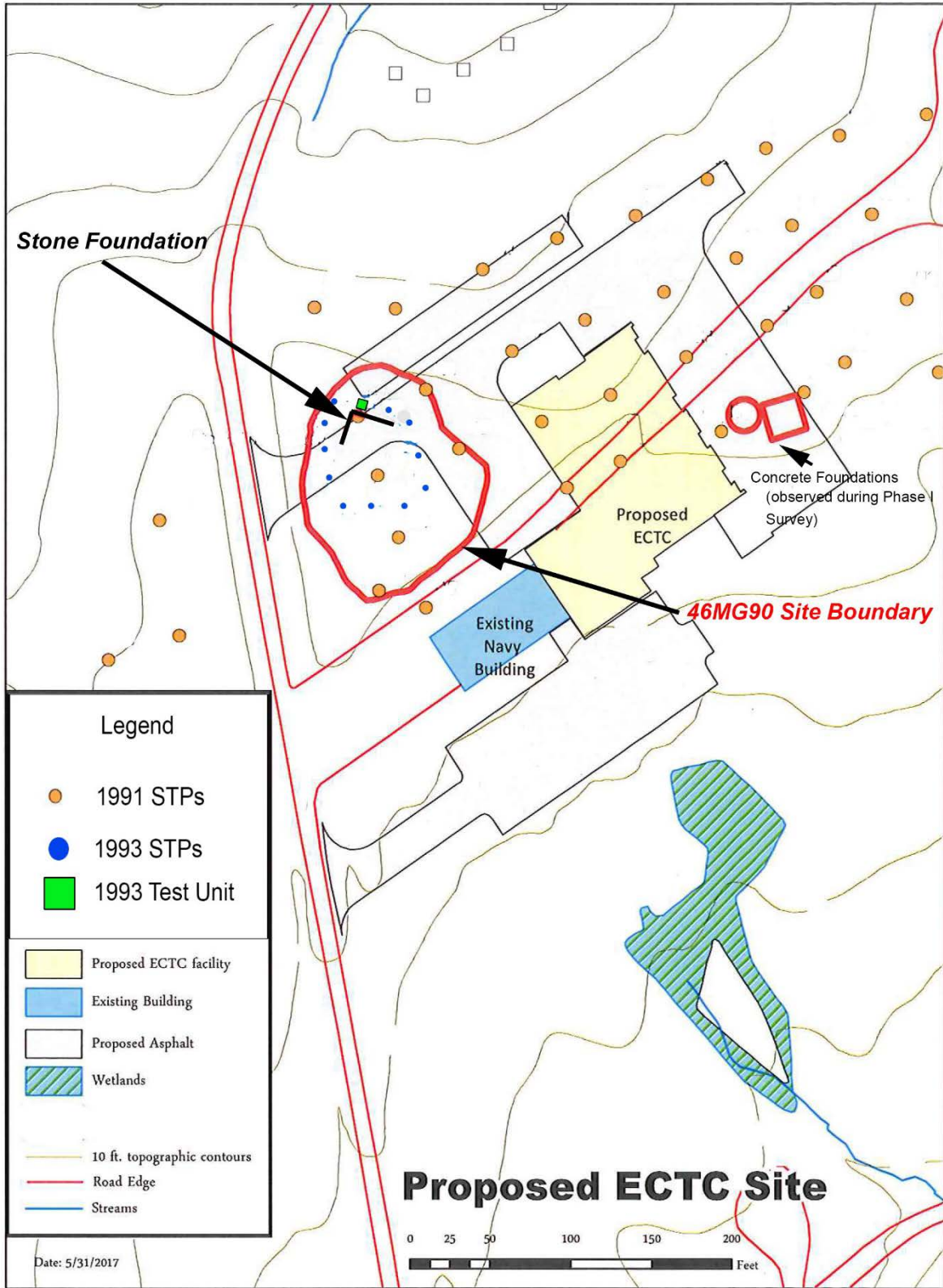


Figure 2. Proposed ECTC site showing previous archaeological surveys (adapted from Pozzuto 2017).

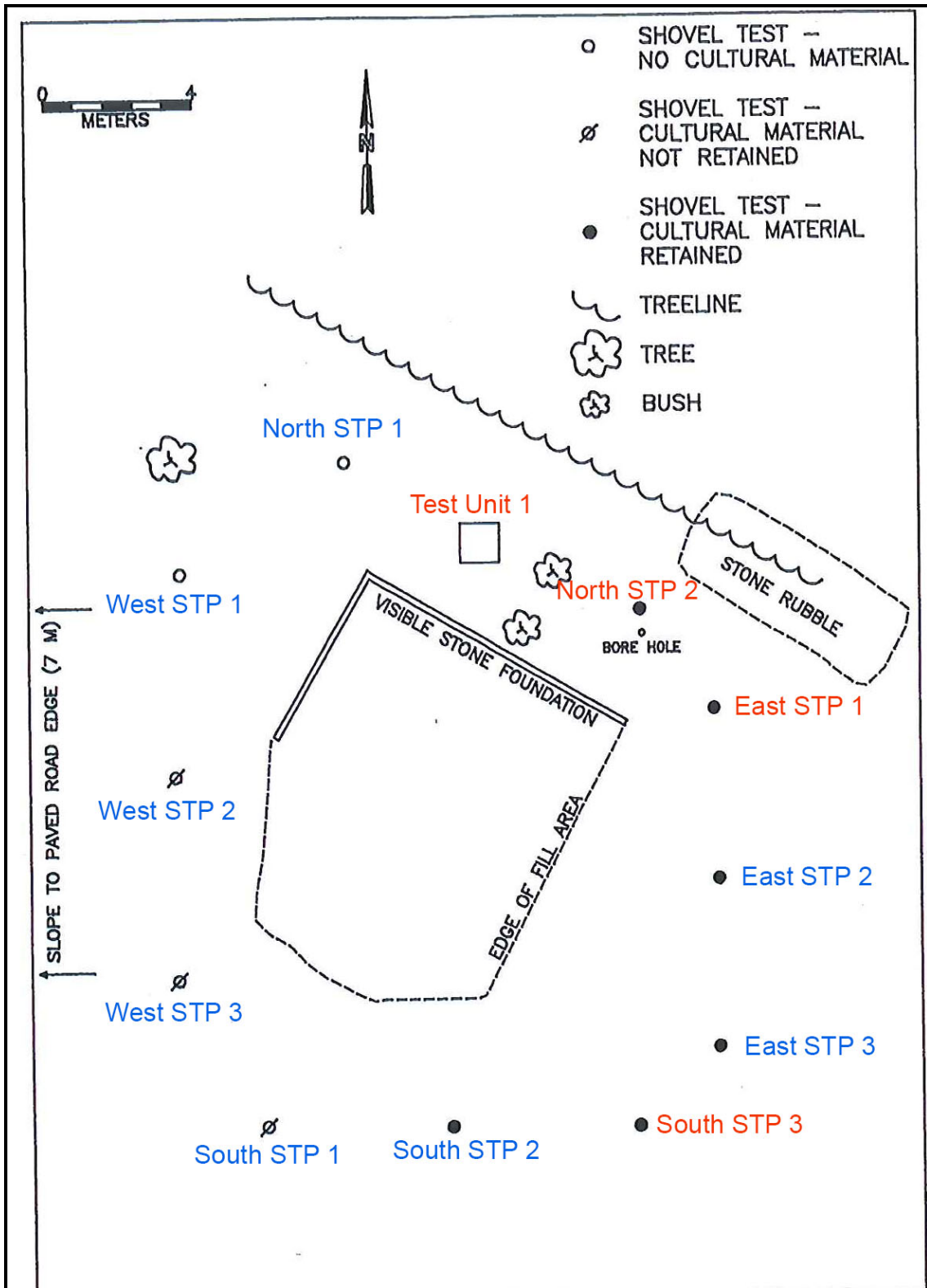


Figure 3. Map showing locations of 1992 STPs and Test Unit. STPs containing possible Antebellum artifacts are labeled in red (adapted from Polglase et al. 1993).

Test Unit 1 was emplaced 2 m north of the foundation, between STPs North 1 and North 2. Five distinct soil strata were identified (Figure 4). The uppermost stratum, Stratum I (0 to 23 cm [0-9 in] bgs), contained dense concentrations of 20<sup>th</sup> century artifacts consisting primarily of architectural debris including wire nails, window glass, mortar, plaster, brick, wood, tar paper, and asphalt shingle fragments. Stratum I was attributed to the ca. 1980 demolition of the structure. Underlying Stratum I was identified as a thick fill deposit, Stratum II (23 to 67 cm [9-29.9 in] bgs), containing a small amount of historic material including machine-made bottle glass, window glass, and whiteware. Due to the lack of artifacts and features in this stratum, an auger probe was excavated beginning at 43 cm (16.9 in) bgs and a third stratum was identified at a depth of 67 cm (29.9 in) bgs. The remainder of Stratum II was removed without screening. Stratum III (67 to 87 cm [29.9-34.3 in] bgs) contained earlier historic artifacts than those found in Strata I and II; including redware and pearlware, and a wrought or cut nail. Underlying Stratum III was a sterile homogenous silty clay and excavation was terminated at 97 cm (38.2 in) bgs. Stratum III was interpreted as a buried A horizon containing historic materials dating from the mid-nineteenth century. Stratum II, contains few artifacts, however, two pearlware sherds were recovered from the second excavation level. Stratum II, therefore, may have resulted from the excavation of the cellar within the stone foundation. This suggests that the foundation is not from the original structure on this property and Stratum II is covering evidence of a prior occupation evidenced in Stratum III.

An examination of historic maps of the site area show a structure on the property beginning in 1886. The Lathrop 1886 *Atlas of Marion and Monongalia Counties* shows this parcel was owned by F.R. Sinclair, who historic research identified as a locally prominent resident who participated in local politics and a was member of the local militia during the Civil War. Subsequent mapping shows a building at this location in 1902, 1932, and 1976.

Site 46MG90 consists of a stone foundation from a structure razed ca. 1980 and associated an artifact scatter dating from the mid-nineteenth century. Based on the early artifacts recovered during the 1992 survey, additional archaeological investigations were recommended to address the site's potential to contain significant information relating to antebellum settlement in the Monongahela Valley. In a response letter dated February 23, 1993, the WVDCH concurred with this recommendation, stating "In conclusion, we agree with the content of your letter. If the site is avoided, no further consultation is required according to the Section 106 review process. If there was to be a direct impact to the site, further evaluation would be required, but avoidance eliminates this requirement. (Appendix I: Farrar 1993).

In June 2017, the NETL informed the WVDCH of the planned construction of a new Energy Conversion Technology Center (ECTC) within the NETL complex (Appendix I: Pozzuto 2017). The ECTC and its associated parking lots will impact the Sinclair Farmstead site. The letter served to inform the WVDCH that an Environmental Assessment would be prepared for the project and to ask for WVDCH "input on a possible Phase II Archaeological Investigation."

The WVDCH response, dated June 21, 2017, stated that because it is no longer possible to avoid the site, "we request that the site undergo National Register evaluations prior to initiating construction activities in their locations. We will provide further comment upon receipt of a proposed Phase II scope of work for the site" (Appendix I: Pierce 2017).



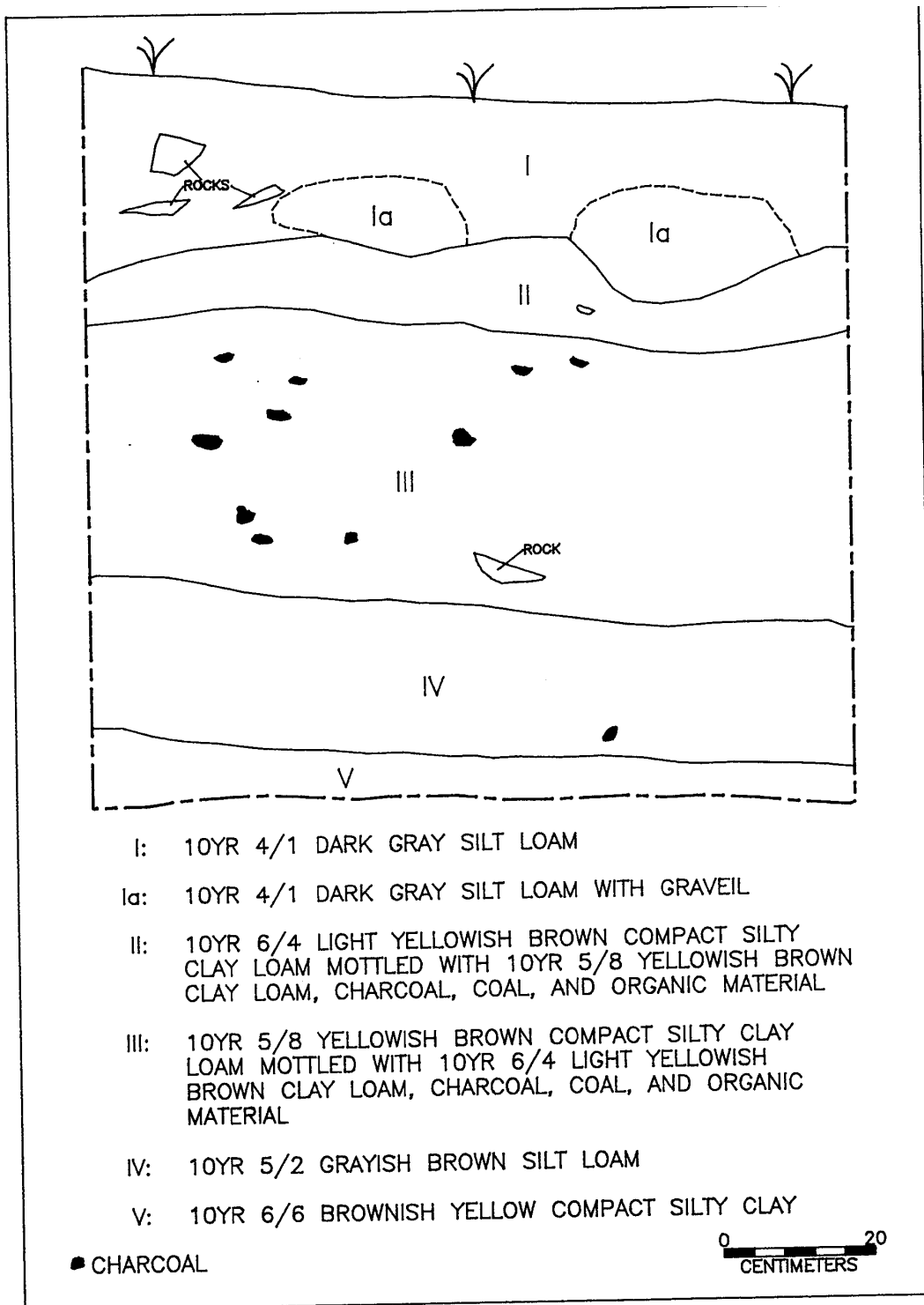


Figure 12. Profile of West Wall of Unit No. 1 (Area 9), Showing Fill and Buried Historic Component.

Figure 4: West Profile of Test Unit 1, excavated during 1992 Phase I (adapted from Polglase et al. 1993).

The WVDCH response letter also refers to a second site identified during the CRMP survey, 46MG91. This site is located north and east of the proposed construction and will not be impacted. Therefore, it is not addressed in the following work plan.

The following Phase II Work Plan will serve to evaluate the Sinclair Farmstead site for NRHP eligibility.

## **PROPOSED PHASE II RESEARCH DESIGN**

Phase II investigations of the Sinclair Farmstead site will involve intensive documentary research and limited archaeological excavations in an effort to make recommendations as to the site's eligibility for nomination to the NRHP. Previous excavations recorded a moderate level of disturbance surrounding the foundation, particularly in the western portion of the site; recovered a limited number of artifacts; and recorded no features excepting the foundation. Based on these results, Phase II investigations will emphasize documentary research rather than intensive excavations. Information gathered during the documentary research and results of prior Phase I surveys will inform the Phase II excavation plans. Michael Baker will excavate up to five 1 x 1 m test units at locations where earlier artifacts were recovered, within the foundation, and at the locations of any outbuildings or other features noted in historic documentation. The excavations will serve to identify the extent of the ante-bellum occupational horizon, including any cultural features.

The proposed work will be conducted pursuant to the instructions and intents set forth in Section 101(b)(4) of the National Environmental Policy Act of 1969; Section 1(3) and 2(b) of Executive Order 11593; Section 106 of the National Historic Preservation Act, as amended; 36CFR 800, as revised August 5, 2004; West Virginia Code § 29, as amended; and the *Guidelines for Phase I, II, and III Archaeological Investigations and Technical Reports* (Trader 2001), prepared by the West Virginia Division of Culture and History (WVDCH). Key Baker personnel will meet appropriate professional standards as outlined in *Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines*, Federal Register, Vol. 48, No. 190-September 29, 1983, Pt. IV, and formerly published in 36CFR § 61.

### **Task 1 – Project Coordination and Administration**

Baker will work in close coordination with the NETL to address any issues that may arise as a result of the Phase II archaeological investigations. One meeting with the NETL and potentially the WVDCH to discuss project goals, methods, and work progress or results is assumed.

### **Task 2 – Background Research**

In the 1993 CRMP, Polglase et al. identified the Sinclair Farmstead site as a parcel belonging to F.R. Sinclair, as shown on the 1886 map in the *Atlas of Marion and Monongalia Counties* (Lathrop 1886). Subsequent maps show a structure at this location through 1976. The structure was razed ca. 1980. Michael Baker will conduct a thorough deed search to create a land use history of this parcel back to its original land grant, if possible. Research will also attempt to confirm the location of an earlier structure, possibly replaced by the current cellar hole and foundation.

Research will also be conducted to gather information regarding the life of F.R. Sinclair and his status as a citizen of Monongalia County, including his Civil War service and involvement in the local economy and politics. The research will attempt to discover when the structure(s) were built, and if, in fact, either of them were constructed by F.R. Sinclair.

### Task 3 – Archaeological Field Investigations

The excavation plan is based upon the results of the Phase I surveys conducted by Ecology and Environment (1992) and R. Christopher Goodwin and Associates (Polglase et al. 1993). A summary of proposed fieldwork for the site is presented below.

Baker will:

- Establish a permanent site datum. Center points of cultural features, the stone foundation, site datum, and several grid points will be recorded with a Trimble GPS unit.
- Excavate up to five 1 x 1 m (3.3 x 3.3 ft) test units across the site, at locations suggested by documentary research to further examine the antebellum deposits. The units will be hand excavated by arbitrary levels within naturally-defined soil horizons. Excavations will follow the same procedures implemented during the test probing with representative plans views and profiles mapped and photo-documented using digital photography for each test unit.
- Strata I and II were determined by Polglase et al. 1993 to be from the demolition of the structure in 1980 and possibly related to the cellar excavation of the structure. Based on these assumptions, these Strata will be discarded during Phase II excavations.

Although unlikely, if human remains are encountered, procedures outlined in West Virginia Title 82, Series 3, *Standards and Procedures for Granting Permits to Excavate Archaeological Sites and Unmarked Graves*, will be followed. The NETL and WVDCH will be immediately notified and, if requested, Michael Baker will consult with interested parties to devise a method of treatment for these remains.

### Task 4 – Artifact Processing and Analyses

Analysis for Phase II studies will specifically address the potential of 46MG90 to yield significant cultural information. Michael Baker will wash, label, and catalog up to **250 historic artifacts** according to the current WVDCH *Guidelines*. All historic-period artifacts will be separated and analyzed according to material type, function, and diagnostic attributes (e.g., form, style, and decoration). Where applicable, date ranges and references for material types and diagnostic attributes will be recorded.

### Task 5 – Site Analysis and Report Preparation

Phase II site analysis will specifically address the potential of the site to yield information that is associated with the lives of significant persons (Criterion B) and its importance to the development on Monongalia County during the nineteenth century (Criterion D) as outlined in 36 CFR Part 63. The results of background research, fieldwork, artifact, and site analyses will be detailed in a draft Phase II report, and recommendations will be made concerning the significance and NRHP eligibility of Site 46MG90. Environmental and broad contextual information for the site area was contained in the previous reports and will not be included. As currently envisioned, the report will incorporate a project overview, the results of the documentary research, including a detailed land use history and information of occupants of the parcel, research design based on the results of the documentary research, and similar information pertaining to the project as a whole. Field methods and results, as well as recommendations for additional work, if applicable, will be included in this volume. The report will be appropriately illustrated with maps, figures, and photographs, and will meet all requirements of the *Guidelines*.

### Task 6 – Phase II Artifact Curation/Disposition



Artifacts, original paperwork, research materials, and project photographs will be returned to the NETL to be archived at the NETL complex (Fred Pozzuto, personal communication).

### **Deliverables**

Baker will prepare a draft Phase II archaeological report based upon the results of the tasks noted above and following the format of the WVDCH *Guidelines*. Baker will provide a draft copy of the report to the NETL for internal review. Upon receipt of comments from the NETL, Michael Baker will submit up to two (2) copies of the final Phase II report to the WVDCH with a CD/DVD containing an electronic copy of the report and appropriate shape files.

## References

Ecology and Environment Inc.

1992 *Environmental Assessment for the Proposed Antenna Relocations at the Naval Material Data Systems Group (NMDSG) Facilities, Morgantown, West Virginia.* Prepared for Chesapeake Division Naval Facilities Engineering Command. Prepared by Ecology and Environment Inc.

Farrar, William G.

1993 Letter to John Ganz, Environmental Manager, Morgantown Energy Technology Center, dated February 23, 1993, from William G. Ganz, Deputy West Virginia State Historic Preservation Officer, West Virginia Department of Culture and History, Charleston.

Lathrop, J.M., H.C. Penny and W.R. Proctor

1886 *An Atlas of Marion and Monongalia Counties, West Virginia.* D.J. Drake and Company, Philadelphia.

Pierce, Susan

2017 Letter to Fred Pozzuto, Acting Associate Director, NEPA Compliance Office, U.S. Department of Energy. National Energy Technology, Morgantown, dated June 21, 2017 from Susan Pierce, Deputy West Virginia State Historic Preservation Officer, West Virginia Department of Culture and History, Charleston regarding the Proposed Project at the National Energy Technology Laboratory FR# 17-732-MG.

Polglase, Christopher R., Michelle T. Moran, Thomas W. Davis, Hugh McAloon, and Timothy A. Silva.

1993 *Cultural Resource Management Plan for Morgantown Energy Technology Center.* Prepared for Department of Energy Morgantown Energy Technology Center. Prepared by R. Christopher Goodwin and Associates, Inc.

Pozzuto, Fred

2017 Letter to Susan Pierce, Deputy West Virginia State Historic Preservation Officer, West Virginia Department of Culture and History, Charleston, dated June 1, 2017, from Fred Pozzuto, Acting Associate Director, NEPA Compliance Office, U.S. Department of Energy. National Energy Technology, Morgantown regarding the Proposed Project at the National Energy Technology Laboratory.



December 15, 2017

*The Culture Center*  
1900 Kanawha Blvd., E.  
Charleston, WV 25305-0300

**Randall Reid-Smith, Commissioner**

Phone 304.558.0220 • www.wvculture.org  
Fax 304.558.2779 • TDD 304.558.3562

EEO/AA Employer

Mr. Fred Pozzuto  
Acting Associate Director  
NEPA Compliance Office  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880 MS B07  
Morgantown, West Virginia 26507

RE: Proposed Project at the National Energy Technology Laboratory (NETL)  
Proposed Phase II Work Plan – Site 46MG90  
FR: 17-732-MG

Dear Mr. Pozzuto:

We have reviewed the proposed Phase II work plan that was submitted for the abovementioned project. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

Archaeological Resources:

The Phase II work plan proposes to conduct a combination of intensive documentary research and limited archaeological excavations to determine whether 46MG90 has the potential to yield information associated with the lives of significant persons and its importance to the development of Monongalia County during the nineteenth century. Specifically, research will be conducted to gather information regarding the life of F.R. Sinclair and his status as a resident of Monongalia County, his Civil War service and his involvement in the local economies and politics. Research will also attempt to discover when the structures within the site were built and if either of them was constructed by F.R. Sinclair. Field investigations will include the excavation of up to five 1 x 1 meter test units across the site at locations suggested by the documentary research. Up to 250 historic era artifacts will be processed and analyzed. The results of the Phase II investigations will be submitted in a technical report. All work will meet federal and state standards and guidelines. We concur with the proposed Phase II work plan and look forward to reviewing the results.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Lora A. Lamarre-DeMott, Senior Archaeologist, at (304) 558-0240.*

Sincerely,

Susan M. Pierce  
Deputy State Historic Preservation Officer

SMP/LLD





*The Culture Center*  
1900 Kanawha Blvd., E.  
Charleston, WV 25305-0300

**Randall Reid-Smith, Commissioner**

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EEO/AA Employer

December 19, 2017

Mr. Fred Pozzuto  
Acting Associate Director  
NEPA Compliance Office  
U.S. Department of Energy  
National Energy Technology Laboratory  
3610 Collins Ferry Road  
P.O. Box 880 MS B07  
Morgantown, West Virginia 26507

RE: Proposed Project at the National Energy Technology Laboratory (NETL)  
Proposed Phase II Work Plan – Site 46MG90  
FR: 17-732-MG-1

Dear Mr. Pozzuto:

We have reviewed the proposed Phase II work plan that was submitted for the abovementioned project. As required by Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

Architectural Resources:

Thank you for the project area photographs; however, we cannot complete our review with the information provided. In our letter dated June 21, 2017, we requested that you provide our office with detailed maps and project plans, including engineering or architectural drawings, so that we may better evaluate any effects the undertaking may have on nearby architectural properties. We specifically need to evaluate how the new building may visually affect those nearby resources. Thus, it will be useful if your drawings include accurate sizes and dimensions, as well as indicators illustrating how tall the building will be in comparison to the surrounding tree line.

In the event that the proposed building will exceed the height of the surrounding tree line, we will request color photographs and original dates of construction for all properties that will have a view of the proposed structure.

We will provide additional comments upon receipt of the requested information; however, we reserve the right to request additional information, including the completion of Historic Property Inventory forms.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please contact Mitchell K. Schaefer, Structural Historian, at (304) 558-0240.*

Sincerely,

Susan M. Pierce  
Deputy State Historic Preservation Officer

SMP/MKS

**APPENDIX II: UPDATED WEST VIRGINIA ARCHAEOLOGICAL SITE FORM**

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13. Site Condition:  Unknown  Undisturbed  Destroyed  Disturbed

(explain): The site consists of two historic occupations, ca. 1880-1903 and ca. 1940-1960. The more recent occupation disturbed the older site and recent activity disturbed both.

14. Describe current land use:

The site is located on DOE property, but is not currently in use.

15. Topographical Location:  Floodplain  Terrace  1  2  3  Ridgetop  
 Gap/Saddle  Hillside/Bench  Bluff Other:

16. Physiographic Province:  Appalachian Plateau  Transitional  Ridge and Valley

17. Soils: Soil Association

Soil Series-Phase/Complex:

18. Vegetation: grasses and deciduous trees

19. Elevation: 938-945 ft/286-28 (ft/m amsl)

20. Slope %: 0%

21. Slope Direction: all

22. Nearest Water Source (select only one, as appropriate):

Name: Monongahela River  Spring  River  Perennial Stream

Intermittent Stream  Swamp/Bog Other:

Major Drainage (name): Monongahela River Minor Drainage (name) West Run

23. Distance to Water (ft/m): 566 ft/173 (horizontal) 148 ft/45 m (vertical)

24. Site Area (Dimensions in meters): 50 x 37

Basis for site area estimate:  Paced  Taped  Historic Maps  Aerial Photograph

Transit/Alidade  Unrecorded Other: Based on artifact recovery

25. Site Description (include description of site, setting, nature and location of artifacts and concentrations, features, and significance of site in a local or regional context. Use Continuation Sheet if necessary:

The Sinclair Farmstead site (46MG90) is located on a high terrace approximately 173 m (566 ft) above the Monongahela River. It is situated 130 m (425 ft) due east of Collins Ferry Road and 460 m (1,510 ft) northeast of the main entrance to the NETL facility at an elevation of 286-288 m (938-945 ft). The site is located on a knoll north of Building B-42, a vacant concrete block building that is scheduled for reconstruction. The proposed project plans include enlarging Building B-42 (located approximately 10 m [33 ft]) south of the site, adding parking areas, and underground utilities. Current vegetation within the site area consists of a mix of conifers, deciduous trees, grasses, and vegetation consistent with disturbed soils. Several large clusters of daffodils typically found at residential sites were observed within the site area.

The site area measures 0.19 ha (0.46 ac). These boundaries were defined during the 1992 Phase I survey by the presence of a stone foundation and artifact recovery from STPs and a single Test Unit (Polglase 1992). The site extends approximately 3 m (10 ft) north of the foundation, where the landform slopes down toward an old road. A large rubble pile was observed on the slope, approximately 5 m (16.4 ft) northeast of the foundation. This rubble pile contains brick fragments, concrete, and metal pipe fragments and is likely related to the demolition of the post ca. 1939 house. The eastern portion of the site includes the possible yard area, a level area sparsely covered with weeds and clumps of grass. The southern and western portions of the site are heavily overgrown

Site Number: 46MG90

4

26. Investigation Type (select as many as appropriate):  Examination of Collection

Pedestrian Survey  Surface Collection  Shovel Tests  Test Unit(s)

Test Trench(s)  Deep Test(s)  Auger/Soil Corer  PZ Removal

Mitigation/Block Excavation  Aerial Photographs  Remote Sensing

Unknown Other:

27. Surface Collection Strategy (select as many as appropriate):

Not Applicable  Grab Sample  Diagnostics  Controlled-Total  Controlled-Sample

Other (specify):

28. Surface Visibility (select only one as appropriate):  None  <10%  11-50%

51-90%  91-100%  Unrecorded

29. Has site been excavated?  Yes  No Estimated Percentage of Site Excavated: 25

30. Artifacts Collected (estimate percentage of artifacts collected) 100%

Prehistoric Artifacts Collected (select as many as appropriate; include frequencies):

Lithics Debitage: Tools: Projectile Points FCR:

Ceramics: Rim Sherds: Body Sherds: Faunal Remains:

Botanical Remains: Human Skeletal Remains: Other:

Historic Artifacts Collected (select as many as appropriate; include frequencies):

Architectural: Bricks: Window Glass 5 Nails: 1 Other:

Ceramics: 31 Bottle Glass 11 Military: Weapons: 1 Personal: 2

Food Remains: Metal: Other: 6

Provide a brief description of diagnostic artifacts:

See continuation sheet.

31. Curation Location:

32. Is Site Eligible to NRHP?  Yes  No  Unevaluated  Unknown

Explain: Lack of integrity



**33. Form Prepared by:** Kathryn M. Lombardi

**34. Affiliation:** Michael Baker International

**35. Address:** 100 Airside Dr., Moon Township, PA 15108

**36. Phone Number:** 412-269-4615

**37. E-Mail:** klombardi@mbakerintl.com

**38. Date of Fieldwork:** 3/12-16/2018

**39. Date Form Prepared:** 4/2/2018

**40. References (please note any bibliographic references):**

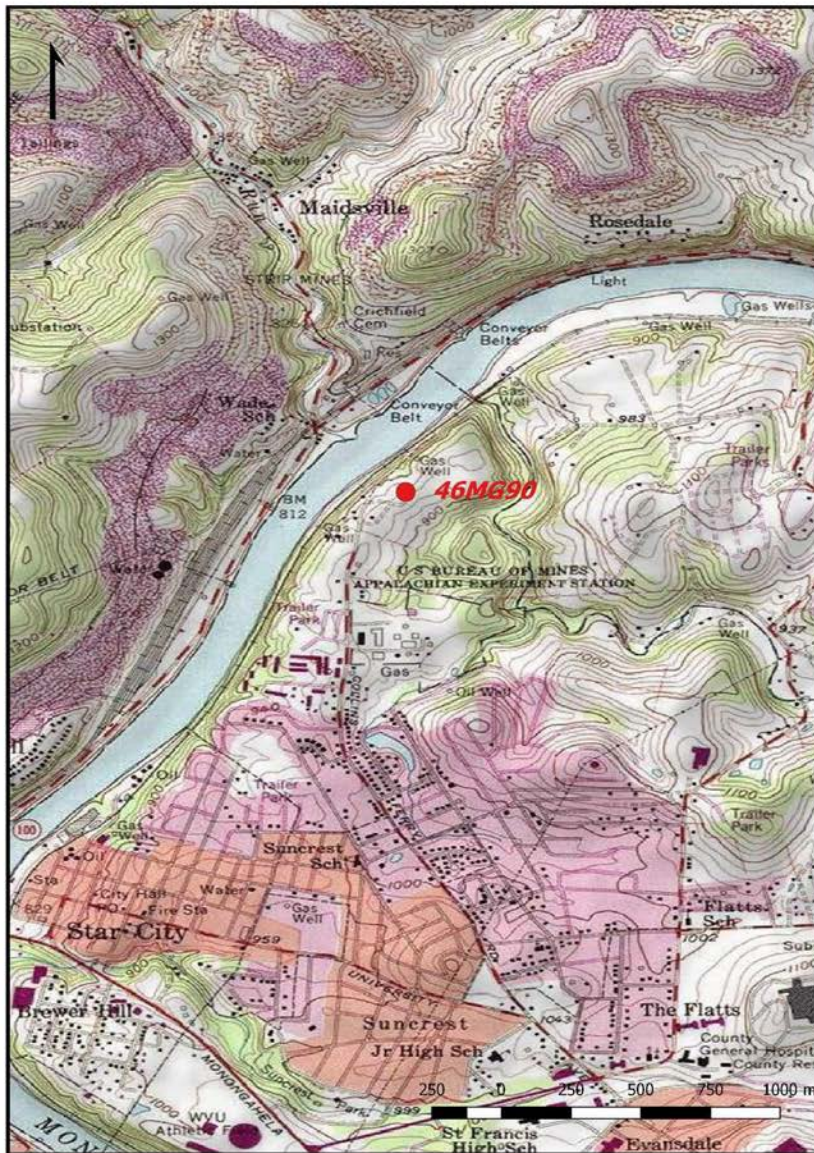
Lombardi, Kathryn M. and Brian R. Seymour  
2018 Phase II Archaeological Investigations at the Sinclair Farmstead Site (46MG90), National Energy Technology Laboratory, Monongalia County, West Virginia. Submitted to KeyLogic, Inc. and the United States Department of Energy National Energy Technology Laboratory, Morgantown, West Virginia. Prepared by Michael Baker International, Inc. Moon Township, Pennsylvania.

**41. Map (Attach portion of USGS quadrangle map and sketch location with nearest landmarks and other recorded sites; include north arrow, key, and scale)**



**West Virginia Division of Culture and History  
State Historic Preservation Office  
1900 Kanawha Blvd., East  
Charleston, WV 25305  
(304) 558-0220**

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Location of Site 46MG90 on Morgantown North, W. Va. 7.5' U.S.G.S. topographic quadrangle.





Site area facing southwest. Note south foundation wall in center of photograph.

4



Site area facing east.



Clusters of daffodils in site area, facing southwest.



Rubble pile on slope northeast of foundation, facing east.

5





North foundation wall, facing northeast.



East foundation wall, facing north.



South foundation wall, facing southwest.

7



West foundation wall, facing south. Note interior portion of foundation in center of photograph.





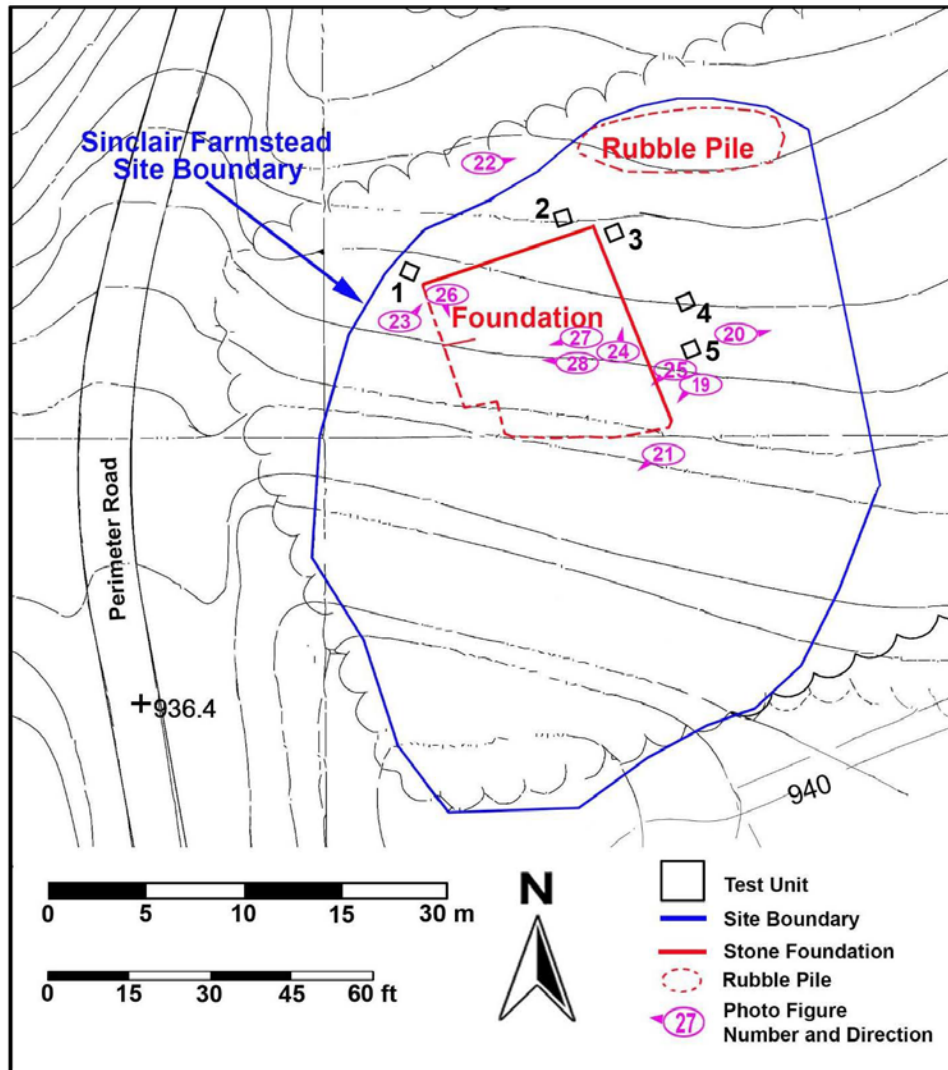
**Foundation interior, facing west.**

8



**Rubble within the foundation.**





Sinclair Farmstead site plan showing the locations of features and excavated Test Units.

## WEST VIRGINIA ARCHAEOLOGICAL SITE FORM CONTINUATION SHEET

### Artifacts

Artifacts recovered during Phase II excavations at the site 46MG90 include historic domestic and architectural items dating from the mid-nineteenth through the mid-twentieth century. The assemblage consists of 57 ceramic, glass, and metal artifacts related to the occupation of the site, ca. 1886 to 1960 (Table 2). Artifacts were recovered from three strata: F5, F9, strata related to various demolition and construction disturbances; and F14, the intact AP horizon east of the foundation feature.

The 31 ceramic sherds include 26 whiteware, 3 redware, and 2 porcelain sherds. The whiteware includes crossmending sherds from five separate vessels. The assemblage includes vessels with decorative techniques such as hand painted floral designs, transfer printed designs, and flow blue transfer printed designs (Figure 35 and Figure 36). The redware and porcelain sherds do not exhibit any diagnostic attributes.

The 23 glass artifacts include 11 container fragments, five window pane fragments, two canning jar lid liner fragments, a marble, a glass "jewel," and three unidentified fragments.

The container fragments include two whole, large beer bottles from the Schmulbach Brewing Company of Wheeling, West Virginia (Figure 36). Henry Schmulbach, a German immigrant, purchased the Nail City Brewing Company in 1882, changing the name to the Schmulbach Brewing Company (Figure 38). After increasing production throughout the 1880s and 1890s, the company constructed its own bottling plant in 1899. Schmulbach became one of the largest breweries in the area, also operating its own ice plant, West Virginia's largest. In 1914, West Virginia enacted its own prohibition law, Yost's Law, making it a dry state, and Schmulbach Brewing Company was forced to close, likely dating these bottles to ca. 1899-1914 (abandonedonline.net 2018).

In addition to the beer bottles, two glass artifacts can be assigned refined date ranges based on their production or maker's mark. A whole opaque white glass canning jar lid liner exhibits a maker's mark of the Hazel Atlas Glass Company. This mark, consisting of a stylized "H" over an "A" was used by the company ca. 1920-1964 (Toulouse 1971:239). The large glass orange and white marble resembles the "Royal" style manufactured by the Akro Agate Company. The company began in Akron, Ohio in 1910 and moved to Clarksburg, West Virginia in 1914, where it operated until 1951. This style of marble was manufactured for the company's entire existence, dating it to ca. 1910-1951 (www.marblecollecting.com 2018). Few metal artifacts were recovered during the Phase II investigations. These include an unidentified nail, a .243 shell casing (post ca. 1955; Barnes 2014), and a nail and a porcelain insulator used in knob and tube wiring.

The artifact assemblage contains domestic artifacts dating from the nineteenth to the mid-twentieth century. The small assemblage was recovered from construction and demolition strata in Test Units 1 and 3, and the AP horizon in Test Units 4 and 5. No artifacts were recovered from F12, believed to be the original surface in the northeastern portion of the site, covered by construction and demolition strata. Few of the artifacts date any earlier than the mid-nineteenth century. While the artifacts date to the earlier occupation (ca. 1886-1930), they are not confined to a specific stratum and were recovered from several strata throughout the site.



Decorated whiteware and a heavily oxidized nail recovered during Phase II excavations.





Decorated whiteware recovered during Phase II excavations.



Bottles from the Schmulbacher Brewing Company of Wheeling, West Virginia recovered during Phase II excavations.

**APPENDIX III: ARTIFACT PROVENIENCE TABLES**



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Sinclair Farmstead Site Material Tabulation by Provenience: Units

Phase II

FS #:	Unit 1	Stratum F5	Level 2	Material Subtype	Ware Type	Ware Subtype	Manufacture	Decoration	Decorative Technique	Date Range	Qty.
Material	Artifact	Subtype 1									
Ceramic	Tableware	Dining	Bowl	Refined Earthenware	White ware				Molded, Hand Painted	post ca. 1820	2
Ceramic	Tableware	Dining	Plate	Refined Earthenware	White ware				Molded, Hand Painted	post ca. 1820	2
Material	Artifact	Subtype 1									
Glass	Closures	Lid Liner		Material Subtype		Ware Subtype	Manufacture	Decoration	Decorative Technique	Date Range	Qty.
Glass	Container	Beverage	Beer/Ale				Molded	Embossed		ca. 1920-1964	1
Glass	Container	Unidentified	Bottle				Two Piece Mold w/Separate Base	Embossed		ca. 1899-1914	2
Glass	Container	Unidentified	Bottle				Molded				1
FS #:	Unit 3	Stratum F5	Level	Material Subtype	Ware Type	Ware Subtype	Manufacture	Decoration	Decorative Technique	Date Range	Qty.
Material	Artifact	Subtype 1									
Ceramic	Tableware	Dining	Plate	Refined Earthenware	White ware				Hand Painted, Molded	post ca. 1820	11
Ceramic	Tableware	Dining	Unidentified	Refined Earthenware	White ware				Transfer Print	post ca. 1820 - early 1900s	1
Ceramic	Tableware	Unidentified		Refined Earthenware	White ware				Transfer, Flow Blue	ca. 1835 - early 1900s	4
Ceramic	Tableware	Unidentified		Refined Earthenware	White ware				Transfer Print	ca. 1820 - early 1900s	2
Material	Artifact	Subtype 1									
Metal	Architectural and Furnishing	Construction	Nail	Material Subtype	Ware Type	Ware Subtype	Manufacture	Decoration	Decorative Technique	Date Range	Qty.
				Iron			Unidentified				1
							Nail				
FS #:	Unit 4	Stratum F3	Level 2	Material Subtype	Ware Type	Ware Subtype	Manufacture	Decoration	Decorative Technique	Date Range	Qty.
Material	Artifact	Subtype 1									
Metal	Arms Group	Ammunition	Shell Case	Brass						post ca. 1935	1
Material	Artifact	Subtype 1									
Misc.	Lighting and Electrical			Material Subtype	Ware Type	Ware Subtype	Manufacture	Decoration	Decorative Technique	Date Range	Qty.
				Composite			Machine-Made				1
							Machine-Made				
FS #:	Unit 5	Stratum F3	Level 2	Material Subtype	Ware Type	Ware Subtype	Manufacture	Decoration	Decorative Technique	Date Range	Qty.
Material	Artifact	Subtype 1									
Ceramic	Kitchenware	Unidentified		Coarse Earthenware	Red ware						3
Ceramic	Tableware	Unidentified		Refined Earthenware	White ware					post ca. 1820	4
Ceramic	Tableware	Unidentified		Porcelain	Unidentified						1
Ceramic	Unidentified			Porcelain	Unidentified						1
Material	Artifact	Subtype 1									
Glass	Architectural and Furnishing	Flat Glass	Window	Material Subtype	Ware Type	Ware Subtype	Manufacture	Decoration	Decorative Technique	Date Range	Qty.
				Unidentified			Unidentified				5

NETL  
46MG90

Sinclair Farmstead Site Material Tabulation by Provenience: Units

Phase II		Unit 5		Stratum F3		Level 2					
Material	Artifact	Subtype 1	Subtype 2	Material Subtype	Ware Type	Ware Subtype	Manufacture	Decoration	Decorative Technique	Date Range	Qty.
Glass	Closures	Lid/Liner					Molded	Embossed		post 1869	1
Glass	Container	Beverage	Beer/Ale				Molded				3
Glass	Container	Unidentified	Bottle				Molded				1
Glass	Container	Unidentified	Container				Molded				4
Glass	Personal	Jewelry					Molded				1
Glass	Toy	Gaming Piece	Marble				Machine-Made			ca. 1910 - 1951	1
Glass	Unidentified						Molded				3

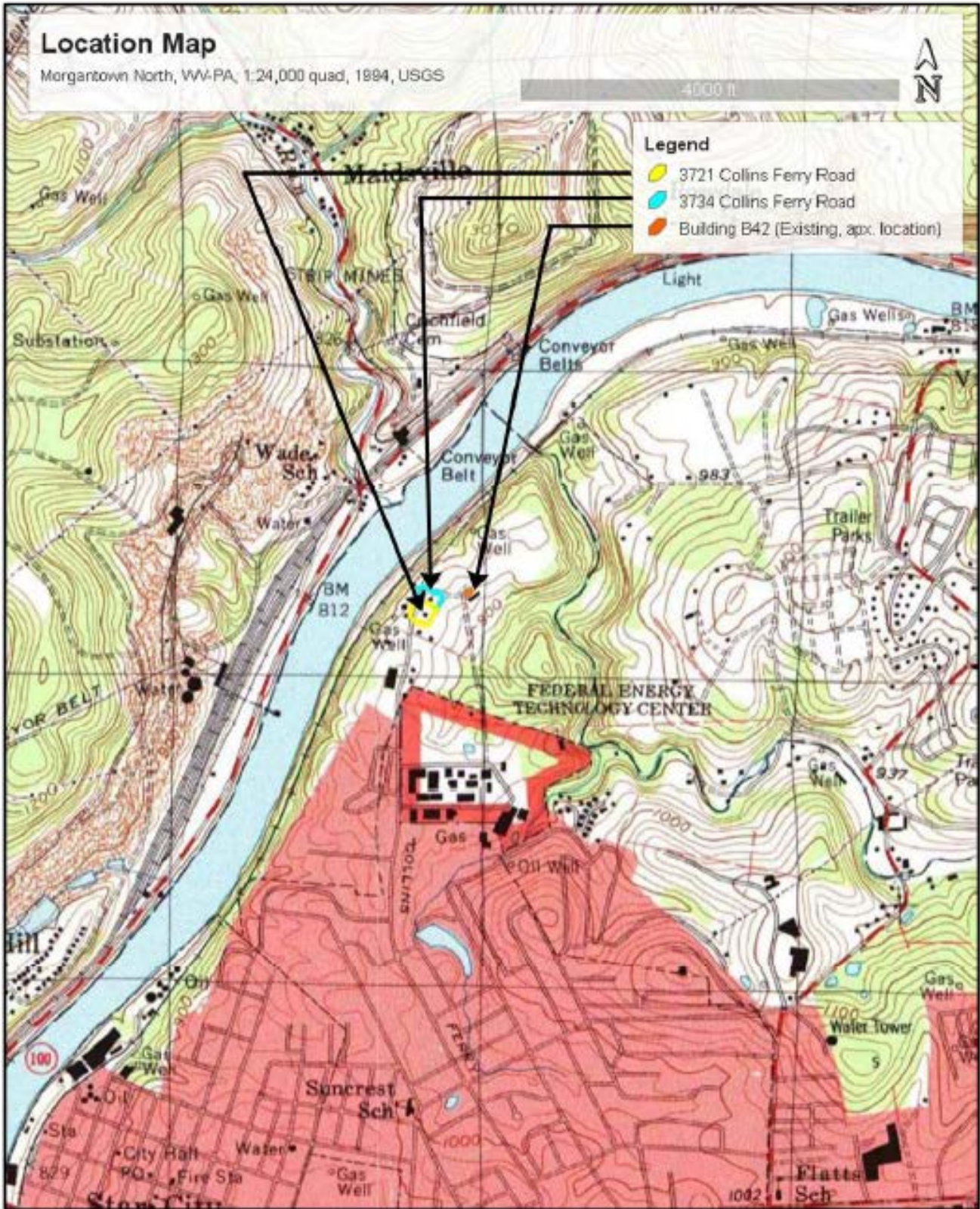


**From correspondence to Ms. Susan Pierce, State Historic Preservation Officer, West Virginia Division of Culture and History (July 13, 2018). [Click here for original correspondence.](#)**

[Begins on next page.]

# **Attachment 1: Mapping**

[5]
















1976

Aerial Photograph: April 30, 1976.

300 ft



**Legend**

-  3721 Collins Ferry Road
-  3734 Collins Ferry Road
-  Building B42 (Future Location)













**Attachment 2:**  
**Viewshed Figures and Photographs**

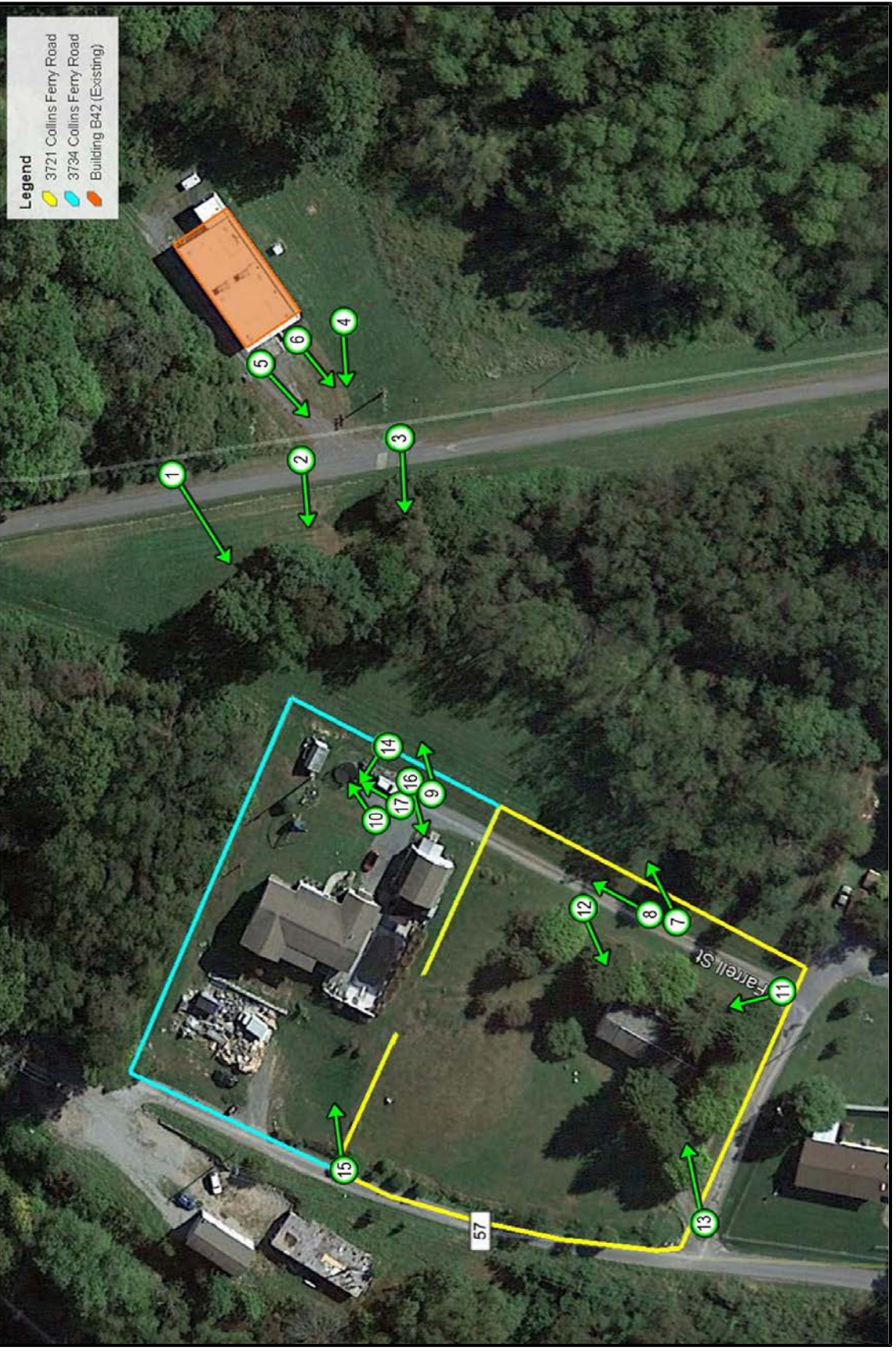


Photo Key & Site Plan



200 ft

- Legend**
- 3721 Collins Ferry Road
  - 3734 Collins Ferry Road
  - Building B42 (Existing)







*Photo 1: View from walking trail approximately 90 feet northwest of Building 42, facing southwest.*



*Photo 2: View from walking trail approximately 75 feet west of Building 42, facing west.*



*Photo 3: View from walking trail located approximately 90 feet southwest of Building 42, facing west.*



*Photo 4: View from lawn of Building 42, facing west.*





*Photo 5: View from southwest façade of Building 42, facing southwest.*



*Photo 6: View from driveway of Building 42, facing southwest.*





*Photo 7: View along Farrell Street from 3721 Collins Ferry Road, facing northeast towards site of proposed renovations to Building 42.*



*Photo 8: View along Farrell Street from 3721 Collins Ferry Road showing garage at 3437 Collins Ferry Road, facing northeast.*



*Photo 9: View at northeast terminus of Farrell Street at 3437 Collins Ferry Road, facing east towards site of proposed renovations to Building 42.*



*Photo 10: View at northeast terminus of Farrell Street at 3437 Collins Ferry Road, facing east towards site of proposed renovations to Building 42.*



## Viewshed from Top of Proposed ECTC Building

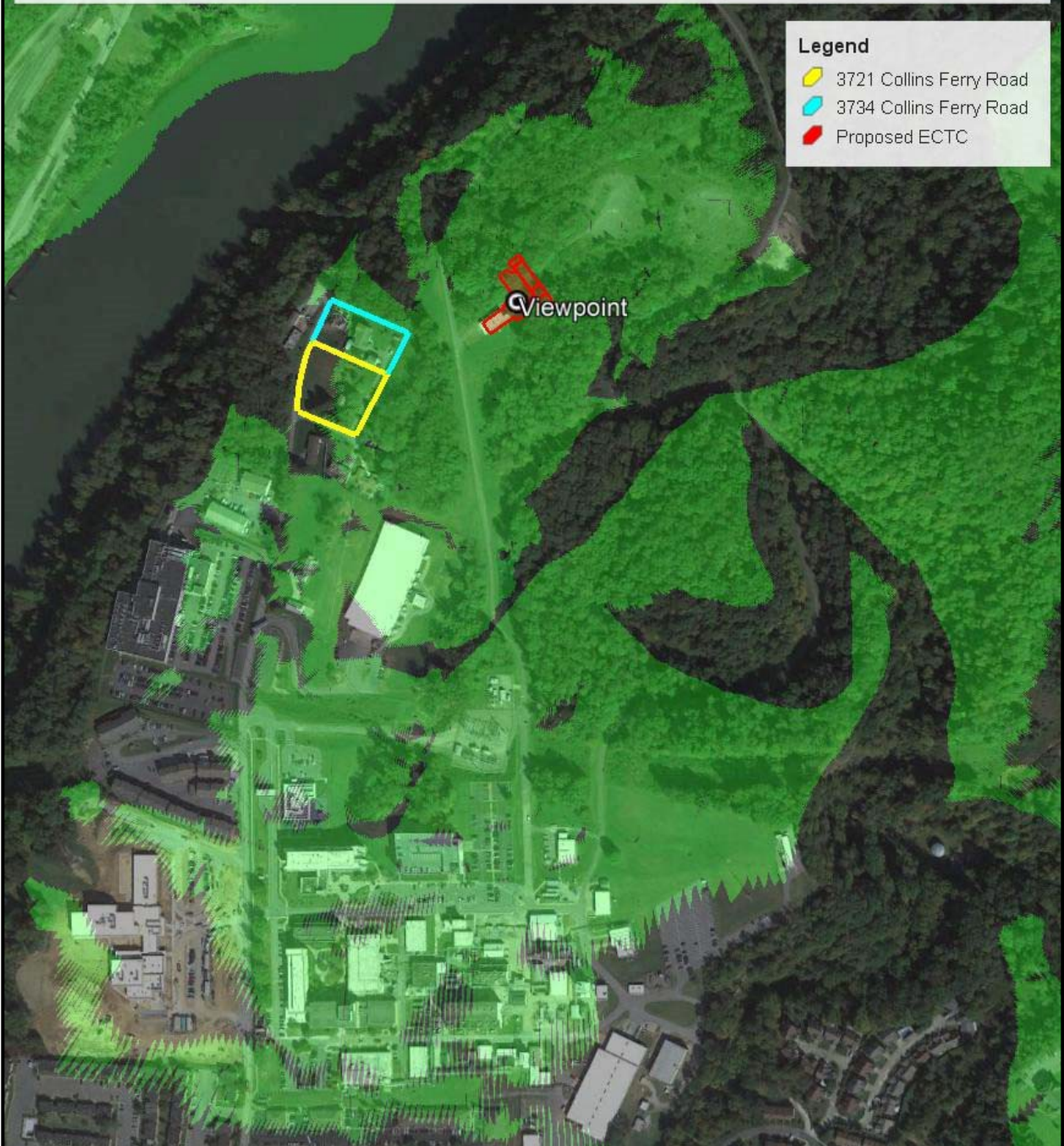
The green shading shows everything in the line of sight from the "viewpoint," approximately 15-meters in elevation. The green shading is applied to the ground surface only, not to buildings or trees that are taller than the ground surface. Therefore, the shading does not take into account tree coverage that could obstruct the line of sight.



1000 ft

### Legend

- 3721 Collins Ferry Road
- 3734 Collins Ferry Road
- Proposed ECTC








## Current Viewshed from Point

The green shading shows everything in the line of sight from the "viewpoint," approximately 2-meters in elevation. The green shading is applied to the ground surface only, not to buildings or trees that are taller than the ground surface. Therefore, the shading does not take into account tree coverage that could obstruct the line of sight.



600 ft

### Legend

-  3721 Collins Ferry Road
-  3734 Collins Ferry Road
-  Proposed ECTC








## Building Proximity

Showing approximate topography, distance, and height of proposed ECTC in relationship with the two closest residential buildings.



### Legend

-  3721 Collins Ferry Road
-  3734 Collins Ferry Road
-  Proposed ECTC








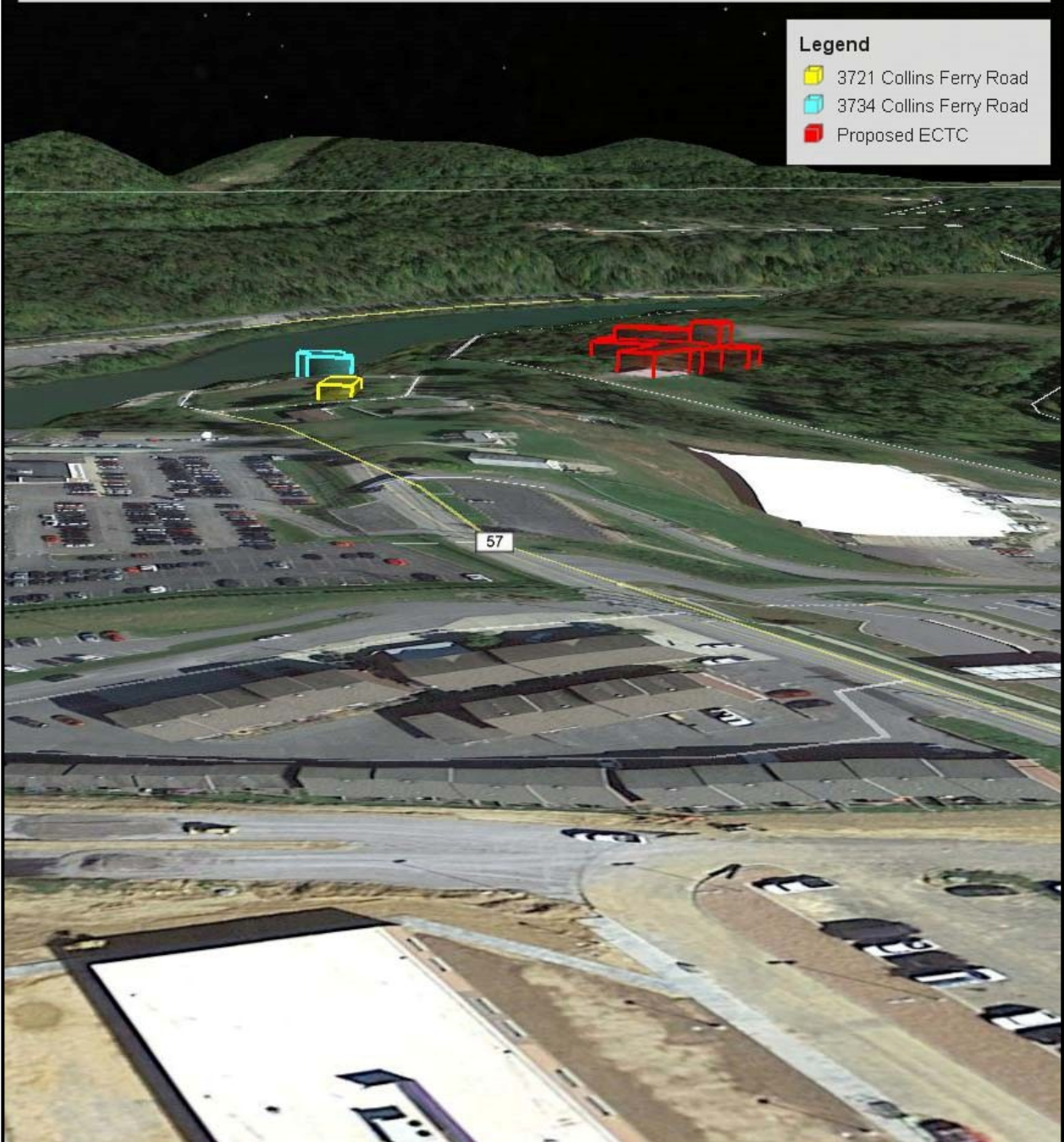
## Building Proximity

Showing approximate topography, distance, and height of proposed ECTC in relationship with the two closest residential buildings.



### Legend

-  3721 Collins Ferry Road
-  3734 Collins Ferry Road
-  Proposed ECTC








## Building Proximity

Showing approximate topography, distance, and height of proposed ECTC in relationship with the two closest residential buildings.



### Legend

-  3721 Collins Ferry Road
-  3734 Collins Ferry Road
-  Proposed ECTC

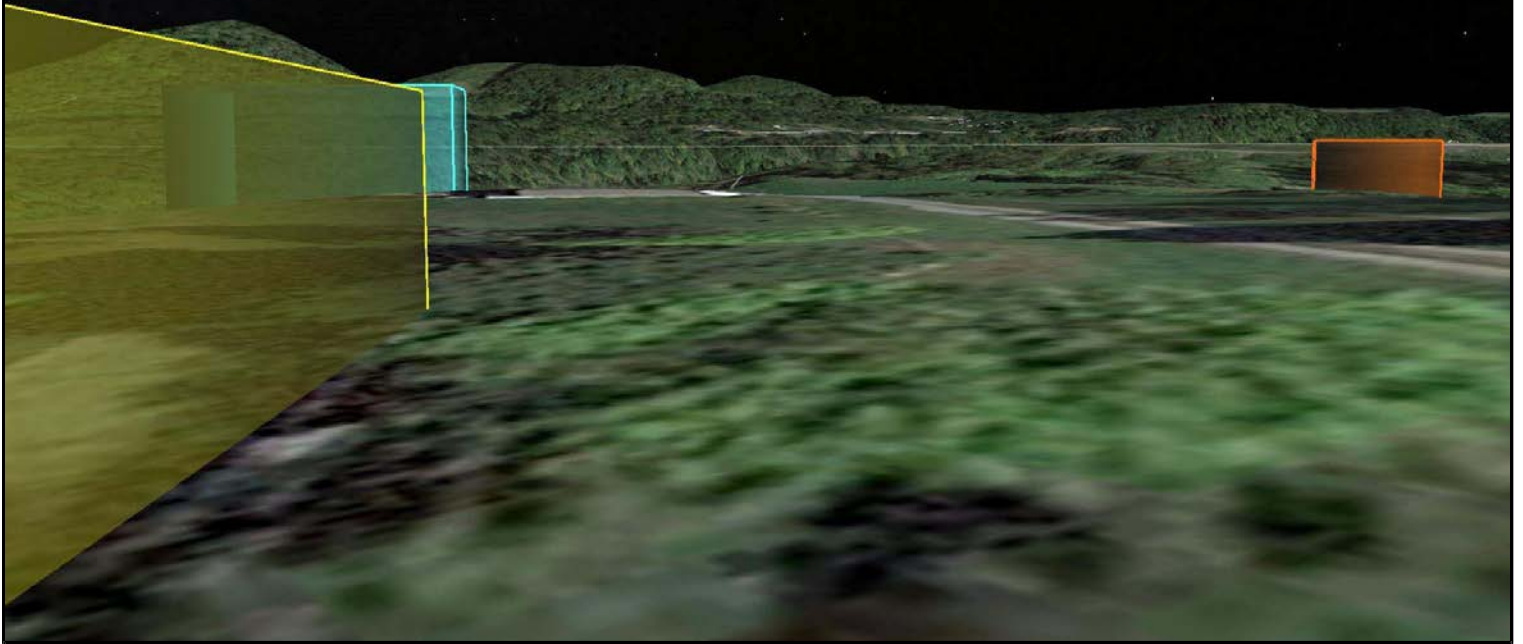


### Current View from 3721 Collins Ferry Road

Showing approximate view from the southeast side of 3721 Collins Ferry Road, looking northeast, showing the relative height of existing Building B42 at 7-meters tall. This image does not depict tree coverage, which obstructs the view.

### Legend

- 3721 Collins Ferry Road
- 3734 Collins Ferry Road
- Building B42 (Existing)

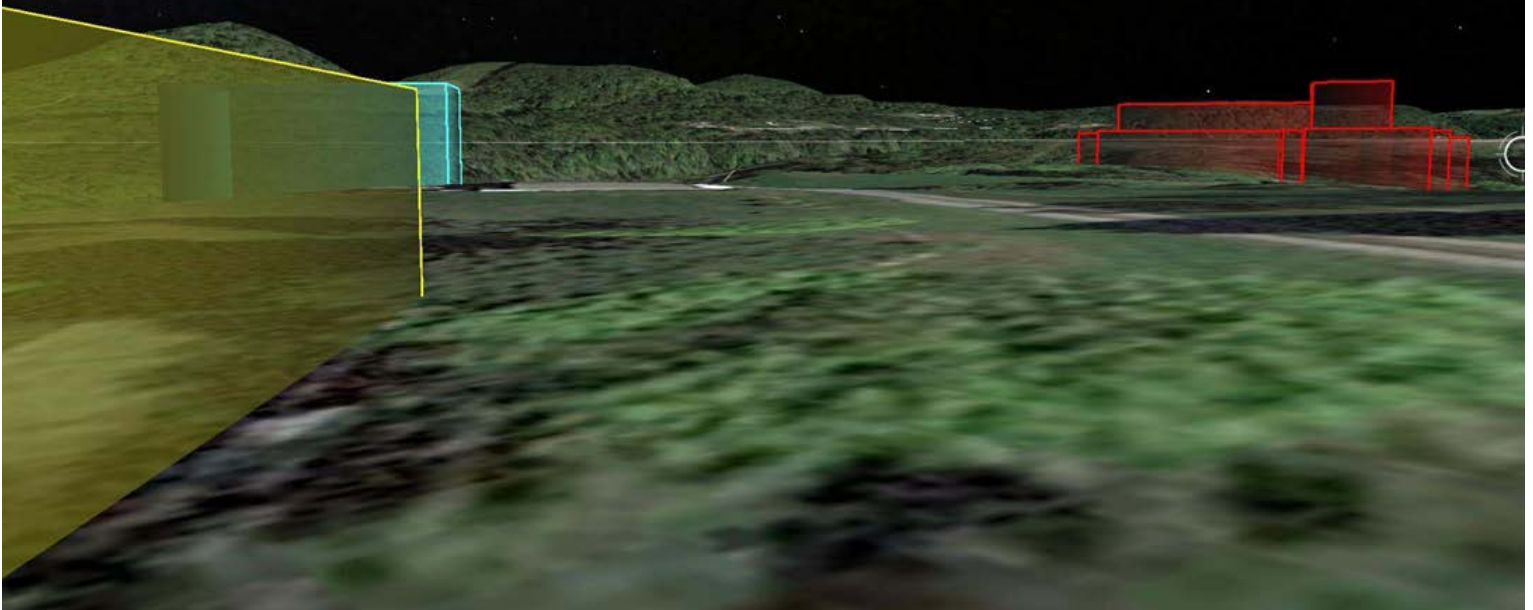


### Proposed View from 3721 Collins Ferry Road

Showing approximate view from the southeast side of 3721 Collins Ferry Road, looking northeast, showing the relative height of the proposed DCTC at 7-to-15 meters tall. This image does not depict tree coverage, which obstructs the view.

### Legend

- 3721 Collins Ferry Road
- 3734 Collins Ferry Road
- Proposed ECTC



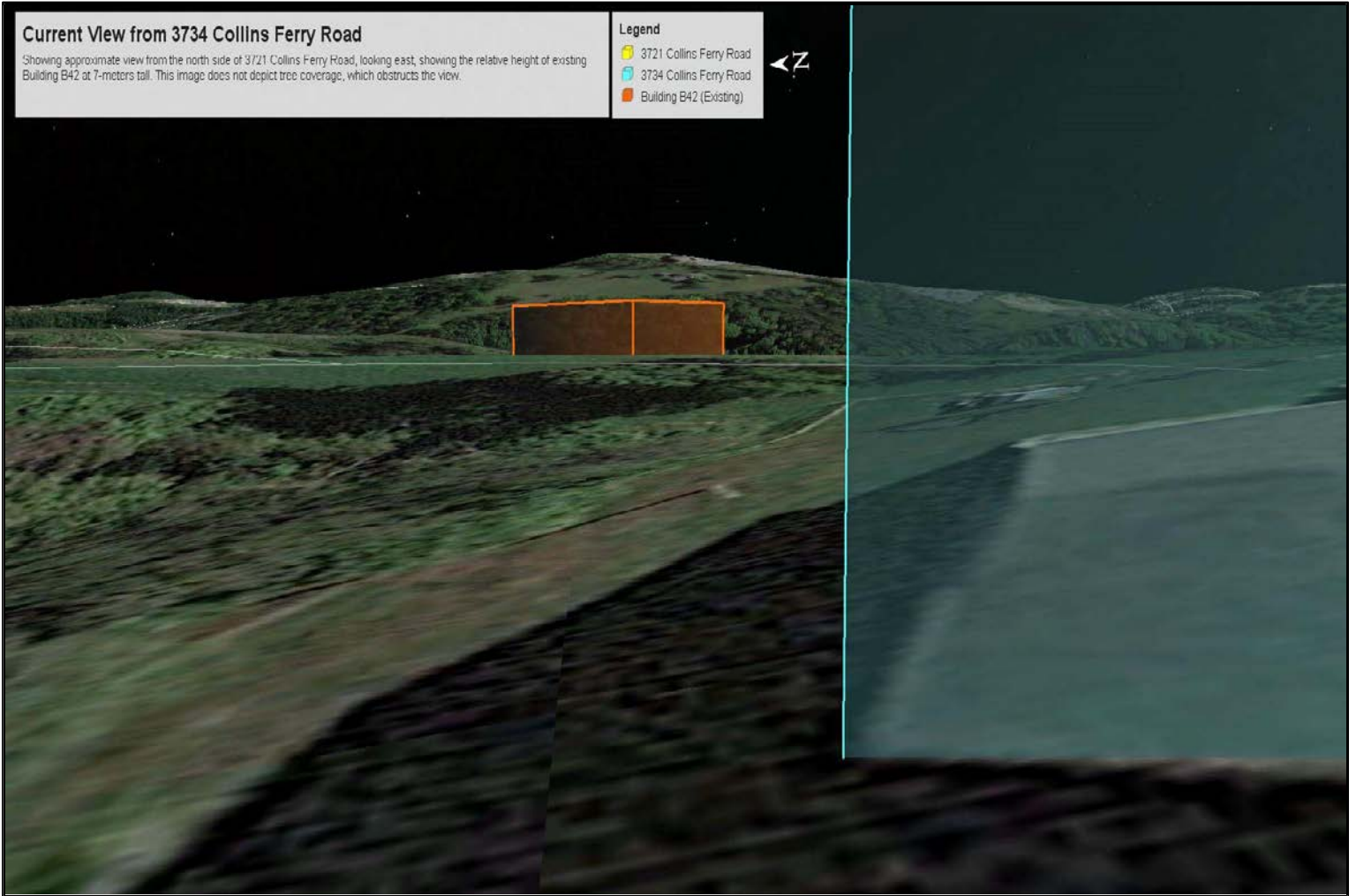


### Current View from 3734 Collins Ferry Road

Showing approximate view from the north side of 3721 Collins Ferry Road, looking east, showing the relative height of existing Building B42 at 7-meters tall. This image does not depict tree coverage, which obstructs the view.

#### Legend

- 3721 Collins Ferry Road
- 3734 Collins Ferry Road
- Building B42 (Existing)



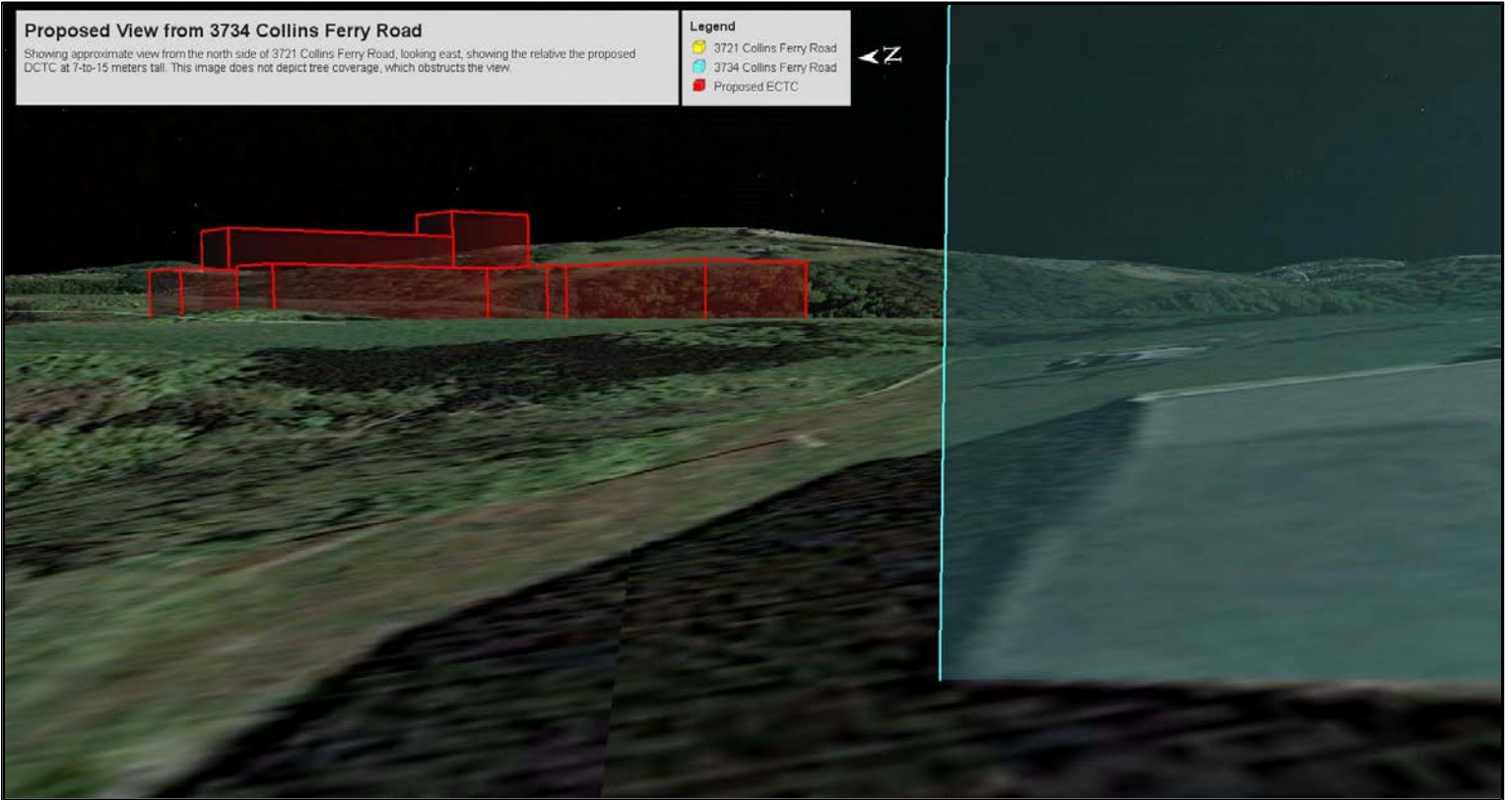


### Proposed View from 3734 Collins Ferry Road

Showing approximate view from the north side of 3721 Collins Ferry Road, looking east, showing the relative the proposed DCTC at 7-to-15 meters tall. This image does not depict tree coverage, which obstructs the view.

#### Legend

- 3721 Collins Ferry Road
- 3734 Collins Ferry Road
- Proposed ECTC

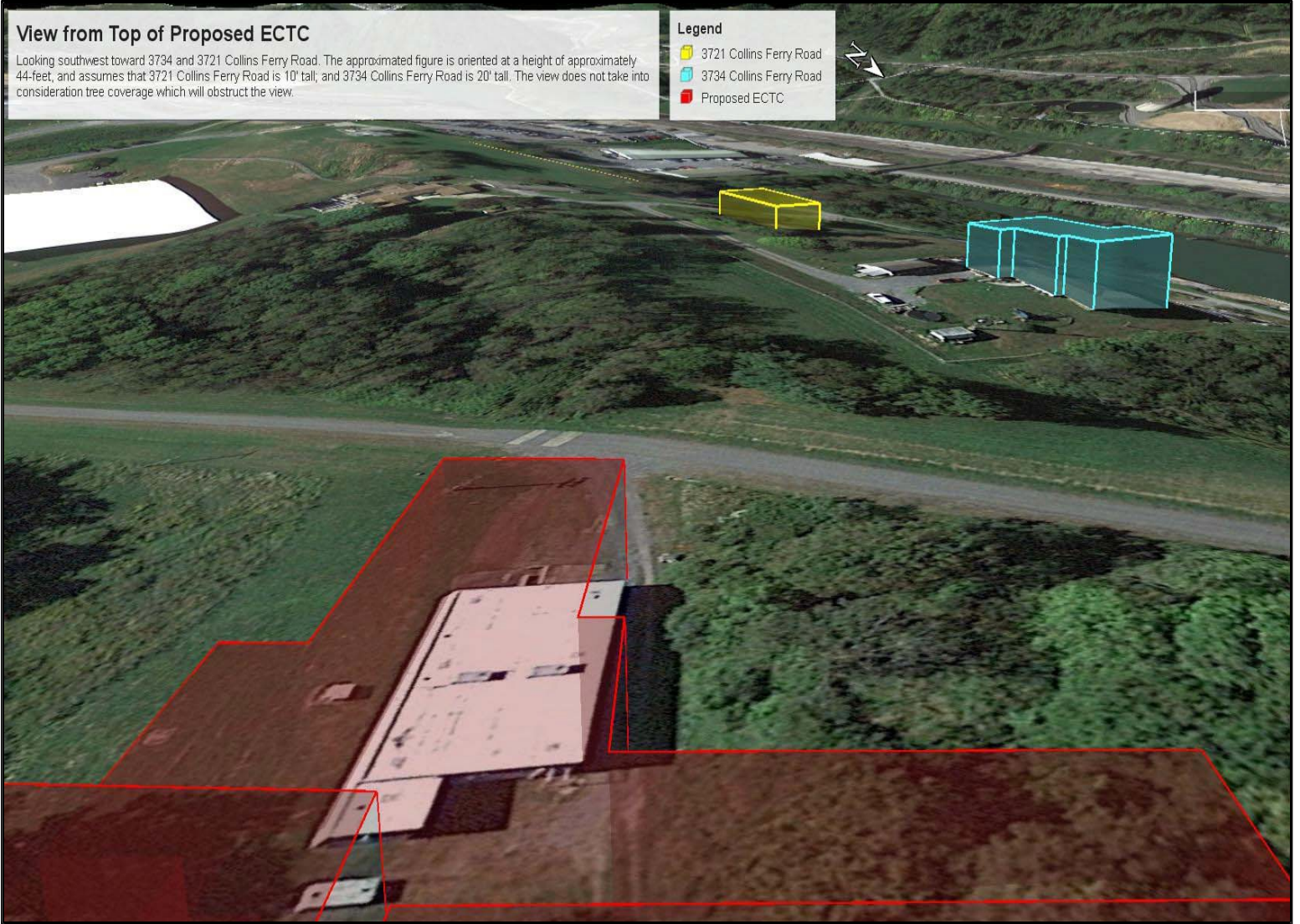


### View from Top of Proposed ECTC

Looking southwest toward 3734 and 3721 Collins Ferry Road. The approximated figure is oriented at a height of approximately 44-feet, and assumes that 3721 Collins Ferry Road is 10' tall; and 3734 Collins Ferry Road is 20' tall. The view does not take into consideration tree coverage which will obstruct the view.

**Legend**

- 3721 Collins Ferry Road
- 3734 Collins Ferry Road
- Proposed ECTC



**Attachment 3:  
Photographs of Buildings**





*Photo 11: 3721 Collins Ferry Road, southwest (side) and southeast (front) façades, facing northwest.*



*Photo 12: 3721 Collins Ferry Road, southeast (front) and northeast (side) façades, facing southwest.*



*Photo 13: 3721 Collins Ferry Road, northwest (rear) and southwest (side) façades, facing northeast.*



*Photo 14: 3734 Collins Ferry Road, southeast (front) façade, facing northwest.*





*Photo 15: 3734 Collins Ferry Road, northwest (rear) and southwest (side) façades, facing northeast.*



*Photo 16: Garage at 3734 Collins Ferry Drive, southeast (side) and northeast (front) façades, facing southwest.*





*Photo 17: Outbuilding at 3734 Collins Ferry Drive, southwest (front) façade, facing northeast.*

## **Appendix E: Greenhouse Gas Calculations**

## Calculation of Greenhouse Gas Emissions – ECTC Annex Construction

### Earthwork, Foundation, Structure

- 100 working days, 4 pieces of equipment, 200 gallons of diesel/day.

### Interior of Structure

- 280 working days, 3 pieces of equipment, 150 gallons of diesel/day.

### Calculations

- $(100 \text{ days} \times 200 \text{ gal/day}) + (280 \text{ days} \times 150 \text{ gal/day}) = 62,000$  gallons of diesel/project.
- 1 gallon of diesel = 22.2 lbs. of CO<sub>2</sub>\*
- $62,000 \text{ gallons of diesel} \times 22.2 \text{ lbs. of CO}_2/\text{gallon of diesel} \times 1 \text{ kg}/2.2 \text{ lbs.} = 625,636 \text{ kg of CO}_2/\text{project.}$
- $625,636 \text{ kg of CO}_2/\text{project} \times 1 \text{ MT}/1,000 \text{ kg} = 625.6 \text{ MT of CO}_2/\text{project.}$
- $62,000 \text{ gallons of diesel} \times 22.2 \text{ lbs. CO}_2/\text{gallon of diesel} \times 1 \text{ T}/2,000 \text{ lbs.} = 688.2 \text{ T of CO}_2/\text{project.}$
- Transportation:  $24 \text{ employees} \times 1 \text{ gallon of gasoline/day} \times 20 \text{ lbs. of CO}_2/\text{gallon of gasoline} = 480 \text{ lbs. of CO}_2/\text{day.}$
- $480 \text{ lbs. of CO}_2/\text{day} \times 380 \text{ workdays} \times 1 \text{ kg}/2.2 \text{ lbs.} = 82,909 \text{ kg of CO}_2/\text{project.}$
- $82,909 \text{ kg of CO}_2/\text{project} \times 1 \text{ MT}/1,000 \text{ kg} = 82.9 \text{ MT}/\text{project.}$
- $480 \text{ lbs. of CO}_2/\text{day} \times 380 \text{ workdays} \times 1 \text{ T}/2,000 \text{ lbs.} = 91.2 \text{ T of CO}_2/\text{project.}$

\* U.S. EPA. Emission Facts: Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel. EPA420-F-05-001. February 2005.



## **Appendix F: Public Comments Received**