Revisiting the Towpath: Archaeological Investigation of the Ohio and Erie Canal Towpath Summit County, Ohio

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ASC Group, Inc. (ASC) has recently completed a relatively small data recovery project to mitigate adverse effects to the Ohio and Erie Canal as it passes through the Cities of Barberton and Akron in Summit County (Figure 1). The United States Army Corps of Engineers' (USACE) proposed to construct a series of barrier structures along the towpath and canal-related structures to prevent invasive Asian carp from migrating from the Tuscarawas River to the Canal and Cuyahoga River, thereby transferring from the Ohio and Mississippi River watersheds to the Great Lakes. One of the objectives of the project was to raise the height of the towpath in low spots along its length so that all of it stands above the 100-year flood level (Figure 2). In this area, the canal and river are separated by as little as 150 feet and as few as 80 feet a bit farther west. Long Lake and Lake Nesmith, elements of the Portage Lakes system that was designed to maintain the water level in the canal, are connected to the canal near the east end of the project. Low-lying wetlands reach from the river to the towpath, which in some places is the only physical barrier separating the two. The project installed barriers, often extending no more than 12 inches above the towpath height, that include driven sheet piling walls, stacked stone gabions, or higher than typical curb heights at a local trailhead. These resulted in direct affects to the towpath and visual affects to canal corridor, which has been determined eligible for and listed in the National Register of Historic Places.

Although the Ohio and Erie Canal's historic and cultural significance has been well established, the towpath has been given relatively little attention in the archaeology of the canal as documented with the Ohio State Historic Preservation Office (SHPO). Constructed of excavated spoil from the canal prism, subject to countless episodes of repair and rehabilitation, and finally converted into a recreational trail conforming to modern safety standards, it is easy to assume the towpath retains little integrity or does not retain the ability to provide meaningful data beyond its location. But the limited data recovery completed by ASC reinforces what past researchers have documented. Interpretable evidence of the historic towpath persists beneath the modern Towpath Trail. This study demonstrates that it is possible to define the sequence of construction and identify significant events in the history of the canal through the archaeology of the towpath.

Spurred by the early success of the Erie Canal in New York after 1817, the Ohio and Erie Canal was billed as an economic driver for development of the young state of Ohio (McClelland and Huntingdon 1905:10–16). The canal was built between 1825 and 1832 and connected Lake Erie at Cleveland to the Ohio River at Portsmouth. Construction specifications were developed and included in the bid documents for potential contractors and required the canal to be at least 40 feet wide at the water's surface, 26 feet wide at the bottom of the prism, and at least four feet deep. General specifications for the towpath were also included.

> …the towing path, which shall be made on such side of the canal as said commissioners or either of them, or any engineer in their employ may direct, shall be at least ten feet wide at

Figure 1. Portion of the 1994 Akron West, Ohio (USGS 7.5' topographic map) showing the project location.

its surface, and not more than five feet in any place above the top of the waterline: and whenever a difference in elevation of the towing path shall occur, the ascent or descent shall not be greater than one foot rise or fall in any sixty-six feet in length and shall be gradual; the towing path shall be smooth and even, shall be comprised of the best materials which the adjoining excavation will furnish, and shall be so constructed that the side next the canal will be six inches higher that the opposite side… (Board of Public Works 1825).

Figure 2. View facing west of a low spot along the Towpath Trail, where the trail height and towpath surface falls below the 100-year flood level.

There are few additional specifications for the towpath provided except as follows:

…all loose and porous materials, and those which are perishable or permeable to water shall occupy the outer extremities of the bank, and for a distance of at least ten feet, measured outwardly from the extremity of the top of the water line on each side, the banks shall be composed, both above and below the top water line, of the most pure, solid, compact and water tight earth which the adjoining excavation can supply; and

> no vegetable mould, leaves, roots, grass, weeds, herbage, logs, sticks, brush, or any other substance of a porous or perishable nature, shall be left, laid or in any way admitted into the said space of ten feet last described (Board of Public Works 1825).

There were no specifications for the surface of the towpath or the weight it was anticipated to hold. There were clear directives on the breadth and height of the canal embankments, one of which needed to support the towpath, in various situations in which the water in the canal was lower than, even with, or higher than the adjacent lands, but not on its surface or makeup other than described above (Figure 3) (McClelland and Huntingdon 1905:161).

The lack of directives was sure to create a situation in which the matrix, if not the form, of the towpath was highly varied along its length, as it was built from the best of the canal prism spoil as selected by the local contractor. Construction was bid in sections with individual contractors being awarded one or more sections. South of the canal summit in Portage County, there were 110 sections let for bid, for which the Board of Canal Commissioners received nearly 6,000 bids with an average of 54 proposals for each section (McClelland and Huntingdon 1905:23). This variation in contractor and labor force, coupled with natural variability in the local soil matrix, ensured from the beginning that the towpath would not be consistent in quality or construction. Only the form of the towpath was governed by any measureable specifications.

This situation was compounded by an annual cycle of repair and rehabilitation. Every year along its northern reaches the canal froze over. The freeze/thaw cycle and annual spring freshets caused damage to the canal and the towpath, in particular, was prone to erosion. This was particularly true in areas with substantial adjacent elevation and cascading streams feeding the canal and near locks and other structures that created currents and eddies that scoured the embankments. These phenomena also deposited sediment loads in the prism that needed to be dredged (Unrau and Scrattish 1984).

Destructive springtime floods plagued the canal from its inception. In 1827, a freshet destroyed much of the canal that had been constructed in the previous year and a half between Cleveland and Akron and the work had to be redone (Dial 1904:472). The Annual Reports to the Board of Canal Commissioners from 1825, 1829, 1830, 1831, 1832, 1833, and 1856 each reference “usual spring repairs,” including towpath berm and bank breaches that needed to be completed before operating season (Board of Canal Commissioners 1825, 1829, 1830, 1831, 1832, 1833, 1856).

This annual maintenance meant that for much of its life the canal was a financial burden on the state. Following the mid-nineteenth century rise of the railroads, traffic on the canal declined year after year and repair and maintenance costs exceeded the canal’s annual receipts from 1856 until 1913 (McClelland and Huntingdon 1905:110–111). The reported losses calculated in 1905 did not account for repayment and financing costs for construction and operating loans, which only added to the drain the canal placed on the state. As such, it was allowed to fall into a state of disrepair by the end of the nineteenth century.

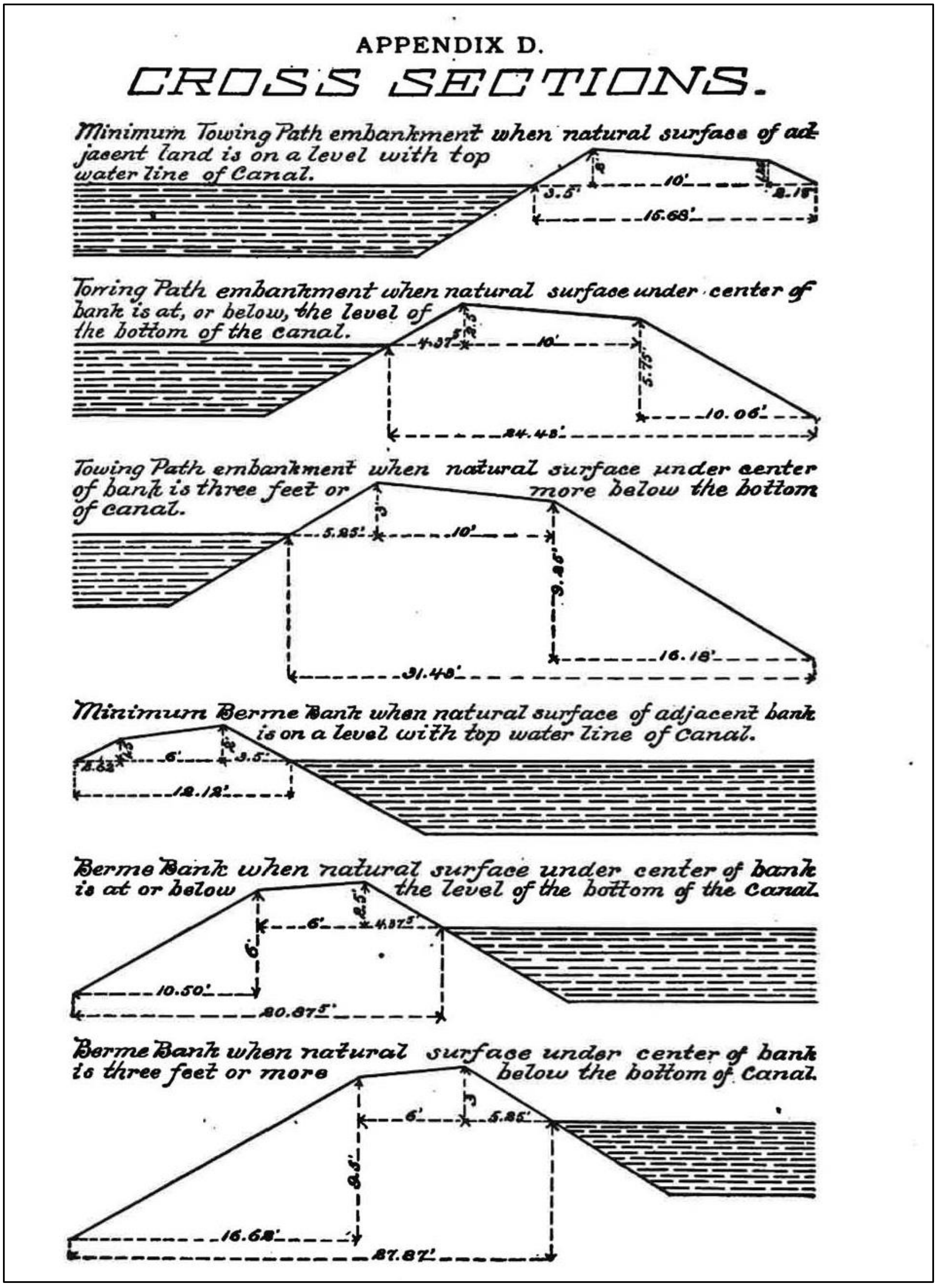

Figure 3. Profiles of the canal prism, towpath, and berms as planned (McClelland and Huntingdon 1905).

In the first decade of the twentieth century, a major repair program was initiated with the stated goal of making the canal once again an asset to Ohio industries. The plan was to dredge the canal to five feet in depth and reconstruct and repair all locks and other deteriorated structures (Whitman and Mustain 2001). The 1905 construction bids contained no specifications for the towpath (Board of Public Works 1909). However, the Notice to Contractors for the 1905 bids stated:

> The work will consist in removing material within the established lines of the standard cross section as shown on plans and depositing the same either on the towing path or berm bank as directed by the Engineer or Inspector, and is such manner as to uniformity and distance from the channel as to avoid future settling into the channel. The material so deposited will be levelled on the towing path side by the state repair gangs, at the state's expense (Board of Public Works 1905).

Despite the overhaul, the Ohio and Erie Canal and nearly the entirety of the canal system in Ohio was abandoned after a massive spring flood in 1913 caused such extensive damage that a return to operation was deemed unfeasible (Whitman and Mustain 2001). In the years surrounding the American Bicentennial in 1976, renewed interest in the recreational aspects of the canal vestiges rose. A rising appreciation for the reuse of our local and national historic built environment led to the advent of the Towpath Trail, portions of which are still under construction. These actions rehabilitated the towpath to a modern multi-use trail system with new trail bedding, surface treatments, and conforming to current safety standards.

Archaeologically, this intensive cycle of construction, repair, rehabilitation, and reuse has been documented in the few studies of the towpath that have been completed. While the Canal eventually wound a 308-mile path from Cleveland on Lake Erie to Portsmouth on the Ohio River in a corridor roughly 100 feet wide, archaeological investigations have not been numerous. Investigations that have included examination of the towpath, and not more "showy" features like locks and the structures surrounding them, are even less common. What work has been done confirms the historic accounts of the towpath. While conforming to design standards, it is highly variable in selected materials and shows evidence of multiple episodes of repair and rehabilitation. This, however, does not preclude it from providing interpretable and important information.

Working in the late 1980s, Vergil Noble and staff from the Midwest Archaeological Center conducted a series of investigations of the Canal as the Cuyahoga Valley National Recreation Area become the Cuyahoga Valley National Park (CVNP) (Noble 1988, 1989, 1992). The impetus for towpath investigations was the planned construction of the Towpath Trail, which of course would entail impacts to the towpath itself (Noble 1992: i). Several trenches were excavated across the towpath near the Village of Boston to, "gather information on the construction, modification, and present condition of the towpath itself" (Noble 1992:19). Noble documented a highly variable towpath structure, even between trenches cut in relatively close proximity to each other (Figures 4 and 5), appearing to represent original construction episodes with locally excavated material and repeated episodes of repair with local and non-local materials. This led him to conclude that no two towpath profiles are likely to be the same.

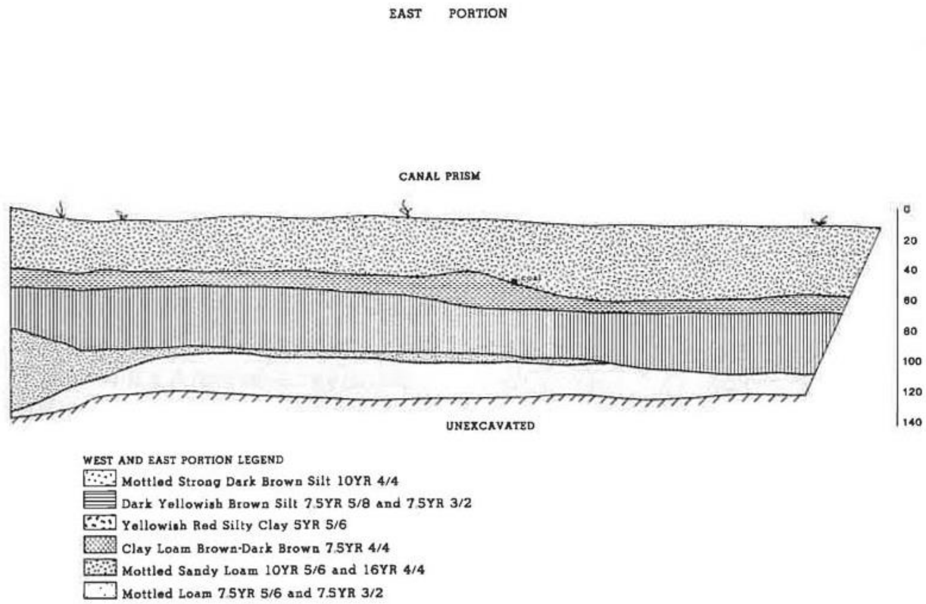

Figure 25B. North profile of Trench 2, section 1.

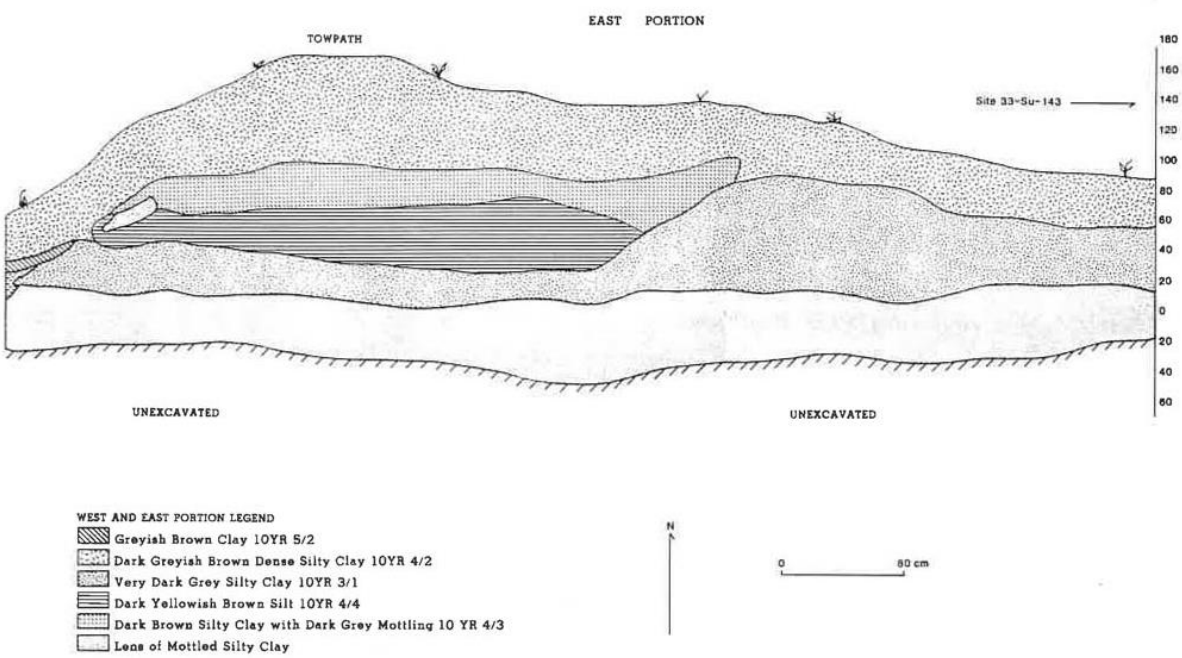

Figure 26B. North profile of Trench 2, section 2.

Figure 4. Profile of a trench across the Ohio and Erie Canal and towpath from 1987 (Noble 1988).

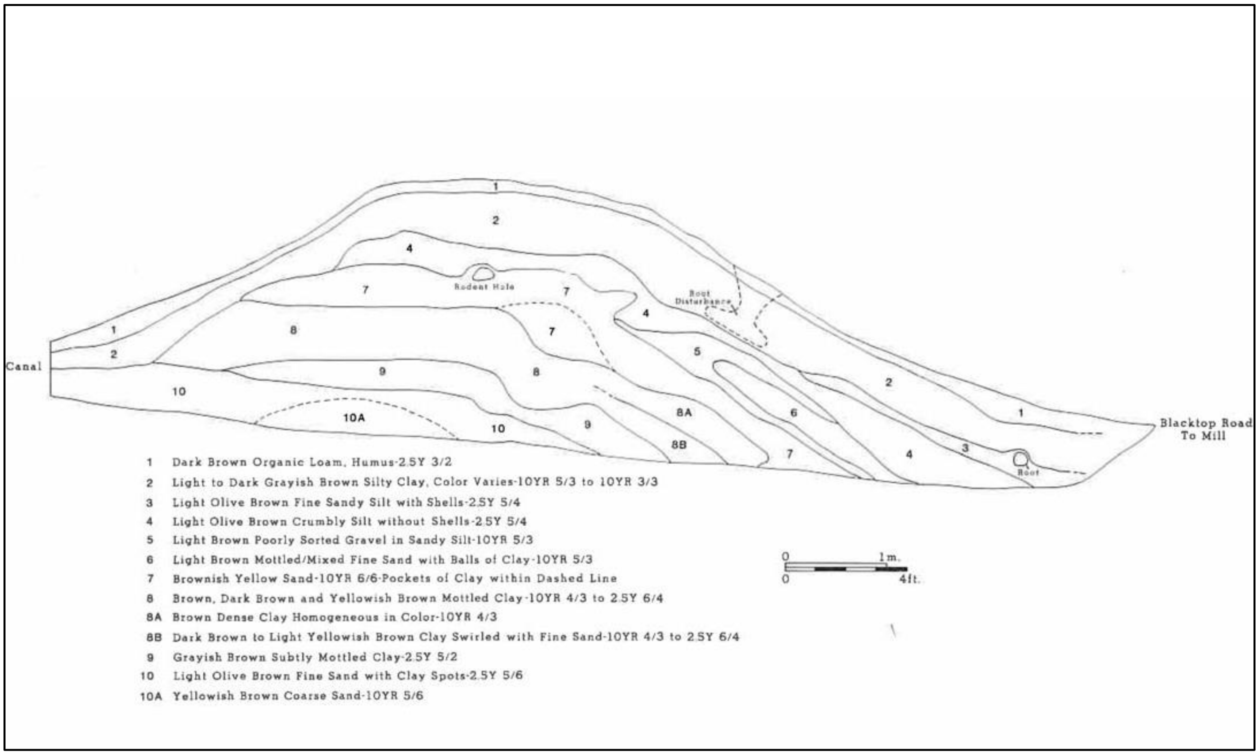

Figure 5. Profile of a trench across the towpath from 1988 (Noble 1989).

Phase I reconnaissance survey and a Phase II site evaluation for a bridge replacement along Hillside Road in the CVNP were completed in 1995 and 1998 that resulted in data recovery excavations in 2001 (Brose 1998; Brose et al. 1995; Whitman and Mustain 2001). The project spanned the canal and towpath at Lock 28 near Independence, and the towpath was documented in both the Phase I and data recovery efforts. A trench cut across the towpath did not detect any of the finished towpath surfaces, but the highly variable soil stratigraphy was determined to have been dredged from the canal and deposited during maintenance events.

In 2007, ASC conducted a Phase I archaeological survey at Lock 37, just a few miles upstream from the 2001 survey. The survey documented intact historic stratigraphy along the towpath from the modern Towpath Trail surface, and several historic occupation and demolition strata from the nineteenth century. All of these intact strata overlay a layer of chipped stone debris from the construction of the nearby lock, and a layer of non-native clay “puddle” to seal the entire canal and towpath complex near the lock. It is not known if puddling was commonly used to reinforce the canal at locks, or if it was used along the prism length wherever soils were too permeable to retain the water. But this stratigraphy has not been documented elsewhere, demonstrating again that from its outset the towpath was constructed at the discretion of the local contractors and its makeup varies dramatically from location to location (Klinge 2007).

The Ohio and Erie Canal towpath was not unique in this. Similar stratigraphic patterns have been observed in excavations of other famous towpaths, including along the Erie Canal in New York (HAA, Inc. 2002; Lenardi and Schmidt 2008). But, the preponderance of depositional episodes and variation in materials provides greater opportunity for archaeological interpretation than would be possible with a homogenous construction.

To mitigate the effect of the USACE's nuisance species project on the towpath, ASC excavated three one-meter by one-meter (3.3 ft. x 3.3 ft.) test units. One test unit was placed in each of three areas where construction plans had the greatest potential to affect the towpath (Figure 6). These areas, and others with a lesser potential to affect historic strata, were also subject to construction phase archaeological monitoring. Each unit was situated to investigate the southern shoulder of the Towpath Trail, extending approximately 30 cm (12 in) into the paved surface, while leaving sufficient space on the trail for bikers, pedestrians, park maintenance vehicles, etc., to pass (Figure 7). Two of the three units recovered sufficient stratigraphic information and artifacts to interpret the sequence of construction from ca. 1825 to the present. The third unit revealed that private industrial development in the third quarter of the twentieth century had compromised substantial portions of the towpath as it approaches Lake Nesmith. Namely, a pair of brine lines have been run down the towpath as a convenient right-of-way for several hundred meters.

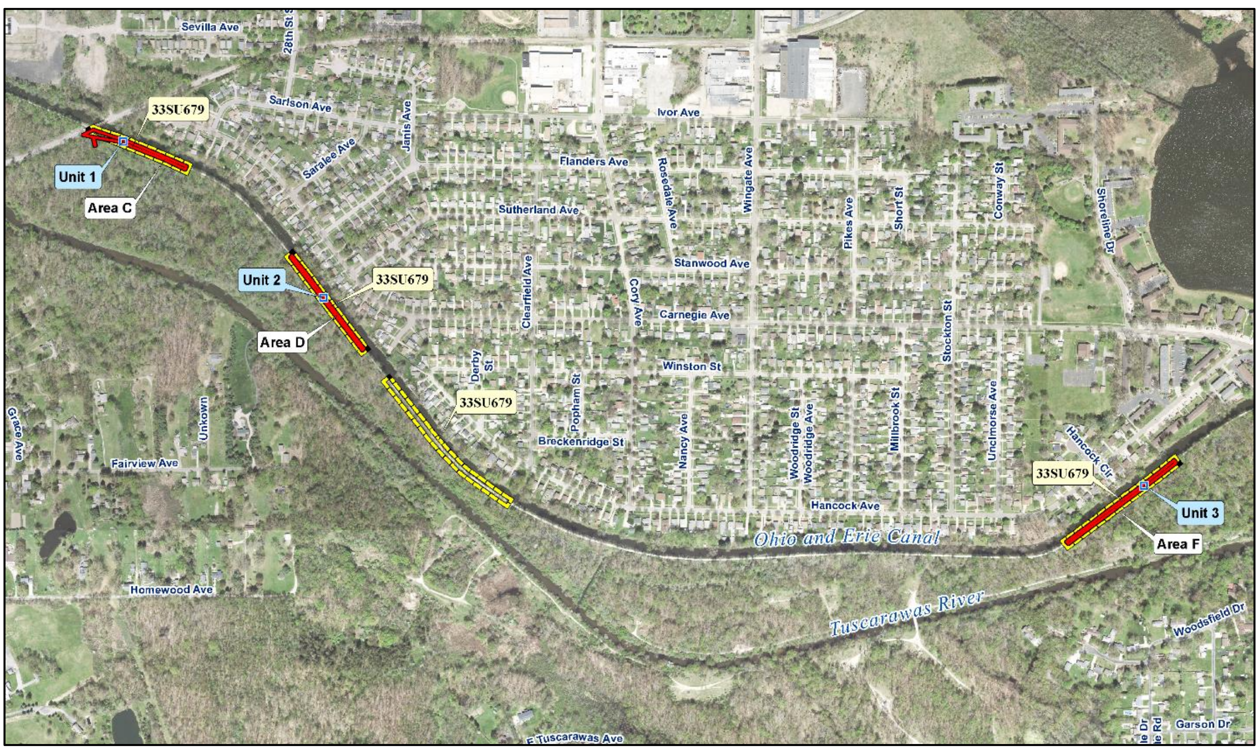

Figure 6. Aerial photograph showing the project location and excavated units.

The units were excavated to a depth of 1.5 m (5 ft.) below the Towpath Trail surface. Although these excavations did not expose sterile subsoil, or even the base of the original towpath, it was sufficiently deep to expose soils from the ca. 1825 construction. Deeper excavation was precluded by safety concerns. The two intact units had varied stratigraphy, but based on included artifacts the various soil lenses could be separated into broader stratigraphic units based on likely depositional history. For this study, these stratigraphic units were called Cultural Strata. The first Cultural Stratum consisted of soils associated with the modern Towpath Trail, deposited in the last decades of the twentieth century through the present. The second Cultural Stratum, consisted of various fill lens deposited between ca. 1930s and construction of the Towpath Trail, and the third Cultural Stratum is the material associated with the active life and use of the towpath. In the westernmost unit, Cultural Stratum III was deposited during the 1905 to 1909 rehabilitation event. In the centrally located unit, the third Cultural Stratum was original towpath berm material deposited during the ca. 1825 construction (Figures 8 and 9).

Figure 7. View facing west of unit excavation along the towpath.

In both Units 1 and 2, with Unit 1 being the westernmost and Unit 2 being centrally located, Cultural Stratum 1 was defined by lenses of Towpath Trail surface and bedding material extending between 20 cm (8 in) and 40 cm (16 in) below the top of the trail. These lenses of material included a geotextile barrier between the trail surfaces and associated bedding material in Unit 1 and a geotextile barrier between the trail surfaces and Cultural Stratum 2 in Unit 2.
Although six artifacts were observed in the bedding material in Unit 1, they were not collected due to their association with the modern Towpath Trail.

The transition to Cultural Stratum 2 in both units was marked by a dark brown sandy loam. In Unit 1, two other soil strata were grouped into this Cultural Strata based artifact content, but it was a

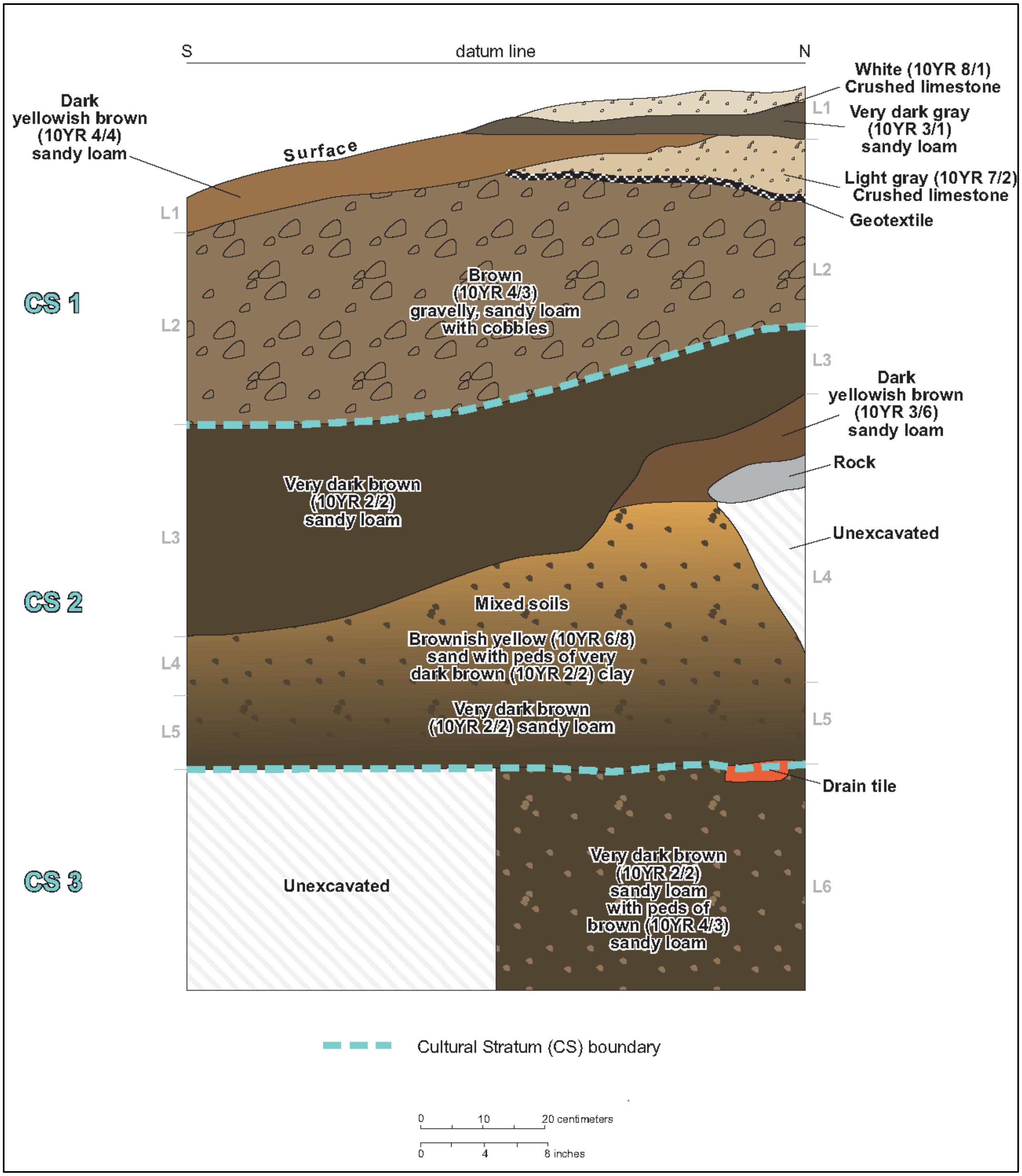

Figure 8. West profile of Unit 1. The canal prism is to the right of this profile.

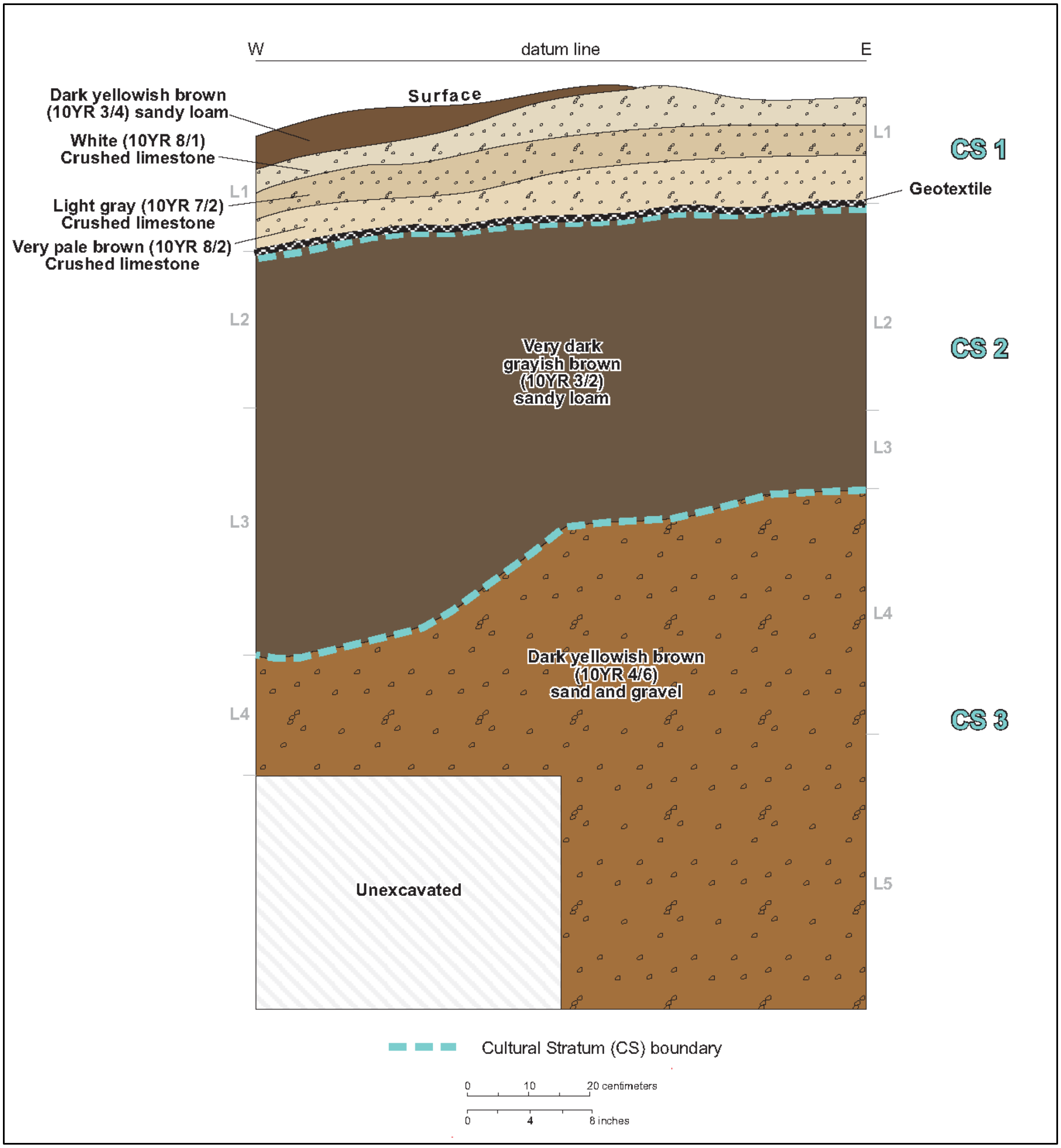

Figure 9. North profile of Unit 2. The towpath extends to the right and left of this profile.

single, homogenous soil stratum in Unit 2 (Table 1). Diagnostic artifacts were recovered from Cultural Stratum 2 in both units, including 16 from Unit 1 and 6 from Unit 2. These were not all the recovered artifacts (a total of 151 artifacts were recovered), but rather the artifacts to which a manufacturing date range could be assigned. In the three soils strata that make up Cultural Stratum 2 in Unit 1, all but one of the diagnostic artifacts are types that could have been produced up to the present, and several fragments of polyethylene terephthalate (PET) plastic were manufactured after 1970. A single patent medicine bottle manufactured around the turn of the twentieth century was also recovered from this stratum. In Unit 2, which was a single soil deposit, the six diagnostic artifacts recovered include a Pepsi-Cola bottle that was manufactured in the 1930s.

The third cultural stratum varied between the two units, although it was encountered approximately 65 cm (26 in) below Cultural Stratum 1 in both. In Unit 1, it was very dark brown sandy loam mottled with lighter and soils. In Unit 2, it was a dark yellowish brown sand with small stone inclusions. The variation in color and inclusions was matched by a variation in artifact inclusions.

In Unit 1, 21 artifacts were recovered from Cultural Stratum 3. Most (n = 17) were ferrous metal fasteners so corroded it was not clear if they were screws, nails, or bolts. Three fragments of structural tile and one piece of container glass were also recovered. A single fragment of hollow structural tile was the only diagnostic item recovered (Table 1). It could have been manufactured as early as 1885 and was fading from popularity by the second quarter of the twentieth century. In Unit 2, no artifacts were observed in or recovered from Cultural Stratum 3.

These small windows into the towpath stratigraphy and the handful of diagnostic items therein allow us to determine the sequence of construction and reveal that these cultural strata are each associated with significant periods of construction, repair, or reuse in the towpath's near 200-year history. In both units, the first Cultural Stratum marks the construction and continued use of the Towpath Trail, connecting the modern recreational use of the towpath and canal with its historic secondary function as a recreational area for swimming, fishing, and boating.

In Unit 1, Cultural Stratum 2 was deposited in the third quarter of the twentieth century, or later, as indicated by the fragments of plastic food packaging. Given this modern origin, this deposit may be associated with the Towpath Trail, or it may have been deposited in the decades preceding the trail construction during an undocumented repair of the failing towpath. Although the canal was not operational, it was still the only feature keeping the canal waters from flowing south into the Tuscarawas River. Maintenance was still required and the fill was likely derived from canal dredge and the artifacts originated as refuse in the canal prism.

In Unit 2, 21 artifacts were recovered from Cultural Stratum 2. Unlike the second stratum in Unit 1, this stratum did not contain clearly modern materials like plastics. Rather, the artifacts from Unit 2 may connect this stratum with the functioning towpath and canal, although a more reasonable interpretation is that it was deposited during private repair efforts after the 1913 flood ended active shipping on the canal. After 1913, the State abandoned the canal, but in several areas local industries depended on intact segments as water supply and for localized movement of materials. Six of the artifacts recovered from this stratum are diagnostic, including vulcanized rubber fragments, decorated and undecorated whiteware fragments, and fragments of a 1930s Pepsi-Cola bottle. Lacking the clearly modern material observed in Unit 1, this stratum appears to represent fill dredged in the first half of the twentieth century after the 1913 flood.

Table 1: Chronologically Diagnostic Artifacts from Units 1 and 2

Unit	Cultural Strata	Material	Type	Subtype	Description	Decoration	Date Range	Reference	Count
1	2	Glass	Container	Bottle, medicine	Body, colored	Brown; "H. CLAY G…"	1888–Early 20th Century	Federation of Historic Bottle Collectors 2004	1
		Metal	Ferrous	Nail	Wire	None	1890s–present (predominant)	Gillio et al. 1980	1
		Synthetic	Asphalt	Paving	Fragment	None	ca. 1948–present (predominant)	National Asphalt Pavement Association 2018	4
			Polyethylene terephthalate (PET)	Molded packaging	Fragment	None	Early 1970s–present	PET Resin Association 2015	1
					Printed cardboard-backed blister pack	"…ALIGHT"; "3/1"	Early 1970–present	PET Resin Association 2015	1
					Ritz Handi-Snacks cheese and cracker	None	Early 1970s–present	PET Resin Association 2015	1
		Ceramic	Coarse Earthenware	Hollow structural tile	Fragment	None	1885–1950	Kibbel 2004	2
		Synthetic	Polyethylene terephthalate (PET)	Cup	Fragment	White	Early 1970s–present	PET Resin Association 2015	1
		Ceramic	Coarse Earthenware	Hollow structural tile	Fragment	Glazed	1885–1950	Kibbel 2004	3
		Glass	Container	Jar/Bottle	Basal, colorless, embossed	None	1938–present	Toulouse 1971	1
	3	Ceramic	Coarse Earthenware	Hollow structural tile	Fragment	Glazed	1885–1950	Kibbel 2004	3
2	2	Glass	Container	Bottle	Body, colorless	Paper label, embossed "Pepsi-Cola"	1920-1930	Sedelmaier 2015	2
		Synthetic	Rubber	Vulcanized	Unknown	None	1844–present	American Inventors 2010	2
		Ceramic	Refined Earthenware	Whiteware	Body	None	ca. 1820–present	Stelle et al. 2011	1
					Rim, shell edged	Blue	1820–1897	Miller and Hunter 1990	1

In both units, Cultural Stratum 3 it is likely associated with the use and operation of the canal and towpath prior to 1913. In Unit 1, the stratum was characterized by dark sandy loam mottled with patches of lighter and darker soils, typical of recent fills. While artifacts were recovered, none were of clearly twentieth century origin, and they were qualitatively different than those in the overlying soils. Whereas the overlying fills contain mass produced, popular cultural food and drink packaging typical of casual refuse disposal in densely populated areas, the artifacts from Cultural Stratum 3 were predominantly hardware fragments and a few datable pieces of structural tile that were made near the turn of the twentieth century. The absence of modern materials, coupled with the existence of items from ca. 1900, suggests that this stratum was not associated with the construction of the Towpath Trail or the initial construction of the towpath at the beginning of the Canal Era. The original towpath berm structure was built from soil excavated from the adjacent canal prism and is expected to contain few, if any, historic artifacts. As such, it is likely that this stratum was deposited during a late-nineteenth century repair. Given the manufacturing dates associated with the hollow tile, it is interpreted as evidence of the 1905–1909 reconstruction.

In Unit 2, no artifacts were recovered from or observed in Cultural Stratum 3. It also had a substantively different soil matrix than Cultural Stratum 3 in Unit 1. Here, it was marked by a homogenous yellowish brown sand with small stone inclusions. The homogeneity indicates it was deposited as a single event and from a single source. The lack of artifacts suggests it was derived from the canal prism at a time when no historic material would have accumulated. It appears to be the berm material from the original ca. 1825 towpath.

While the excavation of two undisturbed units is perhaps too small a sample to make grand pronouncements about the integrity and interpretive viability of the towpath, they offer a sufficient justification for further investigation. The third unit in this mitigation proves that substantial portions of this feature have been so heavily affected by modern development that location is the only remaining information, but this investigation also reinforces what the historic record and past investigations have documented. The towpath is highly variable along its length and it is very unlikely that any two profiles, even in close proximity to each other, will be the same. However, this Phase III mitigation shows that even under those conditions, or perhaps even because of them, interpretable information about the towpath's construction, repair, and reuse can be documented. This data can only add to our understanding of this important, but historically unappreciated element of the Ohio and Erie Canal.

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