Florida Bureau of Archaeological Research, Department of State
Archaeological Research Permit – 1A-32 Application

Project Name: Archaeological Excavations in Support of Phase 2 NFRC Project Application Date: 01/25/2021

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Site or Project Location **(attach detailed map of project location)**:

Plank Road State Forest

Florida Site File number(s): 8JE67; 8JE880/8LE1549; 8JE881

Property Manager Name/Position: Vitor Aguiar

Property Manager Email: vitor.aguiar@fdacs.gov Phone: 850-597-4504

Threats to Resource: Construction of proposed transmission line

Proposed Work **(attach research design)**:

See attached research design

Crew Size: 8 Estimated Project Cost:

Source of Funding: Gulf Power Company

Proposed Field Start Date: 02/15/2021 Proposed Field End Date: 04/15/2021

Proposed Laboratory End Date: 09/30/2021

Proposed Report Date (including site forms and artifacts): 04/15/2022

Publication Outlet(s): Florida DHR

Curatorial Facility: Florida BAR at Mission San Luis

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~~HRE4404-92~~ HRE4404-13

(Note: If underwater or wetlands excavations are involved, provide evidence that dredge and fill permits [DEP and COE] and consent to use state lands [DEP] have been obtained, or determined not necessary.)

RESEARCH DESIGN FOR ARCHAEOLOGICAL EXCAVATIONS AT 8JE00067, 8JE00880/8LE01549, AND 8JE00881 JEFFERSON AND LEON COUNTIES, FLORIDA

SEARCH has been contracted by Gulf Power Company (GPC) to conduct archaeological excavations at sites 8JE00067, 8JE00880/8LE01549, and 8JE00881 within the Plank Road State Forest in advance of anticipated construction impacts by the North Florida Resiliency Connection (NFRC) Transmission Line Project (Project). **Figure 1** depicts the site locations along the Project ROW. Site 8JE00880/8LE01549 is regarded as a continuous archaeological site that straddles the boundary between Jefferson and Leon counties. Sites 8JE00067 and 8JE00881 are located near the east boundary of the Plank Road State Forest, with site 8JE00881 falling only partially within State-owned land.

The portions of these sites within the area of potential effects (APE) for the Project had been evaluated as eligible for listing in the National Register of Historic Places (NRHP) by the State Historic Preservation Officer (SHPO) as a result of previous projects, as summarized in SEARCH's (2020) Phase I cultural resource assessment survey (CRAS) for the current Project (Florida Master Site File [FMSF] Manuscript No. 27105). Therefore, no additional Phase I shovel testing was conducted within these sites for the current Project. Based on the background research and previous survey results, SEARCH recommended avoidance or additional work at this group of sites. The Florida Division of Historical Resources (DHR) accepted the findings of SEARCH's (2020) report in a letter dated September 11, 2020 (DHR Project File No.: 2019-4593). GPC has determined that the Project cannot completely avoid sites 8JE00067, 8JE00880/8LE01549, and 8JE00881 and currently proposes the installation of a total of nine monopole structures on State-owned land within the previously recorded site boundaries.

The research design presented herein is consistent with that presented in the archaeological site testing and treatment plans attached to the Programmatic Agreement (PA) between GPC, DHR, and the US Army Corps of Engineers (USACE) for the Project's compliance with Section 106 of the National Historic Preservation Act (NRHP). The goal of the excavations is to ensure that the Project avoids, minimizes, or mitigates adverse effects to historic properties. Based on this information and the specific findings at each site during the Phase I survey, SEARCH is proposing total excavation of the proposed construction footprints at sites 8JE00067 and 8JE00880/8LE01549 as well as the portion of 8JE00881 on State-owned land as described in more detail below. Taking into consideration the size of the auger, caissons, and poles, each construction footprint is approximately 13 × 13 ft in size.

The field and analytical methods employed for this project will be consistent with the DHR *Module Three Guidelines for Use by Historic Preservation Professionals* as well as Archeology and Historic Preservation: Secretary of Interior's Standards and Guidelines (48 FR 44716–44740). The project will be overseen by Principal Investigators Lillian Azevedo, PhD, RPA and Shawn Joy, MA as well as Project Manager William Werner, MA.

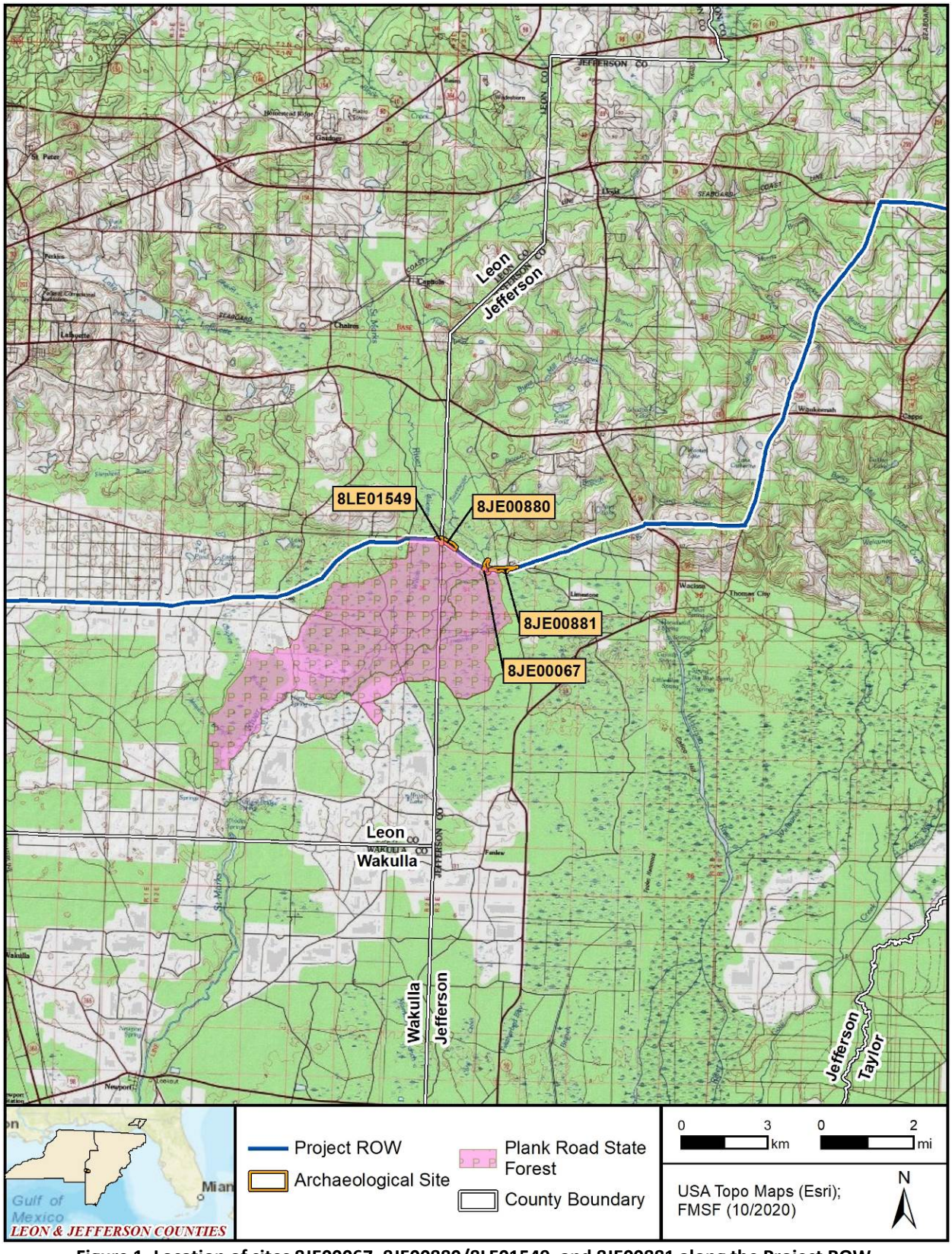

Figure 1. Location of sites 8JE00067, 8JE00880/8LE01549, and 8JE00881 along the Project ROW.

SITE BACKGROUND INFORMATION

The following section presents a more detailed discussion of sites 8JE00067, 8JE00880/8LE01549, and 8JE00881, including an overview of previous research at the site, the specific findings that led to recommendations for additional excavation, the proximity of the currently proposed Project impacts to previous findings, and the anticipated level of effort to minimize or mitigate adverse effects. The archaeological sites discussed herein are among a group of sites along the toeslope of a topographic feature known as the Cody Scarp. Goodwin and Associates, Inc. (Goodwin) identified each of these sites as containing deeply buried, stratified deposits. Drying climactic conditions at the end of the Pleistocene and in the Early Holocene contributed to increased erosion along the Coastal Plain. Prevailing winds from the south and southwest transported loose, fine-grained sands, leading to massive aeolian deposition along the Cody Scarp. These accretional processes ostensibly would have buried archaeological sites on former living surfaces *in situ*. During previous excavations at the subject sites conducted on behalf of Florida Gas Transmission (FGT), Goodwin noted evidence of vestigial paleosols that may represent former living surfaces dating to the Late Paleoindian or Early Archaic periods.

Specifically, Goodwin noted that a paleosol at 8JE00067 contained a large plano-convex ovate scraper similar to those found in secure Paleoindian contexts at the Harney Flats site (Goodwin 2009:165). At 8JE00880/8LE01549, Goodwin noted an increase in artifact frequency associated with the paleosol, including an Early Archaic Arredondo point (Goodwin 2013:292). Evidence of a paleosol was observed at 8JE00881 and was posited to represent an early Holocene living surface based on its stratigraphic similarity to other sites in the vicinity, but no Early Archaic diagnostic artifacts were observed at this site (Goodwin 2009:166).

Based on these previous findings, SEARCH has developed a research program focused on reconstructing the paleolandscape and site formation processes that occurred along the Cody Scarp. The analysis will rely principally on data obtained by Optically Stimulated Luminescence (OSL) dating, soil micromorphology, and stratigraphic cross-section models. The results of this analysis will significantly enhance understanding of the geomorphological context of archaeological deposits along the Cody Scarp, the age of identified paleosols, and the rate of sedimentation. The findings will furthermore contribute to the interpretation of other deeply buried sites in similar physiographic settings in north and northwest Florida.

Site 8JE00067

Table 1. Summary of Site 8JE00067.

Eligibility Status	Eligible for NRHP (April 20, 2009)
Max. Depth of Known Deposits	140 cm
Basis for Eligibility	Diagnostic artifacts from multiple periods; paleosol possibly dating to the Paleoindian or Early Archaic periods
Proposed Impacts	Two 4 x 4 m pole installation footprints (Structure Nos. 1245 and 1246)
Proposed Work	Excavate four 2 × 2 m units within each pole footprint for a total of 32 m^2 of excavation.

Site 8JE00067 has been subject to several previous Phase I and Phase II studies conducted by Goodwin and Associates, Inc. (Goodwin) which have identified possible Paleoindian, Early to Late Archaic, Swift Creek, and historic components including lithic workshops. The site was interpreted to consist primarily of lithic reduction workshops in proximity to raw material sources. Goodwin (2009:154) noted that artifacts were recovered from depths between 10 and 140 cm during Phase I survey, with the majority of artifacts occurring between 60 and 120 cm. Phase II efforts included the excavation of six 1 × 1 m test units, which yielded a total of 484 artifacts consisting primarily of early stage lithic reduction flakes. No cultural features were identified during the Phase II investigation, though a possible paleosol or buried A horizon was observed within Level 9. In Test Unit (TU) 2 this paleosol yielded a large plano-convex ovate scraper from between 110 and 120 cm below surface, which was interpreted as evidence of a probable Paleoindian component (Goodwin 2009:165).

The current Project proposes to install two pole structures within the previously recorded site boundary (**Figure 2**). Review of maps contained within reports of previous investigations at the site indicates that neither pole location has been previously excavated. TU 6 was located approximately 12 m north of Structure No. 1245 and yielded only 11 artifacts, including an amorphous lithic core, pieces of debitage (*n* = 9), and fire cracked rock (*n* = 1). The aforementioned ovate scraper and buried A horizon within TU 2 was approximately 32 m northwest of Structure No. 1245. Structure No. 1246 is approximately 25 m northwest of TU 4, which yielded 56 artifacts comprised exclusively of non-diagnostic debitage (*n* = 54) and fire cracked rock (*n* = 2).

Proposed Excavations

Based on the previous work at the site, the primary research objective will be to identify paleosols at 8JE00067 and to situate them within the paleolandscape of the Cody Scarp through the analysis of archaeological data, OSL samples, and micromorphology thin sections. Excavations will be conducted over the 4 × 4 m footprints of the two poles proposed for installation at the site. It is anticipated that these units will be excavated to a minimum depth of 140 cm.

Figure 2. Site 8JE00067 showing proposed pole structure locations and State land boundaries.

Site 8JE00880/8LE01549

Table 2. Summary of Site 8JE00880/8LE01549.

Eligibility Status	Eligible for NRHP (April 20, 2009)
Max. Depth of Known Deposits	125 cm
Basis for Eligibility	Diagnostic Early Archaic artifacts and paleosol containing possible Paleoindian artifacts within two discrete loci
Proposed Impacts	Five 4 × 4 m pole installation footprints (Structure Nos. 1254 – 1258)
Proposed Work	Excavate four 2 × 2 m units within each pole footprint for a total of 80 m^2.of excavation.

Site 8JE00880/8LE01549 was identified in 1993 and revisited in 2008 and 2009 (FMSF Survey Nos. 16447, 16532, 16609 and 17291). The site straddles the Jefferson-Leon county line and is therefore assigned two trinomials. Previous reports analyze the site as a single entity. The site was evaluated by SHPO as eligible for listing in the NRHP in 2009. In 2010, Goodwin excavated a total of 63 m^2 to mitigate adverse effects to the site from the FGT Phase VIII Expansion project. DHR revisited the site as part of a reconnaissance survey for St. Marks River Preserve State Park in 2015 (FMSF Survey No. 23827).

The site has identified possible Paleoindian, Early Archaic, Weeden Island, St. Johns II, Leon-Jefferson, and historic components. Recovered artifacts include a heavily re-worked Arredondo point and scrapers from the Early Archaic period and non-diagnostic lithics below this level that were interpreted as a possible Paleoindian component. During a Phase II evaluation, test units were dug to 150 cm deep and yielded on average less than 20 artifacts per square meter; however, the site was recommended eligible for listing in the NRHP based on the preservation of late Pleistocene and early Holocene components in well-stratified contexts within two loci (Goodwin 2009:198). Data recovery excavations focused on these two loci, designated Areas A and B, where artifact concentrations were identified. The interstitial area between the loci was "nearly devoid of prehistoric cultural materials" (Goodwin 2013:275). Blood residue analysis of two scrapers found within the Early Archaic context led to the interpretation of the site as a duck/fowl hunting and processing area.

The current Project proposes to install five pole structures within the previously recorded site boundary (**Figure 3**). A review of reports of previous investigations of the site do not indicate that any of the pole locations were previously investigated, and none of the pole locations were targeted during Phase II and Phase III excavations. The closest pole location to Areas A or B, the focal points of the Phase III data recoveries, is Structure No. 1256, which is approximately 25 m southeast of Area B. Data recovery at Area B concluded it was a low-density lithic workshop or tool curation area. This portion of the site showed disturbance from silviculture to up to 80 cm below the surface but did contain underlying, intact Early Archaic deposits above vestiges of a paleosol around 130 cm deep.

Figure 3. Site 8JE00880/8LE01549 showing proposed pole structure locations and State land boundaries.

Proposed Excavations

Based on the previous work at the site, the primary objective will be to identify paleosols at 8JE00880/8LE01549 and to situate them within the paleolandscape of the Cody Scarp through the analysis of archaeological data, OSL samples, and micromorphology thin sections. Excavations will be conducted over the 4 × 4 m footprints of the five pole structures proposed at the site. It is anticipated that the units will be excavated to a minimum depth of 130 cm.

Site 8JE00881

Table 3. Summary of Site 8JE00881.

Eligibility Status	Eligible for NRHP (April 20, 2009); portion within APE found to lack integrity or research potential following Phase II investigation (September 22, 2009)
Max. Depth of Known Deposits	110 cm
Basis for Eligibility	Diagnostic Swift Creek and Weeden Island artifacts
Proposed Impacts	Four 4 × 4 m pole installation footprints (Structure Nos. 1241 – 1244)
Proposed Approach	Excavate four 2 × 2 m units within each pole footprint for a total of 64 m^2 of excavation.

Site 8JE00881 has been subject to previous Phase I and Phase II studies, which identified Woodland (Swift Creek and Weeden Island) and historic components. The site is located on an upland landform surrounded by mixed hardwood and pine, marsh, and secondary growth vegetation. The area has been subjected to repeated pine planting and harvesting. Goodwin (2009) conducted a Phase II evaluation including 53 shovel tests and a total of 7 m^2 of test units (FMSF Report No. 17291). The Phase II evaluation focused on the portion of the site within the proposed FGT pipeline corridor that overlaps the current APE.

Historic and prehistoric artifacts were recovered from depths of 20 to 100 cm, with the highest concentration between 50 and 70 cm. Disturbance from pine silviculture was observed at depths varying from 50 cm in TU 6 to 90 cm in TUs 3 and 4. No diagnostic artifacts were recovered from the intact strata beneath the silviculture disturbance. Goodwin (2009:178) concluded that the portion of the site within their APE, which overlaps the APE for the current Project, lacked integrity and did not warrant further mitigation. The SHPO concurred with this assessment (DHR Project File No.: 2009-04239-B, letter dated September 22, 2009).

The Project proposes to install four pole structures within the previously recorded site boundary, though only two of these fall within State-owned land (**Figure 4**). While the current APE was encompassed within the area evaluated, and found to lack significance, during Goodwin's (2009) Phase II investigation, the specific subsurface conditions at the proposed pole locations are unknown.

Figure 4. Site 8JE00881 showing proposed pole structure locations and State land boundaries.

Proposed Excavations

Based on the previous work at the site, the primary research objective will be to identify paleosols at 8JE00881 and to situate them within the paleolandscape of the Cody Scarp through the analysis of archaeological data, OSL samples, and micromorphology thin sections. Excavations will be conducted over the 4 × 4 m footprints of the two pole structures proposed for installation at the site. It is anticipated that these units will be excavated to a minimum depth of 110 cm. The two pole structures within the portion of the site on privately-owned land will also be excavated.

METHODS

Mapping and Spatial Control

Site mapping will be achieved with a combination of hand-drawn sketch maps and an EOS Arrow Gold GPS unit with sub-10 cm accuracy. Site maps will focus on the proposed pole footprints, showing them in relation to excavation units and topographical or cultural features observed on the surface. A GPS point will be recorded on the southwest corner of each shovel test or excavation unit.

Excavation Methods

Excavations will be conducted in units measuring 2 × 2 m, with four units placed together to form a 4 × 4 m block covering the entirety of a pole footprint. Separate proveniences will be maintained for sediments and artifacts removed from each 1 × 1 m quadrant within a unit. All excavations will be conducted by hand tools in vertical increments not exceeding 10 cm within natural strata. Excavated sediments will be screened utilizing ¼ in hardware cloth. The cultural content, soil strata and texture, predominant Munsell color, and environmental setting will be recorded on field forms.

Each 2 × 2 m unit will be excavated concurrently, so that each 10 cm level is removed from all quadrants within a given block together. Depths will be measured from a datum line attached to a unit datum stake that is placed at the highest corner of the unit. The datum line is secured 10 cm above the ground surface, and the position of the datum stake will be recorded via GPS.

When excavation is complete for a given unit, a wall profile that best represents the stratigraphic environment the unit is placed in will be documented with a profile sketch and photographs. If the stratigraphy of a unit is not uniform across all unit walls, sketches and photographs of more than one wall profile will be documented to show this inconsistency. Unit walls where features are present will also be documented with sketches and photographs.

Artifact and Soil Sample Collection

Artifacts will be bagged by unit, level, and stratum. Within 2 × 2 m units, artifacts from each 1 × 1 m quadrant will be bagged separately. Bags and bag tags will be filled out for each provenience that produced cultural material. A bag tag will be placed within its own bag prior to placing the tag into the artifact bag to ensure the bag tag is not destroyed by moisture. This includes tags for soil and carbon samples. If faunal or floral remains or ceramics that are in a poor state of preservation are recovered, these will be bagged separately into sub-bags or wrapped in aluminum foil.

Feature Documentation

If an archaeological feature is encountered, a feature form will be completed and the plan view of the feature will be documented in sketch and by photography. Features will then be bisected to further investigate the feature context and reveal its shape in profile. Bisection will be performed by drawing an axis across the middle of the feature area and excavating one side of the feature in 5 cm levels. Feature soil will be screened using 1/8-in mesh. A sufficient area around the portion of the feature that was bisected will also be excavated to create a window through which the feature can be viewed in profile. The team will excavate the window soil in the same 5 cm levels, but this soil will be screened separately and treated as matrix (not feature) soil. Once the entirety of a feature is exposed in profile, the profile will be documented in sketch and using photography.

Observations and interpretations of the feature will be recorded on the feature form, including the depth that the feature first appeared, the depth it terminated, its shape in plan and profile, and associated photo and sketch numbers. If suitable sample material that could be used for dating techniques (floral or faunal remains, or carbon) is recovered when excavating the feature or its surrounding context, it will be collected and bagged appropriately. Carbon samples will be wrapped in clean aluminum foil before being placed in an artifact bag. Bulk flotation samples will be taken from feature soil.

Laboratory Methods

Artifacts collected during the archaeological survey will be transported to a SEARCH laboratory facility for cleaning, processing, and analysis. SEARCH laboratory technicians will remove remnant soil from each artifact and will allow for sufficient time for washed artifacts to air dry prior to sorting and identification. Technicians will then inventory material by provenience and artifact type and will prepare it for permanent curation. Material will be inventoried with SEARCH's Microsoft Access database analytical system, which uses coded attributes to facilitate analysis with efficient observation and interpretation of data patterns.

Lithic Artifact Analysis

Recent lithic studies of Early Archaic and Paleoindian assemblages in Florida have relied on a series of techniques to examine technology, subsistence and settlement pattern change through time (Austin and Mitchell 2010; Austin et al. 2018; Goodwin 2013; Fagan 2014; Farr 2006; Halligan et al. 2016; Thulman 2018; Webb 2006). The NFRC lithic analysis will be conducted in such a manner that it allows comparative information to be drawn from previous work at the sites under investigation, and to allow for valid intra- and inter-assemblage comparisons. Specifically, analytical methods will be comparable to those previously used during excavations in the region (Goodwin 2013:50-61) for chipped and groundstone tools (bifaces, cores, unifaces, edge-modified flakes, ground or battered/pecked stone) and debitage (flakes, flake fragments, and shatter). Lithic analysis of artifacts from these sites will primarily rely on:

- Tool and debitage definitions found in Adams (2002) and Andrefsky (1998).
- Individual and aggregate analytical techniques described by Andrefsky (1998), Bradbury and Carr (1999, 2004), Carr and Bradbury (2004), Kuhn (1990), and Odell (2003).
- Usewear or microwear analytical techniques found in Adams (2002); Ballo (1986); Pevny (2009, 2012), and Waters et al. (2011).

A number of studies are used for descriptions of Florida Paleoindian and Early Archaic projectile points, and unique tools like Aucilla adzes, Edgefield scrapers, and Waller knives: Austin and Mitchell (1999, 2010); Ballo (1986); Bradley et al. (2010); Bullen (1968, 1975); Callahan (1979); Carter and Dunbar (2006); Daniel and Wisenbaker (1987); Daniel et al. (1986); Dunbar (2006); Farr (2006); and Purdy (1981), among others.

For the current study, lithic analysis will be used to identify technologies (e.g., core reduction versus tool production), to identify technological change through time, and to explore artifact density and distribution within and between archaeological sites. The approach to lithic artifact analysis links form and function attributes to stone tool reduction stages and use strategies. Metric size data and weight will be recorded for all artifacts; however, individual measurements will be recorded for tools (i.e., length, width and thickness) and debitage will be size sorted through nested geologic screens.

Using Andrefsky (1998) and Odell (2003) as guides, lithic artifacts will be sorted into: (1) tools or tool fragments, (2) debitage or waste flakes, and 3) fire-cracked rock or thermal shatter. Lithic raw material type, the presence/absence of cortex, and thermal alteration will be recorded, as well as technological attributes such as platform type, platform facet count, and flake scar count. The following list provides an inventory of the stone artifacts types observed or anticipated to occur:

Flake: debitage removed from a tool through percussion or pressure that displays a striking platform and bulb of percussion. Proximal flake fragments are partial flakes that retain the

striking platform. Medial-distal fragments are flake fragments that do not retain the striking platform.

Shatter, angular: debitage exhibiting a blocky and angular form or flake fragments that cannot be assigned to proximal, medial or distal categories.

Shatter, thermal: small fragments of rock that detached from a larger rock due to direct exposure to heat or fire. A potlid is an example of thermal shatter.

Tested pebble/cobble: natural lithic pebbles/cobbles possessing evidence of flake removals intended to determine the suitability of the stone for tool manufacture but showing no evidence to suggest that it was intended as a tool or core.

Core: a nucleus or mass of rock that functioned primarily as a source of flakes, with flake removal scars on one or more faces.

Biface: a tool with evidence of reduction to two opposing surfaces to form a single edge that circumscribes the tool. May be hafted or unhafted.

Projectile point/knife (PP/K): a bifacial tool possessing a hafting area at its proximal end that potentially functioned as either a projectile point or hafted knife, or both. PP/Ks are typically identified by hafting method, which can include a contracting stem, expanded stem, or straight stem, and by other morphometric attributes such as basal shape (pointed, rounded, incurvate, excurvate, straight), hafting type (auriculated, side notched, corner notched, basal notched); blade shape (straight, excurvate, incurvate, parallel, recurvate, etc.), blade edge type (serrated, beveled, notched, ground), distal end characteristics (acute, acuminate, obtuse, broad, etc.), shoulder characteristics (horizontal, tapered, rounded, barbed, expanded), cross section shape (biconvex, rhomboid, plano-convex, flattened, median ridged, fluted), stem features (thinned, beveled, ground), and flaking method (collateral, horizontal transverse, oblique transverse, random). Standard references will be consulted to determine whether a PP/K is associated with a type recognized to have a distinct temporal or spatial distribution in the region (Bullen 1975; Cambron and Hulse 1975; Farr 2006).

PP/K fragment: an incomplete hafted biface tool with identifiable characteristics indicating usage as a projectile point or knife, including hafting method and other morphometric base, stem, shoulder, blade, distal end, cross section, and flaking attributes.

PP/K preform: a bifacial tool possessing a hafting area at its proximal end. Early stage preforms (sometimes called blanks) are roughly finished past the point of late stage biface but are not completed to form a functional PP/K.

Drill: a thick, narrow bifacial tool possessing a bit used in a rotary motion.

Groundstone: a tool manufactured through mechanisms of grinding, abrasion, or polish, or, are themselves used to grind, abrade, or polish.

Pitted or nutting stone: exhibits one or more very distinct small depressions. Use from nut cracking or spinning a bow drill can only be identified microscopically. Bow drill depressions are conical and have a smoothed interior; whereas, nutting depressions are rougher and tend to exhibit more impact fractures.

In addition to "standard" lithic artifact analysis, several techniques were used during past investigations of the subject sites including cross-over immunoelectrophoresis (CIEP), often referred to as "blood residue analysis" (Fagan 2014); petrographic analysis (Bryan 2014); landmark geometric morphometric (LGM) analysis (Thulman 2014, 2018); and usewear analysis using high and low magnification (Goodwin 2013).

In terrestrial settings, Florida's acidic soil hinders preservation of organic materials. CIEP offers a means to identify tools used to process subsistence resources and to infer those resources. Bolen groups relied on small and large game; similar results were in other Southeastern areas (Moore et al. 2016). Bryan (2014) identified foraminifera fossils in Coastal Plain chert artifacts, which are specific to geologic formations in the Florida panhandle; chert sourcing provides one way to examine group mobility ranges or range changes through time. Thulman (2014) used LGM of Bolen points to explore spatial and temporal differences between contemporary social groups.

Charlotte Pevny, PhD, RPA, is a Project Manager at SEARCH in New Orleans, Louisiana and will oversee the lithic analysis. At Texas A&M and the Center for the Study of First Americans, Dr. Pevny studied Clovis debitage and conducted usewear analysis of Clovis artifacts from the Gault site in central Texas. She recently completed a usewear study of Dalton points and other bifacial tools recovered from the Brand site in Arkansas (Smallwood et al. 2020) and analyses of Late Paleoindian Dalton and Late Prehistoric Scallorn serrated points to identify evidence of convergent evolution in the stone-tool record (Smallwood et al. 2018). Dr. Pevny co-authored publications on the Paleoindian and Early Archaic periods in the Southeast (Jennings et al. 2020; Smallwood et al. 2019), Florida (Faught and Pevny 2019; Pevny et al. 2018), Louisiana (Jennings and Pevny 2020), and Texas (Dockhall and Pevny 2009; Jennings et al. 2010; Wiederhold and Pevny 2014). She directed the laboratory analysis of lithic assemblages recovered from Phase III data recovery excavations at sites in Leon and Jefferson Counties (Barse et al. 2011, Barse et al. 2012; Goodwin 2013; Heller et al. 2011; Pevny et al. 2012).

Ceramic Artifacts

Ceramics will be analyzed to determine type based on paste, temper, surface treatment, and vessel form. Paste, temper, and surface treatment will be examined macroscopically and microscopically. Microscopic analysis will be conducted at low magnification under white light with a stereo microscope. When necessary, a small piece of each sherd will be removed to expose fresh surfaces for paste and temper characterizations. Temper types common in the

survey region include sand, grit, grog (clay), and crushed quartz. Particle size for sand and grit temper categories is based on the Wentworth grain size classification system (Wentworth 1922). Temper sizes in this system include very fine sand (< 0.125 mm), fine sand (0.125–0.25 mm), medium sand (0.25–0.5 mm), coarse sand (0.5–1 mm), very coarse sand (grit) (1–2 mm), granule (2–4 mm), and pebble (> 4 mm). Surfaces of ceramic sherds will be examined for treatments such as stamping, incising, cord or fabric impressions, fingernail marks, pinching, brushing, or roughening. Surface treatment also includes plain or burnished ceramics. Diagnostic cultural and temporal attributes will be identified using standard typologies for the region (Willey 1949, Scarry 1985).

Historic Artifacts

Based on the findings of the Phase I surveys, significant historic artifacts are not anticipated for the currently proposed work. However, historic artifacts that are recovered will be sorted into the following groups: architecture, clothing, furniture, kitchen, personal, arms, tobacco, and activities. Evidence of functional, cultural, or temporal association will be recorded based on attributes such as raw material, manufacturing technique, decoration, use wear, and maker's marks.

Faunal Analysis

Bone

Vertebrate remains will be sorted from the general collection for zooarchaeological analysis. Skeletal elements will be identified to the lowest taxonomic level with the use of SEARCH's comparative faunal collection. Lab analysis procedures will consist of counting the Number of Identified Specimens (NISP) for each taxon, recording bone weight, identifying individual elements, and calculating the minimum number of individuals (MNI), which estimates how many individuals of each taxon are represented by the remains. The calculation of MNI is accomplished by counting unique anatomical elements, taking into consideration their size and the side of the body from which they come. The spatial relationships within and between the samples in adjacent collection areas are also considered in the determination of MNI (Reitz and Wing 1999).

Cultural modifications to the bones, such as butchering or burning, will be noted when present. Mammal long bones will be examined to determine the level of epiphyseal fusion, which occurs at predictable times in an animal's development and can allow for an estimation of the age of death for some species. Bird bones will be examined for the presence of medullary, which occurs in reproductive females and is an indicator of sex. Any secondary uses of the bones (e.g., drilling, grinding, polishing, or incising) will be described to identify them as tools or decorative items.

Shell

Large quantities of shell are not anticipated; however, freshwater shell may be recovered in small amounts. Invertebrate remains will be sorted from the general collection for zooarchaeological analysis. Before analysis, shells will be further cleaned of dirt and concreted deposits that may have remained after processing. Shell will be subjected to taxonomic identification using standard references (Abbot and Morris 1995; Williams et al. 2014).

As with vertebrates, the invertebrates will be counted to determine the NISP, and weighed. The MNI for bivalves will be determined based on the presence of left and right hinges. Final MNI counts accounted for abutting or superimposed contexts. Shells also will be examined for evidence of cultural modification such as cutting or drilling, use wear, burning or polishing.

Absolute Dating Methods

Radiocarbon dating is the standard dating method for archaeological sites younger than 50,000 years. The technique relies on the dating of carbon-based organic material in a secure stratigraphic context. However, Florida's soils are extremely acidic and not conducive to organic preservation, and it is not anticipated that secure radiocarbon samples will be available from deeply buried contexts at the subject sites. As an alternative dating method, archaeologists and geologists have used OSL to date sand grains in aeolian deposits that are void of organic material (Chen 1999; Smith 2020). OSL functions on the principles of trapped charge dating. As quartz and feldspar sand grains are buried, they are sheltered from the sun's radiation. Electrons from Earth's background radiation become trapped within the minerals at a discernable rate. Exposure to heat or light will release the electron banks in the sand, and the number of particles within a single grain can then be counted and compared against the total of background radiation an area receives in a year. This measurement of electrons can be correlated to a known date with an uncertainty range of 5-10% (Cordier 2010).

SEARCH proposes at least two OSL samples per site. The OSL samples will be extracted at the interfaces of dune deposits. These bracketing dates will correlate the beginning and end dates of dune deposition as well as sedimentation rates. Radiocarbon samples will also be obtained if suitable organic deposits are identified. SEARCH intends to contract Dr. Steve Forman of the Department of Geosciences at Baylor University to conduct the OSL dating. Dr. Forman has previously collaborated with SEARCH project managers Shawn Joy and Charlotte Pevny.

Micromorphology

Micromorphology will be employed in the stratigraphic analysis of excavated soil layers in order to identify potential buried living surfaces and to reconstruct site formation processes. Micromorphology can detect signatures of human-associated deposits, such as the presence of charcoal, burned bone, microdebitage, or microfauna, that may not be readily visible in other

forms of analysis. These data can help develop an understanding of short-lived habitations, breaks in sedimentation and erosion, and increases in plant colonization.

SEARCH proposes to take at least two micromorphology samples per site. The samples will be extracted from possible paleosols or living surfaces, or other distinct stratigraphic units observed in the excavated soil profiles. The extracted soil will be tightly packed into an appropriate container and submitted to lab for processing into a thin section. The thin sections will be examined microscopically and characterized according to the size, shape, orientation, arrangement, and mineral composition of their constituent particles. SEARCH intends to contract Dr. Heidi Luchsinger of the Department of Anthropology at Eastern Carolina University to conduct the micromorphological analysis. Dr. Luchsinger has previously collaborated with SEARCH.

Paleolandscape Reconstruction

The OSL and radiocarbon dating will assist in understanding the paleoenvironmental and archaeological patterns within the region. The different stratigraphy deposits directly correspond to changes in the paleoenvironment context. Additionally, dating archaeological events will contribute to the interpretation of the environmental context in which Paleoindian and Early Archaic groups occupied these sites. The OSL and radiocarbon dates will be used to create a Bayesian chronology model for the sites. Bayesian chronological models are statistical models that are used to analyze both relative and absolute chronological data (i.e. OSL and radiocarbon dates, stratigraphy, error ranges, outliers) from multiple archaeological or paleoenvironmental samples. Bayesian chronological models can produce date estimations that are often much more precise than single calibrations and provide probability distributions for boundary events across a landscape. These events include both beginning and ending of archaeological and paleoenvironmental phases. The chronological model will be coupled with subsurface stratigraphic and micromorphological data to reconstruct the buried living surfaces for each archaeological component. This reconstruction will consist of a two-dimensional model of the site and the depositional chronology. These data can be tied into the regional datasets to understand further the paleoenvironmental changes, Pleistocene faunal extinctions, and cultural adaptations to these changes (Halligan et al. 2016; Perrotti 2018; Perrotti et al. 2019; Smith 2020).

As part of the overall site paleolandscape reconstruction, 3 cm auger test units will be excavated every 20 m to a maximum depth of 3 m or to impasse across the site. The auger test will be used to create the two-dimensional model of the sites. The high-resolution data collected within the excavation units will be extrapolated across the sites to create a broader interpretation of site habitation patterns and paleolandscape features within sites.

Shawn Joy, MS, of SEARCH's Tallahassee office, will conduct the field sampling and will oversee the paleolandscape analysis. Mr. Joy has expertise on the geoarchaeology of deeply stratified sites in the Southeast. He has most recently contributed to the paleolandscape analysis of the Suwannee component at the Ryan/Harley Site (8JE1004) and Lewis McQuinn (8DI112). Mr. Joy

has conducted excavations at over 10 Paleoindian sites in Florida and developed paleoenvironmental reconstructions throughout the region. Additionally, Mr. Joy has extensive experience collecting OSL samples, including the first-ever successfully collected sample from an underwater context.

Curation

Upon completion of analysis, artifacts from 8JE00067, 8JE00880/8LE01549, and 8JE00881 will be prepared for curation at the Bureau of Archaeological Research (BAR) in accordance with DHR's 1A-32 Permit, Collection and Curation Guidelines. Associated records, including field forms, notes, photographs, maps, and GIS data will also be submitted to the BAR for curation.

Human Remains

If human remains or suspected human remains are encountered at any time during the excavation and testing, the provisions of the *Unanticipated Discoveries Plan for Cultural Resources and Human Remains: North Florida Resiliency Connection 161 kV Transmission Line Corridor, Columbia to Jackson County, Florida* will be followed.

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1949 *Archeology of the Florida Gulf Coast*. University Press of Florida, Gainesville.

Lillian Azevedo, PhD, RPA

Principal Investigator

Lillian Azevedo, PhD, RPA, joined SEARCH in 2015 and has 12 years of professional experience in maritime and terrestrial archaeology. She received her PhD in Maritime Archaeology from the University of Southampton in 2014 while a Jack Kent Cooke Graduate Scholar and her BA from the University of the South in 2005 (*summa cum laude*). She is a member of Phi Beta Kappa and has conducted archaeological research in the United Kingdom, France, Spain, Denmark, Caribbean, and southeastern United States. Her research interests include grass-roots heritage management initiatives and tourism in the Lesser Antilles and Bermuda. Dr. Azevedo is an AAUS diver and certified PADI SCUBA instructor qualified to teach deep, night, navigation and heritage awareness diver course, as well as CPR, First Aid/AED and O2 Administration. She has supported USACE, FERC, and GSA projects; completed training courses in Anti-Terrorism Awareness and unexploded ordinance; and has experience with Sections 106 and 110 of the NHPA, as well as NEPA and NAGPRA. Dr. Azevedo's qualifications exceed those set forth by the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716-42).

EDUCATION

PhD	2014	Archaeology. University of Southampton.
MA	2007	Maritime Archaeology. University of Southampton.
BA	2005	Cultural Anthropology. Sewanee: The University of the South.

PROFESSIONAL EXPERIENCE

2015–present	Principal Investigator, SEARCH
2014–present	Adjunct Professor of Archaeology and Maritime Archaeology, Flagler College
2013–present	Consultant, Brimstone Hill Fortress World Heritage Site, St. Kitts and Nevis, Lesser Antilles
2014–2015	Field Archaeologist, LG^2 Environmental Solutions, Inc.
2012–2014	PADI Specialty SCUBA Instructor, Squalo Divers, Miami, Florida
2009–2012	Researcher and Heritage Spokeswoman, Anguilla Archaeological and Historical Society
2005–2014	Jack Cooke Kent Graduate Scholar
2002	Underwater Archaeologist, Institute of Nautical Archaeology

PROFESSIONAL REGISTRATIONS AND ASSOCIATIONS

Phi Beta Kappa	Professional Association of Diving Instructors
Society of Historical Archaeology	Lighthouse Archaeological Maritime Program
Archaeological Institute of America	Florida Anthropological Society
Anguilla Heritage, President 2011-2012	Museums Association of the Caribbean
Emergency First Responder Adult CPR/First Aid/AED	Archaeological Society of Virginia

SELECT PROJECT EXPERIENCE

2018: Principal Investigator. Cultural Resource Assessment Survey for the Seacoast Palatka Lateral Pipe Construction Project, Putnam County, Florida. Florida Master Site File Report No. 25494. On file, Florida Division of Historical Resources, Tallahassee, Florida.

2018: Principal Investigator. Phase I Cultural Resource Assessment Survey for the Sweetbay Solar Center, Martin County, Florida. Florida Master Site File Report No. 25501. On file, Florida Division of Historical Resources, Tallahassee, Florida.

2017: Project Archaeologist and Author (Archaeology). Cultural Resource Assessment Survey of the NuTerra Biosolids Management Facility, Duval County, Florida. Conducted for NuTerra and NEFL Compost.

2016: Project Archaeologist and Author (Archaeology). Cultural Resource Assessment Survey of the Loggerhead Solar Energy Center, St. Lucie County, Florida. Conducted for ECT and Florida Power & Light (FPL).

2016: Project Archaeologist and Author (Archaeology). Phase I Cultural Resource Assessment Survey and Supplemental Testing of the AZ Ocala Ranch Property, Marion County, Florida. Conducted for Farner, Barley & Associates.

2016: Project Archaeologist and Author (Archaeology). Phase II Archaeological Evaluation of the Anclote Power Plant North Site (8PA1237) and Documentation of the Anclote Missile Tracking Annex, Pasco County, Florida. Conducted for Duke Energy.

2016: Project Archaeologist and Author (Archaeology). Phase I Cultural Resource Assessment Survey for the Perry Solar Plant, Taylor County, Florida. Conducted for NARENCO.

Shawn Joy, M.S.
Project Manager
Submerged Pre-contact Group Leader
Tallahassee, Florida Office

Shawn Joy, Shawn Joy, MS, has over 12 years of experience in historic, maritime, and pre-contact archaeology and is one of the leading submerged pre-contact archaeologists in the country. Mr. Joy's research focuses on geoarchaeology, submerged pre-contact archaeology, and Bayesian statistical sea-level curves. His research in the Gulf of Mexico has created the most precise sea-level curve for the region over the last 24,000 years. This research has helped refine the Bureau of Ocean and Energy Management regulations for cultural resource surveys in the Gulf. His current research focuses on developing the human-altered lithic detection system (HALD), which uses sub-bottom profiler data to identify submerged pre-contact sites. Shawn He has presented on research at numerous venues, including the Smithsonian Insitute, and has chaired several conferences. Mr. Joy has been involved in multiple Phase III excavations, including America's oldest submerged site Page-Ladson, as well as Guest Mammoth, Manasota Key offshore burials, and Sloth Hole. He is the co-director of the Submerged Paleo-Landscapes Archaeological Survey and Heritage Project (SPLASH) and a board member and the Director of Innovations and Acquisitions for Archaeological Research Cooperative (ARCO-OP). Mr. Joy has conducted desktop analyses, submerged paleolandscape reconstructions, and geotechnical surveys for both commercial and research projects in the Gulf of Mexico and the Atlantic Coast. He has worked for the Massachusetts Board of Underwater Archaeological Resources, where he assisted in developing the reporting guidelines for maritime archaeological reports and advanced an extensive New England shipwreck database. Mr. Joy also specializes in underwater photography, and his photographs were featured on CNN, Smithsonian Magazine, and Popular Archaeology.

EDUCATION

MS	2018	Underwater Archaeology. Florida State University.
BA	2012	Anthropology. The University of Massachusetts.

RESEARCH SPECIALIZATIONS

Submerged Pre-contact
Sea-level Reconstruction
Paleoenvironmental Reconstruction
Paleoindian Period
Sonarwiz
Hypack
Sub-bottom Survey
Geoarchaeology
Coastal Geology
Fluvial Geology
Underwater Photography
Technical and Scientific Diving
Rebreather Certified

PROFESSIONAL EXPERIENCE

2020-present	Project Manager, Submerged Pre-contact Group Leader SEARCH Inc.
2015-2020	Underwater Archaeologist, SEARCH Inc.
2015-2018	Underwater Archaeologist, Florida State University
2013-2018	Underwater Archaeologist, Texas A&M University
2016	Archaeologist, Grey and Pape Inc.
2015-2016	Field Director, SWCA Environmental Consultants
2015	Crew Chief, BL Companies
2014-2016	Project Archaeologist, Archaeological Response Consultants
2015-2016	Archaeologist, Versar Inc.
2012-2015	Crew Chief, Public Archaeology Laboratory
2011-2012	Field Technician, Soil Sight LLC
2009, 2014	Research Associate, Massachusetts Board of Underwater Archaeological Resources
2008-2010	Field Technician, Tim Dinsmore CRM

PROFESSIONAL REGISTRATIONS AND ASSOCIATIONS

American Academy of Underwater Sciences (AAUS) Scientific Diver, Rebreather 21% Diluent Diver, Dive Master, Cavern and Cave Diver, Dive Safety Officer, Rescue Diver, Advanced EANx Diver, DAN SCUBA Diver Ins, Coast Guard Boater Safety, Shipboard Damage Control Training, Advanced Open Water SCUBA, PADI O2, CSX Railway Safety Training, OSHA 40-hour Hazardous Waste Emergency Response Training, Professional Rescuer and CPR/First Aid, and Rhode Island Maritime Archaeology Certification, Society for Historical Archaeology, Society for American Archaeology, American Academy of Underwater Sciences (AAUS) Member.

SELECT PROJECT EXPERIENCE

2020

Project Manager, Ruth Springs Restoration Project CRAS. Lafayette County, Florida.

Project Manager, Gilchrist Blue Springs Restoration Project. Gilchrist County, Florida

2019

Scientific Recovery Expert, Department of POW/MIA Accounting Agency, Mission 20-1LA, Kalum, Laos.

Field Director/ Dive Master, Lewis McQuinn Site, Archaeological Research Cooperation, Special Category Grant, Florida.

Field Director/ Dive Master, Clint's Scallop Hole Site, Archaeological Research Cooperation, Special Category Grant, Florida.

Field Director/ Dive Master, Mammoth Graveyard, Archaeological Research Cooperation, Special Category Grant, Florida.

2018

Submerged Precontact Archaeologist, New York Offshore Wind Farm. Conducted for Tetra Tech Inc. for Statoil.

2017

Report Writer, Environmental and Sea-level Reconstruction, and Archaeological Potential for Cultural Resource Assessment for Choctawhatchee Bay Eglin Maritime Strike Expansion Area, Eglin Airforce Base, Gulf of Mexico. Conducted for SEARCH Inc.

Underwater Archaeologist, Phase III Archaeological Investigation of Submerged Native American Burial Site, Manasota Key. Conducted for Florida Bureau of Archaeological Resources

Underwater Archaeologist/Dive Safety Officer, Phase III Archaeological Investigation of Submerged Prehistoric Guest Mammoth Site, and Phase I Survey of Silver River Head Springs. Project Dive Safety Officer. Marion County, Florida. Conducted for Texas A&M University

Underwater Archaeologist/Dive Safety Officer, Phase III Archaeological Investigation of the Submerged Prehistoric Ryan-Harley Site. Project Dive Safety Officer. Jefferson County, Florida Conducted for Florida State University.

2016

Archaeologist, Phase III Cultural Resource Assessment, Dickinson, North Dakota.

Underwater Archaeologist, Geoarchaeological and Topographical Investigation of the Kinsey Sink, Cypress Hole, and Sloth Hole, Jefferson County, Florida. Conducted for Florida State University.

2015

Underwater Archaeologist, Phase III Cultural Resource Investigation of the Page-Ladson and Sloth Hole, Jefferson County, Florida. Conducted for Texas A&M University.

2014

Underwater Archaeologist, Phase III Cultural Resource Investigation of the Page-Ladson and Sloth Hole, Jefferson County, Florida. Conducted for Texas A&M University.

Archaeologist, Phase III Cultural Resource Assessment of the National Grid Easement, Monson, Massachusetts. Conducted for National Grid.

Archaeologist, Phase III Cultural Resource Assessment of Spetra Energy Pipeline Easement, New London County, Connecticut. Conducted for Spetra Energy.

Archaeologist, Phase III Cultural Resource Assessment of Kingston Athletic Fields, Kingston, Massachusetts. Conducted for Town of Kingston.

2012

Archaeologist, Phase III Cultural Resource Assessment of National Grid Powerline Easement, North Redding, Massachusetts. Conducted for National Grid.