

**END OF FIELD LETTER REPORT FOR ARCHAEOLOGICAL PHASE I SITE
IDENTIFICATION FOR THE TROUT BROOK RESERVOIR DAM REMOVAL
PROJECT, BERKSHIRE, FRANKLIN COUNTY, VERMONT**



**University of Vermont
Consulting Archaeology Program
180 Colchester Avenue
111 Delehanty Hall
Burlington, VT 05405
Report No. 1669**

December, 2024

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INTRODUCTION

The Franklin County Natural Resources Conservation District (FCNRCD) proposes the removal of the Trout Brook Reservoir Dam¹ (VT State ID #19.02), located in Berkshire, Franklin County, Vermont (Figures 1). The dam, which is owned by the Village of Enosburg Falls and located on an 87.67-acre parcel north of Reservoir Road, was built in 1924 to supply water to the Village of Enosburg Falls (SLR 2023:13). The proposed project will reconnect 4.8 mi (7.7 km) of the Missisquoi River watershed (SLR 2023:1) (Figure 2). The proposed sediment disposal site is located near the chlorination facility on the same village owned property as the dam. Two possible construction access routes have been identified. One follows up the eastern side of the brook from Reservoir Road along an old overgrown access road to the dam, which was probably cut during the dam's construction, and the other runs along a modern access road leading from Reservoir Road to the wells currently used by the village on the western side of the brook, before continuing northward along the east edge of an open field to the north end of the current impoundment (Figure 4) (SLR 2023:38).

The University of Vermont Consulting Archaeology Program (UVM CAP) completed an Archaeological Resources Assessment (ARA) and Historic Resource Review (HRR) of the proposed project on behalf of the Village of Enosburg Falls and (FCNRCD) (Kenny and Quinn, 2024). The ARA and HRR were undertaken to assist with satisfying federal and state permitting requirements, including Section 106 of the National Historic Preservation Act (NHPA) as amended, and Vermont's Historic Preservation Act, 22 VSA 14. The ARA included detailed cultural and environmental contexts and will be referenced in this letter report as needed. As a result of the ARA, two areas within the proposed project's Area of Potential Effects (APE) were determined to be archaeologically sensitive for containing precontact Native American sites. These areas were designated as the Western Construction Access and Staging Area (Figure 3).

The proposed western construction access route follows an established improved dirt road from Reservoir Road northward to the active well houses near the dam then continues north running along the easterly edge of an open field to the north end of the current impoundment, then heads down a steep bank into the former impoundment area (see Figure 4). In the first part of the route, it is only in the area around the Trout Brook crossing that the proposed project's APE extends beyond the currently traveled dirt road, as culvert replacement is proposed here (see Figure 3). This area has been extensively altered by flooding and subsequent culvert and road repair and it is not considered sensitive for precontact Native American sites.

Most of the proposed access route in the field north of Well House 2 was studied at the Phase I site identification level relating to the installation of solar array project. This study resulted in the identification of precontact Native American site VT-FR-0466 (Knight 2023). This site was identified by the recovery of four lithic artifacts collected from the plowed surface of the field in the northeast corner of the solar project APE (Figure 4) (Knight 2023). Much of the proposed construction vehicle access road was surveyed during the unrelated study for the adjacent solar project and no sites were identified. At the northern end of the proposed construction access route, however, the area where the proposed access road heads toward the impoundment over a small terrace was not previously studied and is considered sensitive for precontact Native American sites. This sensitivity is based upon the local topography, proximity

¹ Also known as the 'Enosburg Reservoir Dam.'

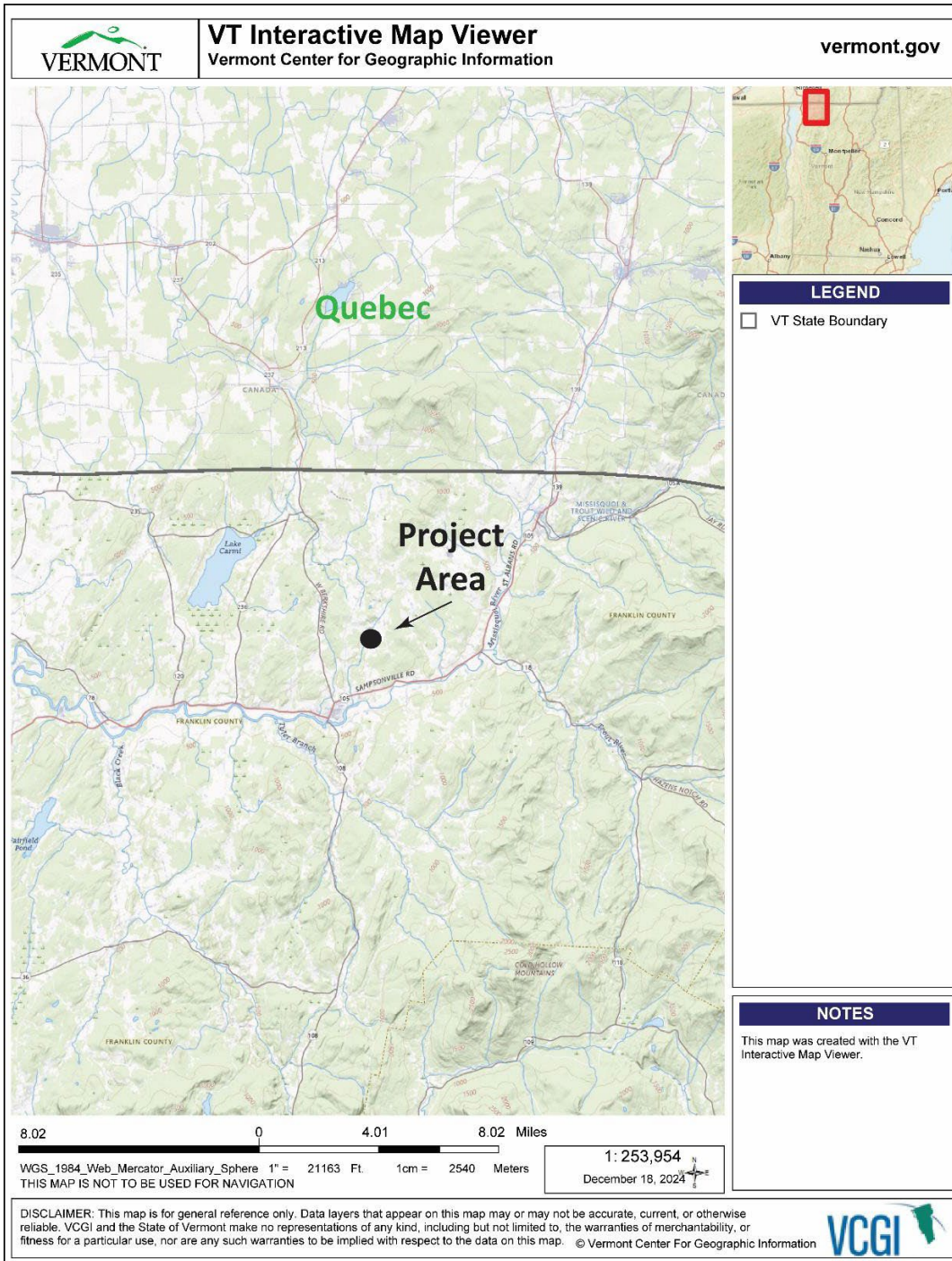


Figure 1. Topographic map showing the location of the proposed Berkshire Trout Brook Dam Removal Project, Berkshire, Franklin County, Vermont.

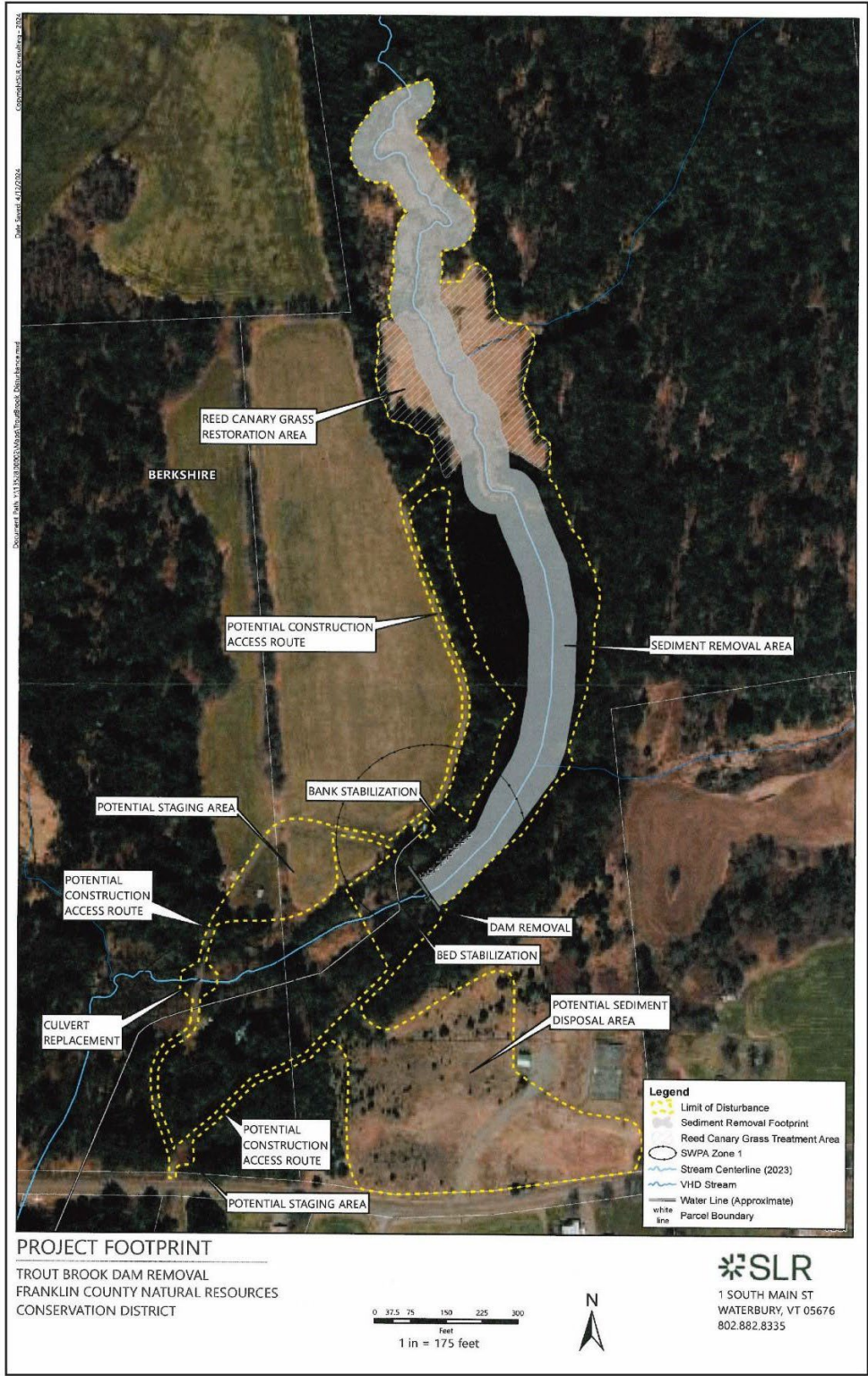


Figure 2. Trout Brook Dam Removal Project plans (provided by SLR).

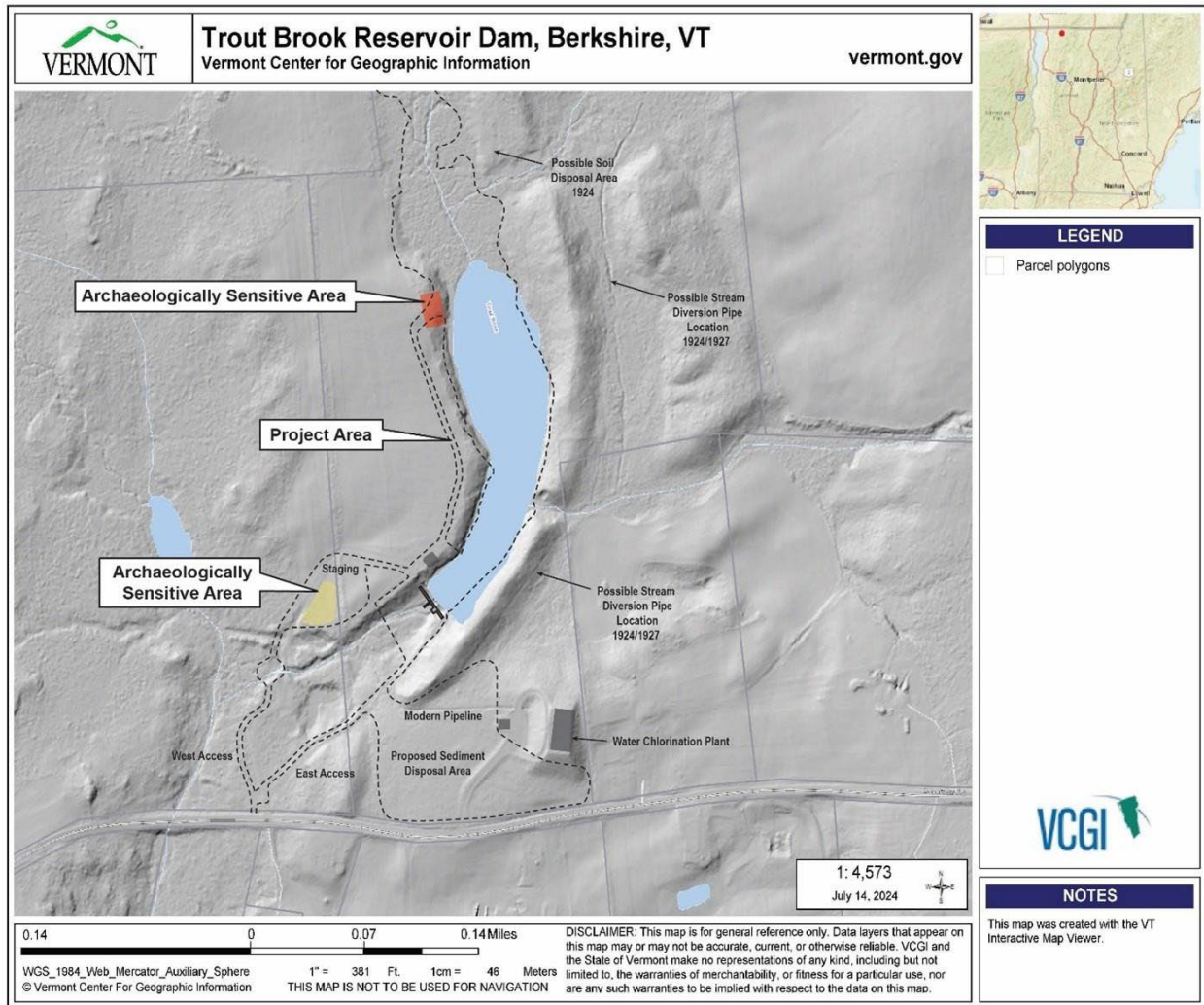


Figure 3. LiDAR base map showing the archaeologically sensitive Western Access Route and Staging Area locations, Berkshire Trout Brook Dam Removal Project, Berkshire, Franklin County, Vermont.

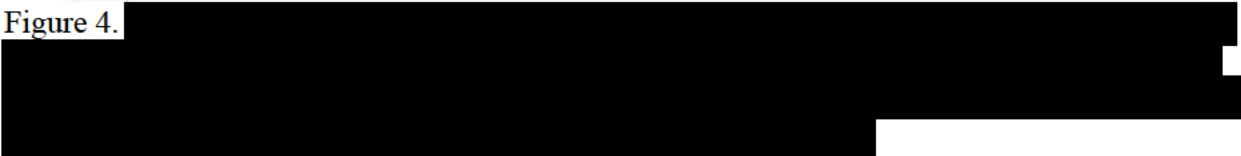
to the now inundated Trout Brook, hand soil cores indicating relatively intact soils and nearby site VT-FR-0466, located approximately 75 m (246 ft) to the northwest. Thus, a Phase I site identification survey was recommended in this portion of the proposed project APE.

A proposed staging area located within the farm field along the western access route, west of the Trout Brook Dam is situated on top of the high stream bank and lower landform that overlook the Trout Brook outlet and dam (see Figure 2). The higher portions of the APE in this area lie on top of a sandy / gravelly esker feature. Cores made on top of this feature did not encounter developed soil horizons, suggesting the possibility of either overburden or stripping in this area (the cores could not get very far). The lower-lying ground in this part of the overall APE is considered archaeologically sensitive, however. The landform is comprised of silty glacial lake plain soil and maps as being located not far from the projected shoreline of ancient glacial Lake Vermont. Although moderately sloped, this area is potentially sensitive for precontact era Native American sites and, as with the final section of access road was recommended for an Archaeological Phase I survey.



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Figure 4.



ENVIRONMENTAL SETTING

The Town of Berkshire is in the northeastern part of Franklin County and lies within the eastern part of the Champlain Hills Biophysical Region of Vermont (Thompson, Sorenson, and Zaino 2019:45). The region begins about 6-9 mi east of Lake Champlain and continues eastwards to the western foot of the Green Mountains (Thompson, Sorenson, and Zaino 2019:45). The region is bounded south by the Lewis Creek watershed in Addison County and north by the Canadian border (Thompson, Sorenson, and Zaino 2019:45). This region is an elevated glaciated plateau characterized by “compact rugged” till covered foothills and broad valleys dominated by “sediments deposited by post-glacial lakes and seas” (Thompson, Sorenson, and Zaino 2019:51-52). The forest cover in this area consists predominantly of Northern Hardwood Forest and Hemlock-Northern Hardwood Forest (Thompson, Sorenson, and Zaino 2019:53). Berkshire’s topography is “somewhat hilly” with elevations ranging from about 440 ft amsl in the Missisquoi River Valley up to about 1,320 ft amsl on top of Ayers Hill (VCGI 2024; Vermont Bureau of Publicity 1914:101). The Missisquoi River is the largest watercourse in town. It originates northwest of Lowell, Vermont, at the union of its two main branches, and flows about 81 mi (130 km) westward to Lake Champlain, clipping the eastern and southeastern part of Berkshire along the way (VCGI 2024).

The dam is located on Trout Brook, a primary tributary of the Missisquoi River. This brook rises in the central part of Berkshire at about 720 ft amsl and flows southward about 4.7 mi (7.6 km) to its confluence with the Missisquoi River just above the Village of Enosburg Falls at about 390 ft amsl (Pierce 1917:209; VCGI 2024). The dam is located about 2.3 mi (3.7 km) upstream of the confluence between Trout Brook and the Missisquoi River at about 500-520 ft amsl (SLR 2023:8; VCGI 2024). The dam has a drainage area of about 1.8 sq mi (SLR 2023:1). As designed, the depth of the impoundment ranged “from 11 ft [3.35 m] at the dam to from 6 to 8 ft [1.83-2.43 m] through the center and upper portions” and had a “storage capacity of approximately eight million gallons” (Enosburg Falls 1925:28-29). The impoundment has an estimated maximum area of about 8.23 acres (SLR 2023:13). However, the impoundment retreated significantly between 1995 and 2021, and it now covers only about 3.7 acres (SLR 2023:3, 13).

The dam is located within a narrow and steep sided portion of the Trout Brook Valley. Near the dam, the slopes of the embankments are over 20%, but the bank declines in height going north along the western side of the impoundment. Three short unnamed tributaries, which appear to flow from small spring fed wetlands, join Trout Brook in or near the project area. One stream, about 0.58 mi (0.93 km) long, joins the left side of Trout Brook about halfway up the present impoundment, about 385 ft (117.4 m) upstream of the dam. Another stream, about 0.68 mi (1.1 km) in length, joins the left side about 1,150 ft (350.5 m) upstream of the dam (within the old impoundment area). The last tributary, which is about 1.2 mi (1.9 km) long, joins the right side of Trout Brook about 740 ft (225.5 m) below the dam (VCGI 2024).

PRECONTACT NATIVE AMERICAN CONEXT

A review of the Vermont Archaeological Inventory (VAI) indicates that site VT-FR-0466 is the only known site located within 1.5 km (0.93 mi) radius of the project area (Figure 5). The site was identified during a Phase I surface inspection of the plowed and harrowed surface of the agricultural field (Knight 2023). Four lithic artifacts, the stem and midsection of a chert projectile point, a chert biface, and two milky quartz debitage specimens were found in the northeast portion of the proposed solar project. The projectile point fragment, typologically classified as a Susquehanna or Snook Kill, dates to the Transitional Late Archaic period, ca. 3,200-2,700 years ago. The remaining three artifacts are not dateable. Site VT-FR-0466 appears to be focused along the north side of short drainage gully that trends downslope and joins Trout Brook.

A GIS based version of the Vermont Division for Historic Preservation's *Environmental Predictive Model for Locating Archaeological Sites* indicates that portions of the project area include up to six habitability factors important to precontact Native American populations (see Figure 5). These factors include proximity to known sites, water, proximity to stream confluence, Kame Terrace or Glacial Outwash Plain, Level Terrain and Travel Corridor. The VDHP's paper version of the model is a checklist that provides an area a score based on environmental features statistically associated with precontact Native American sites. A score of 32 or greater indicates that an area may be archaeologically sensitive. The Berkshire Trout Brook Dam Removal project area scores a 96 indicating that it is sensitive for precontact Native American sites.

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Figure 5. GIS based map with overlay of habitability factors that correlate with the location of precontact Native American sites for the Trout Brook Reservoir Dam Removal Project in Berkshire, Vermont.

PHASE I FIELD METHODS

The initial step of the Phase I Site Identification Survey included the use of an EOS Arrow Gold GPS system that was used to navigate to the sensitive areas following the georeferencing of the project design data into the GPS system. Once the areas were identified and following minimal vegetation clearing, a mounted Brunton Compass and metric tape were employed to install three linear transects. Two of the transects were located within the proposed Western Construction Access and one within the Staging Area. In total, the Phase I study resulted in the excavation of a total of 13 50 x 50 cm (20 x 20 in) test pits across the two areas.

All soils were excavated in arbitrary 10 cm (4 in) vertical levels with respect to the identified soil stratigraphy and screened through 0.64 cm (1/4 in) mesh screens. Field soil stratigraphy designation followed the standard nomenclature such as “Ap1” (first historic plowzone), “Ap2” (second historic plowzone), “B” and “Bs” (“weathered” subsoil stratum), and “Fill” for historic fill strata. Individual test pit walls were schematically profiled according to soil texture and Munsell chart color, and select profiles were photographed in digital color format. Following the completion of the Phase I excavations, The EOS GPS system was used to record the location of each test pit to ensure accurate placement on maps and project design plans. Lastly, each test pit was backfilled and returned as close as possible to its original state and all labelled range pin flags marking the locations of each test pit were removed. All field notes, photographs, field maps, and other data will be curated at the UVM CAP laboratory in Burlington, Vermont.

PHASE I FIELD RESULTS

Western Construction Access

Two transects, designated Transects 1 and 2, were placed south-north across the interior level portion of the West Construction Access APE (Figure 6). The eastern side of the APE sloped sharply down to the reservoir, and the southern end, at first included a gradual slope before descending steeply down to a narrow intermediate terrace above the reservoir. At the time of the Phase I study, the APE was vegetated with dense pine trees on both the southern and northern ends with a small opening in its center (Figure 7).

Transect 1 was located approximately 2 m (6.6 ft) to the east and parallel to the fallen fenceline along the western side of the APE. A 50 cm (20 in) high earthen berm followed along the fallen fenceline. This transect contained five test pits spaced at 4 m (13 ft) intervals (see Figure 6). No archaeological sites were identified in these test pits. Dense roots were encountered in each test pit. The soil profiles recorded for the test pits excavated along Transect 1 The soil stratigraphy documented in these test pits included a thin uppermost “Ao” stratum of dark brown duff and very fine sandy loam and an underlying “AP” stratum characterized as very dark grayish brown fine sandy loam (Figure 8). This thin “Ap” stratum may relate to past historic plowzone or it could be overburden/colluvium from the agricultural field to the west. This stratum was generally 10 cm (4 in) thick, but was absent in the northernmost Test Pit 5. Beneath the “Ap”, intact subsoil of strong brown fine sand and silt and light yellowish brown fine sand was present to the base of excavation.



Figure 6. Aerial image showing the location of Transects 1 and 2 within the Western Construction Access, Berkshire Trout Brook Dam Removal Project, Berkshire, Franklin County, Vermont.



Figure 7. View south of UVM CAP archaeologists excavating test pits along Transect 1, West Construction Access, Berkshire Trout Brook Dam Removal Project, Berkshire, Franklin County, Vermont.

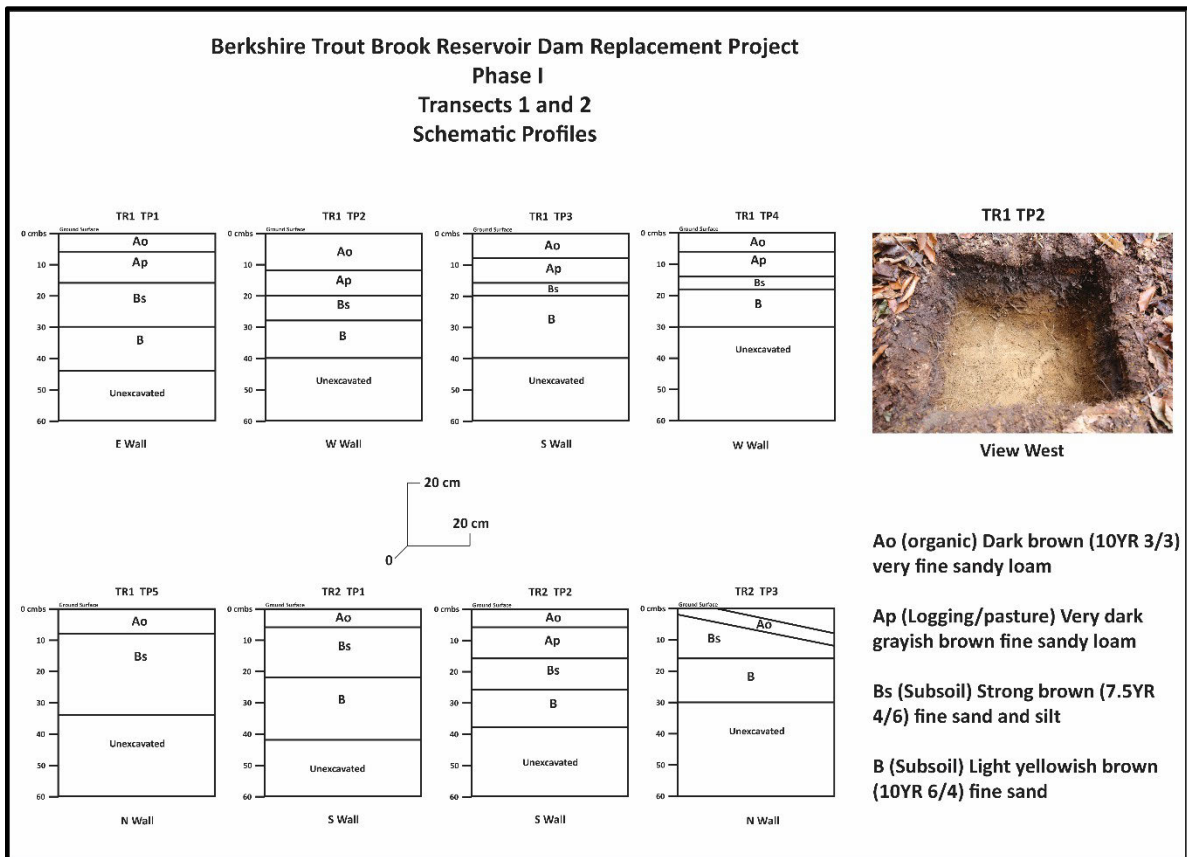


Figure 8. Schematic profiles and image of Phase I, Transects 1 and 2, West Construction Access, Berkshire Trout Brook Dam Removal Project, Berkshire, Franklin County, Vermont.

Transect 2 was located 4 m (13 ft) to the east and parallel to Transect 1 (see Figure 6). The alignment of this transect followed the crest of the steep slope overlooking the reservoir to the east. Test Pit 1 of Transect 2 was located 4m (13 ft) east of Transect 1, Test Pit 3. Transect 2 contained three test pits spaced at 4 m (13 ft) intervals. No archaeological sites were identified in the test pits excavated along Transect 2. The “Ap” stratum was absent in Test Pits 1 and 3, but present in Test Pit 2 (see Figure 8). Intact subsoil was present beneath the Ao/Ap strata in all test pits.

Staging Area

At the time of the Phase I study, the proposed Staging Area was covered in seasonally dead grass (Figure 9). One transect, designated Transect 3, was aligned parallel to the wooded treeline and grassy field (Figure 10). The transect was from 3-5 m (10-16 ft) north of the channelized Trout Brook stream channel flowing west from the reservoir impoundment. Transect 3 contained four test pits spaced at 5 m (16 ft) intervals (see Figure 10). Two additional test pits were excavated in cardinal south and north directions from Transect 3, Test Pit 3). No archaeological sites were identified in the test pits excavated along Transect 3.



Figure 9. View east of UVM CAP archaeologists excavating Phase I test pits along Transect 3, Staging Area, Berkshire Trout Brook Dam Removal Project, Berkshire, Franklin County, Vermont.

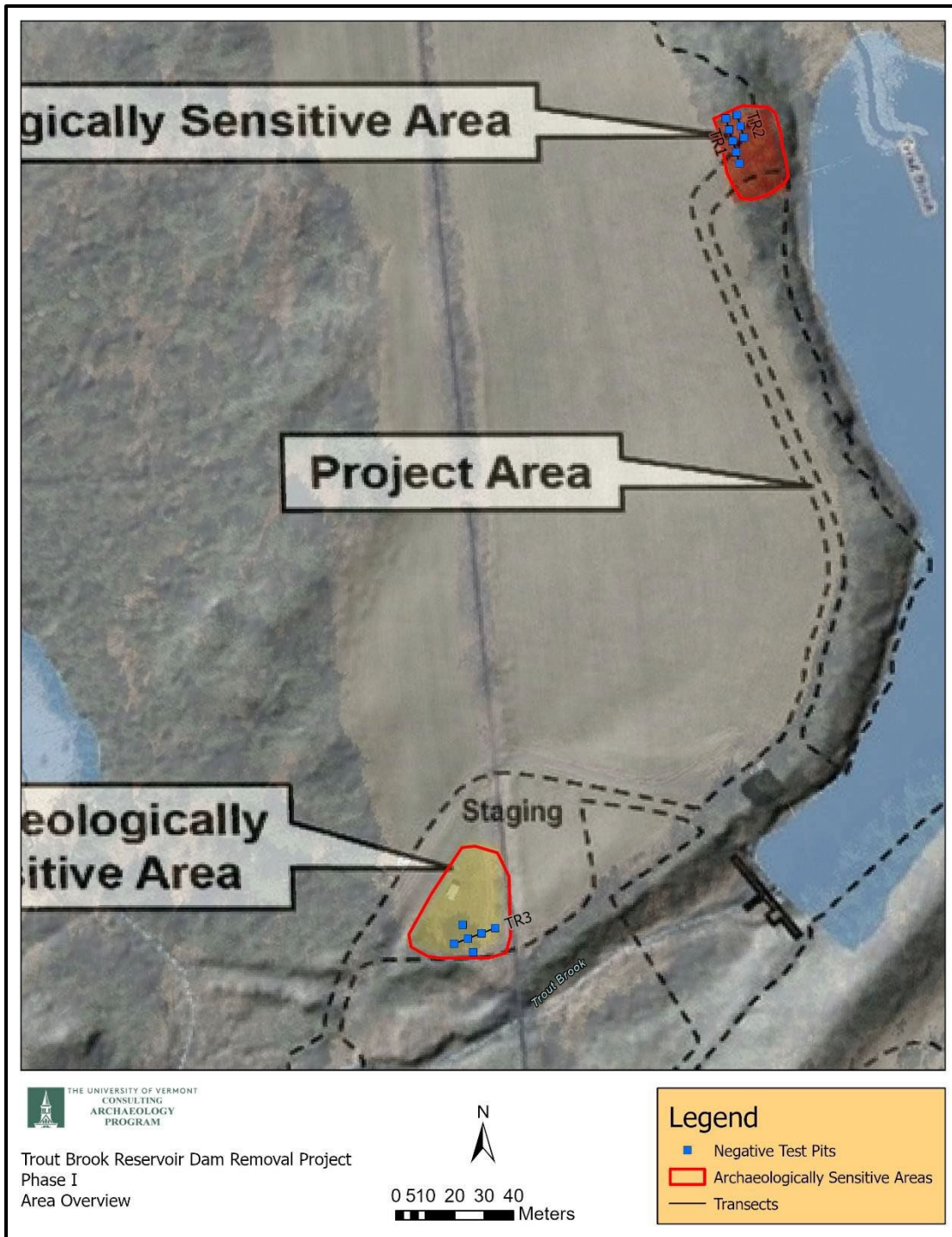


Figure 10. Aerial image showing project design plan and location of Phase I testing within the West Construction Access and Staging Area, Berkshire Trout Brook Dam Removal Project, Berkshire, Franklin County, Vermont.

The soil stratigraphy recorded for the test pits excavated along Transect 3 included an uppermost 18-30 cm (7-12 in) thick dark brown silt loam plowzone underlain by intact olive brown silt (Figure 11). Both strata were culturally sterile.

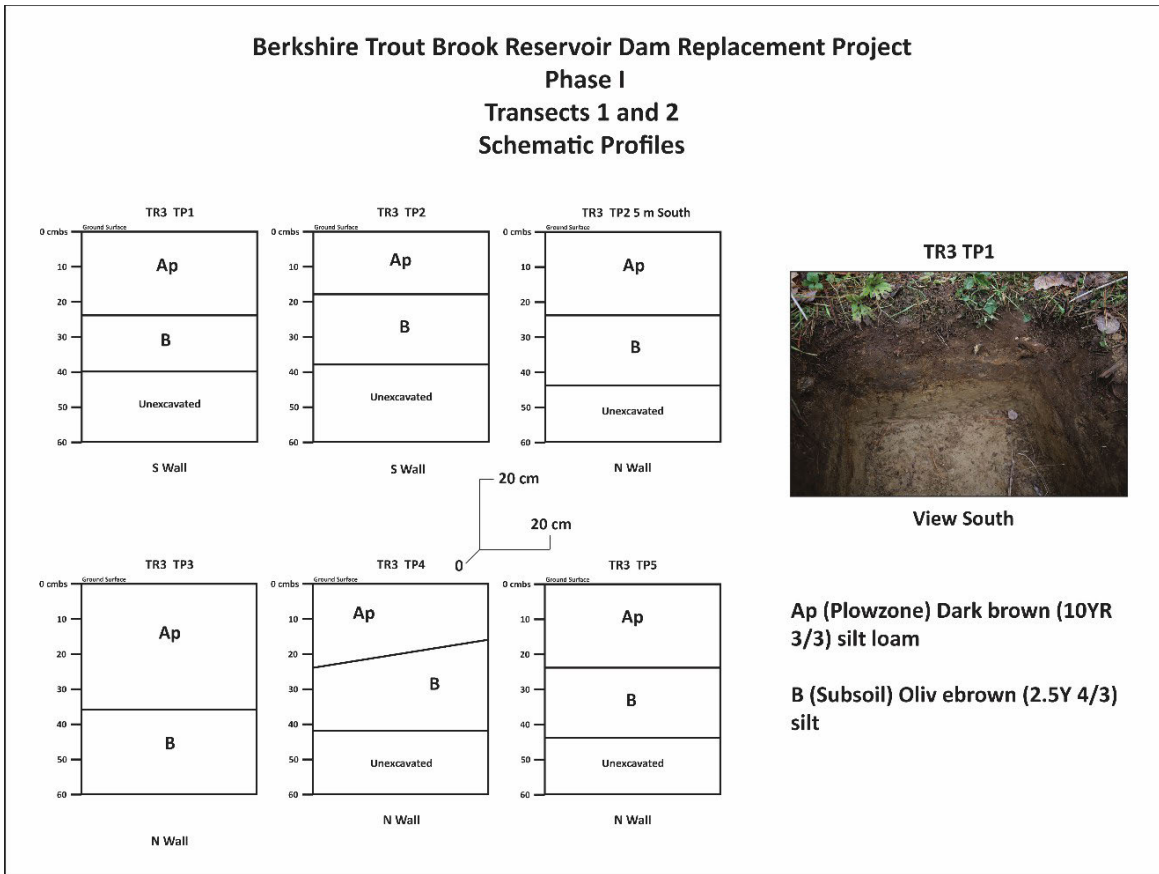


Figure 11. Schematic profiles and image of Phase I, Transects 1 and 2, West Construction Access, Berkshire Trout Brook Dam Removal Project, Berkshire, Franklin County, Vermont.

CONCLUSIONS AND RECOMMENDATIONS

The University of Vermont Consulting Archaeology Program completed a Phase I site identification survey within two archaeologically sensitive areas identified in the proposed Berkshire Trout Brook Dam Removal project area. This Phase I study entailed the excavation of 14 test pits aligned along three linear transects in the two separate sensitive areas. As a result of this additional Phase I study, no archaeological sites were identified. We recommend that no further study of these areas is warranted and that the proposed dam removal project receive a determination of No Historic Properties Affected.

REFERENCES

Kenny, Kate and Catherine A. Quinn

2024 *Archaeological Resources Assessment and Historic Resource Review, Trout Brook Reservoir Dam Removal Project, Berkshire, Franklin County, Vermont.* University of Vermont Consulting Archaeology Program, Report No. 1639.

Knight, Charles

2023 *End of Field Letter Report for the Archaeological Phase I Site Identification of the Proposed Reservoir Road Solar Project, Enosburg Falls, Franklin County, Vermont.* Crown Consulting Archaeology Report No. 2023-39.