HISTORIC RESOURCE REVIEW
AND ARCHAEOLOGICAL RESOURCES ASSESSMENT,
CURTIS POND DAM (VT STATE ID #40.09) REHABILITATION PROJECT
CALAIS, WASHINGTON COUNTY, VERMONT

Curtis Pond, looking southeast across the south end of the pond; the Curtis Pond Cam is located at the left side of the image, to the right of the large white barn, behind the treeline (Postcard Collection, Silver Special Collections, University of Vermont, Billings Library Annex, Burlington, Vermont)

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UVM Report No 1509
June 5, 2023

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Submitted to:
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PROJECT DESCRIPTION

The Curtis Pond Association proposes the rehabilitation of the Curtis Pond Dam (VT State ID #40.09; National ID #VT00063) which is located on a tributary to Pekin Brook near the outlet of Curtis Pond, on the north side of Worcester Road and west side of Camp Road, in Calais, Washington County, Vermont (Figures 1 and 2). A dam has been at this location for over 200 years; the current dam is a stone masonry and earthen structure that has been assessed as in poor condition (Figure 3). The Maple Corner Dam (VT State ID #40.16), which was historically directly related to the Curtis Pond Dam, is located about 300 ft (91.4 m) below the Curtis Pond Dam, also on the Curtis Pond outlet stream (see Figure 2). The Maple Corner Dam consists of a breeched stone masonry dam (Figure 4). Proposed project work, which primarily includes the construction of a concrete wall along the upstream side of the existing Curtis Pond Dam, the widening of the spillway from 5 ft to 10 ft, and the construction of a new concrete spillway, will stabilize the Curtis Pond Dam and ensure the continued impoundment of Curtis Pond and its use for recreational activities (Figure 5; Appendix I). No project work will take place at the Maple Corner Dam.

The proposed project requires a U.S. Army Corps permit. As a result, the permit process for the project includes compliance with Section 106 of the National Historic Preservation Act, as amended. This Historic Resources Review (HRR) and Archaeological Resources Assessment (ARA) will assist with satisfying the Section 106 permit requirements, and any state permit requirements. Historic Preservation Specialist Catherine Quinn and Archaeological Research Technician/Program Historian Kate Kenny of the University of Vermont Consulting Archaeology Program (UVM CAP) conducted the review.

The objective of the HRR is to identify and document any historic resources on or eligible for listing on the National Register of Historic Places that have the potential to be directly or indirectly affected by project work, and if present, to recommend a determination of effect on the resources by the proposed project. The proposed project was reviewed according to standards set forth in 36 CFR Part 800, the regulations established by the Advisory Council on Historic Preservation to implement Section 106 of the National Historic Preservation Act, and its amendments. Curtis Pond Dam is located within the State Register-listed Maple Corner Historic District (Survey No. 1205-27) (Figure 6) (VDHP 1980). As such, the Area of Potential Effect (APE) for historic resources was identified as the project area and the boundaries of the district, along with one additional building located at the dam (Figure 7).

The goals of the ARA are to identify any portions of the project's APE that may contain precontact Native American and/or historic archaeological sites, to provide sufficient information to gauge their potential for archaeological significance, and to recommend if further archaeological work would be needed prior to project work. The APE for archaeological resources was identified as the project area (Figure 8). To assess the potential of the proposed project's APE for precontact Native American sites, a review of the files maintained by the Vermont Division for Historic Preservation (VDHP) was undertaken to identify the location and nature of nearby previously reported sites in order to understand the archeological potential of

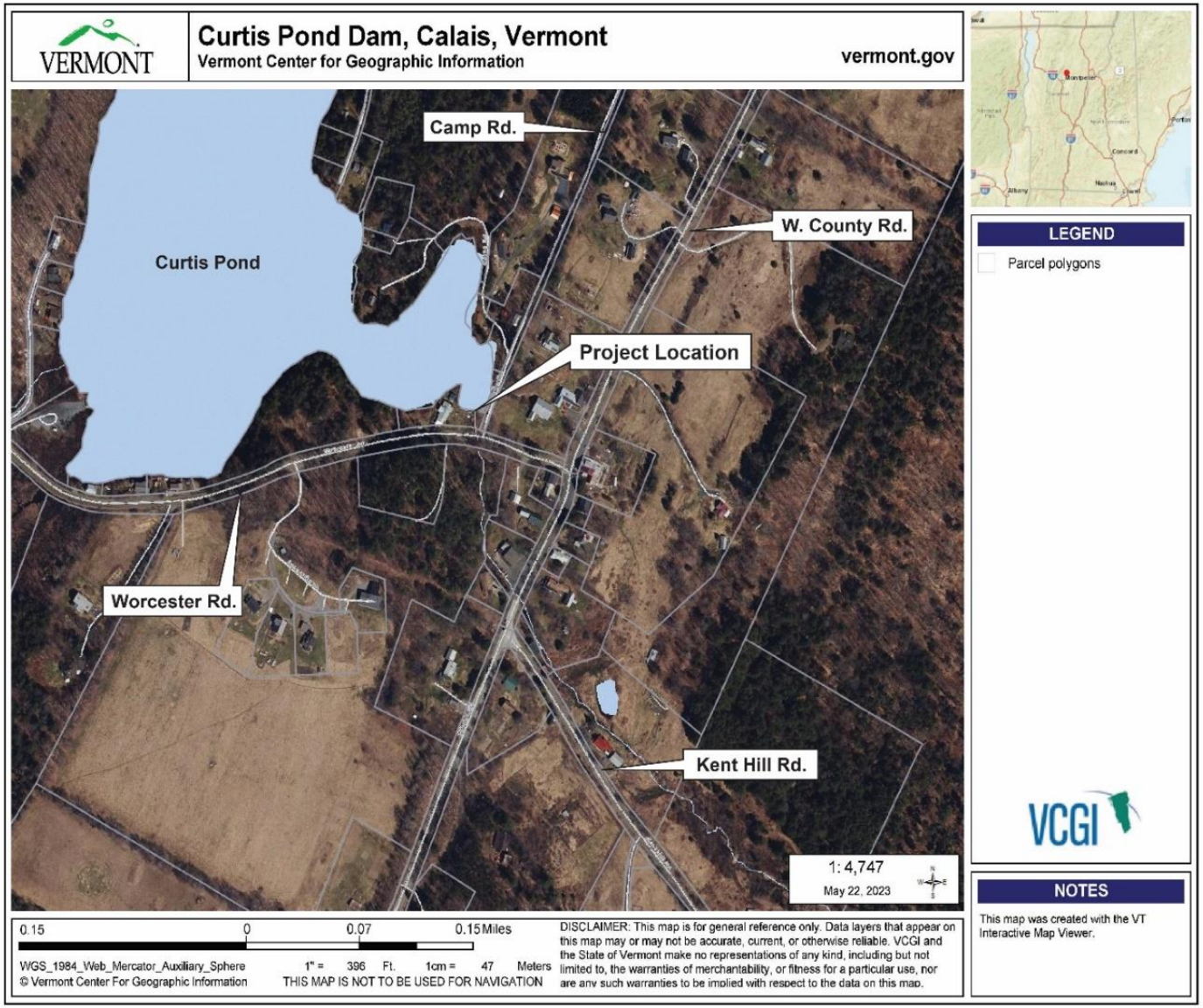

Figure 1. Map showing the location of the Curtis Pond Dam Project in Calais, Washington County, Vermont (VCGI).

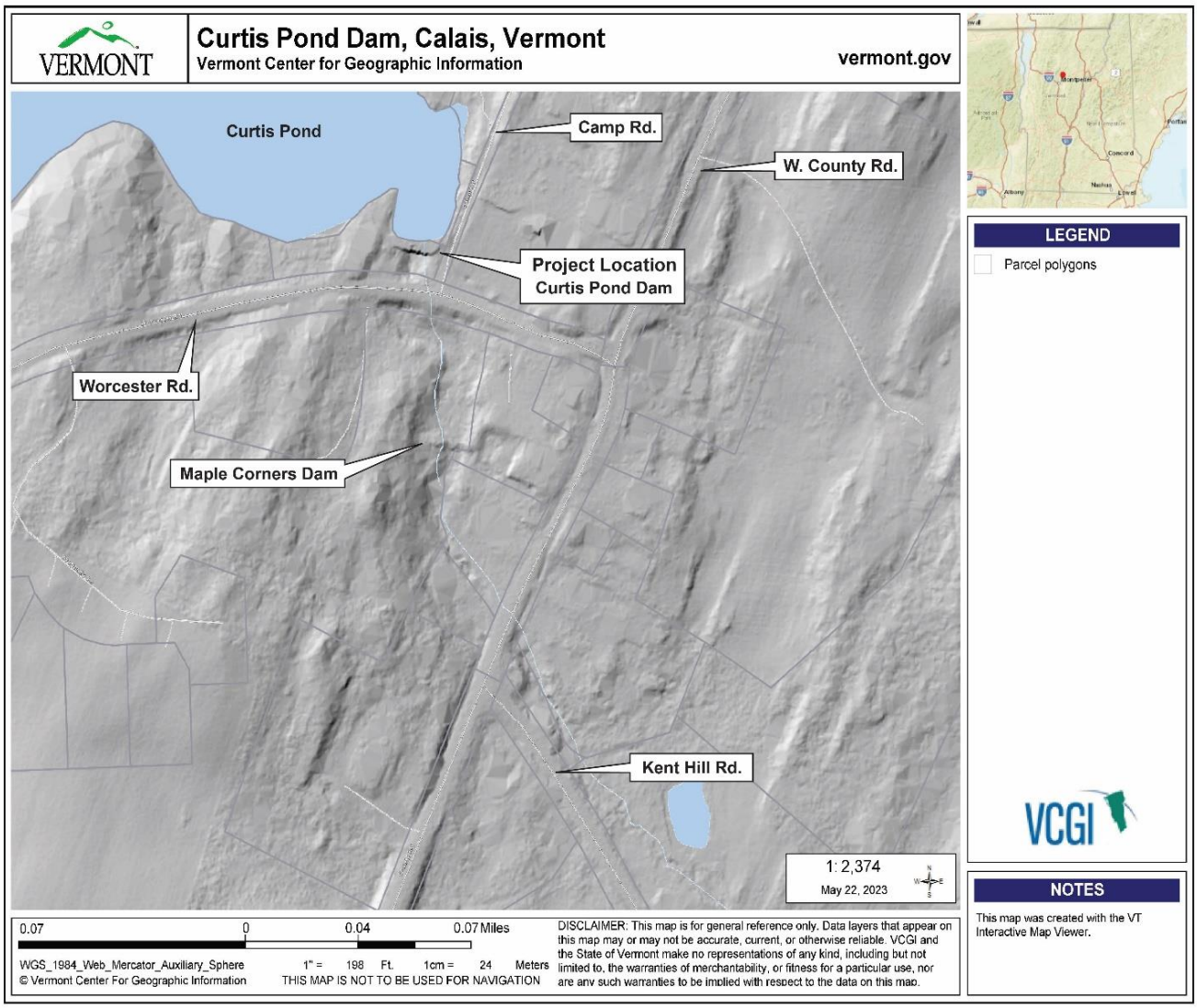

Figure 2. LIDAR image showing the Curtis Pond Dam and Maple Corner Dam in Calais, Washington County, Vermont (VCGI).

Figure 3. View of the Curtis Pond Dam looking north from Worcester Road.

Figure 4. View of the Maple Corner Dam looking north.

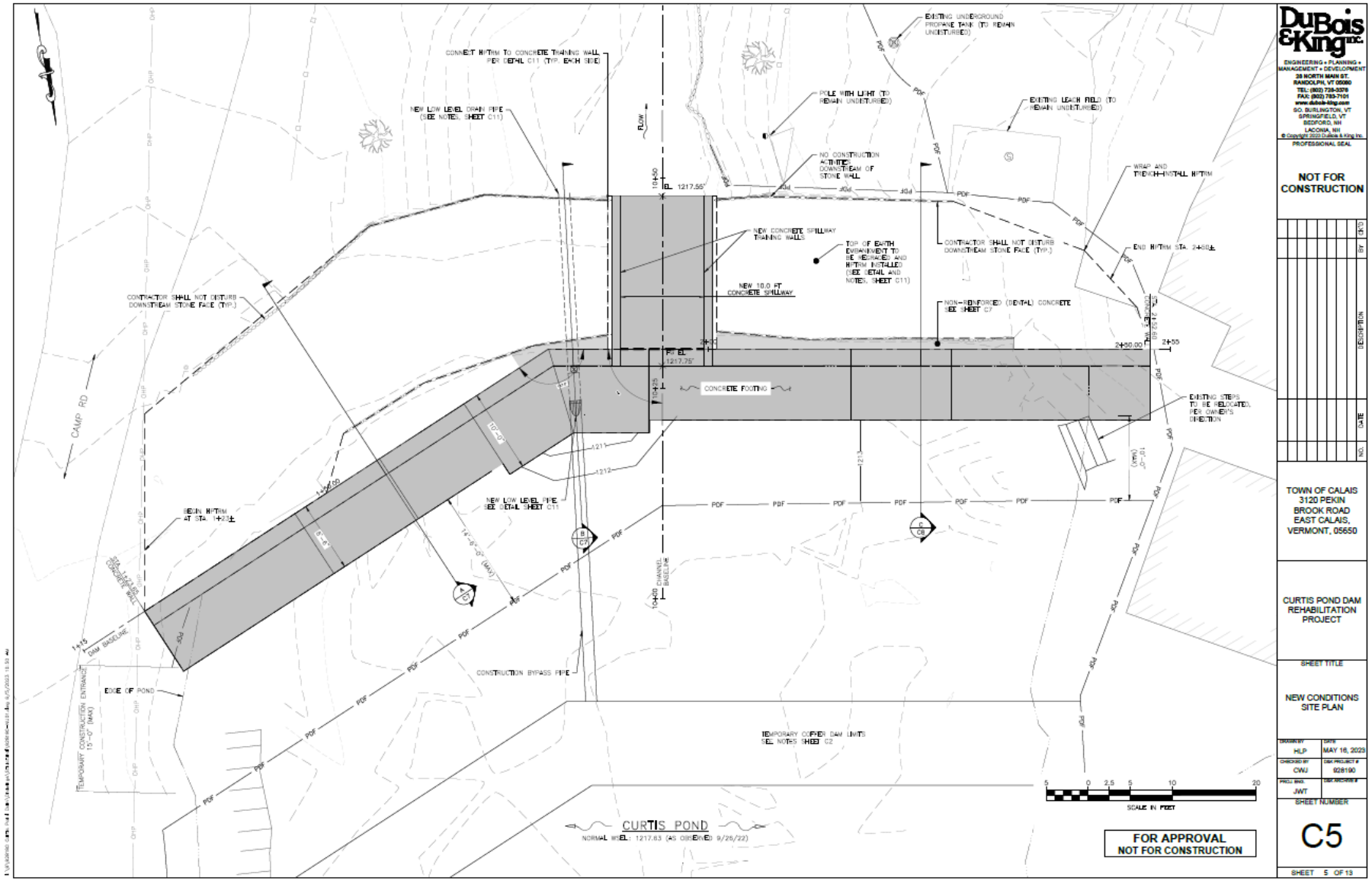

Figure 5. Proposed New Conditions Site Plan for the Curtis Pond Dam Rehabilitation Project (DuBois & King, Inc. 2023).

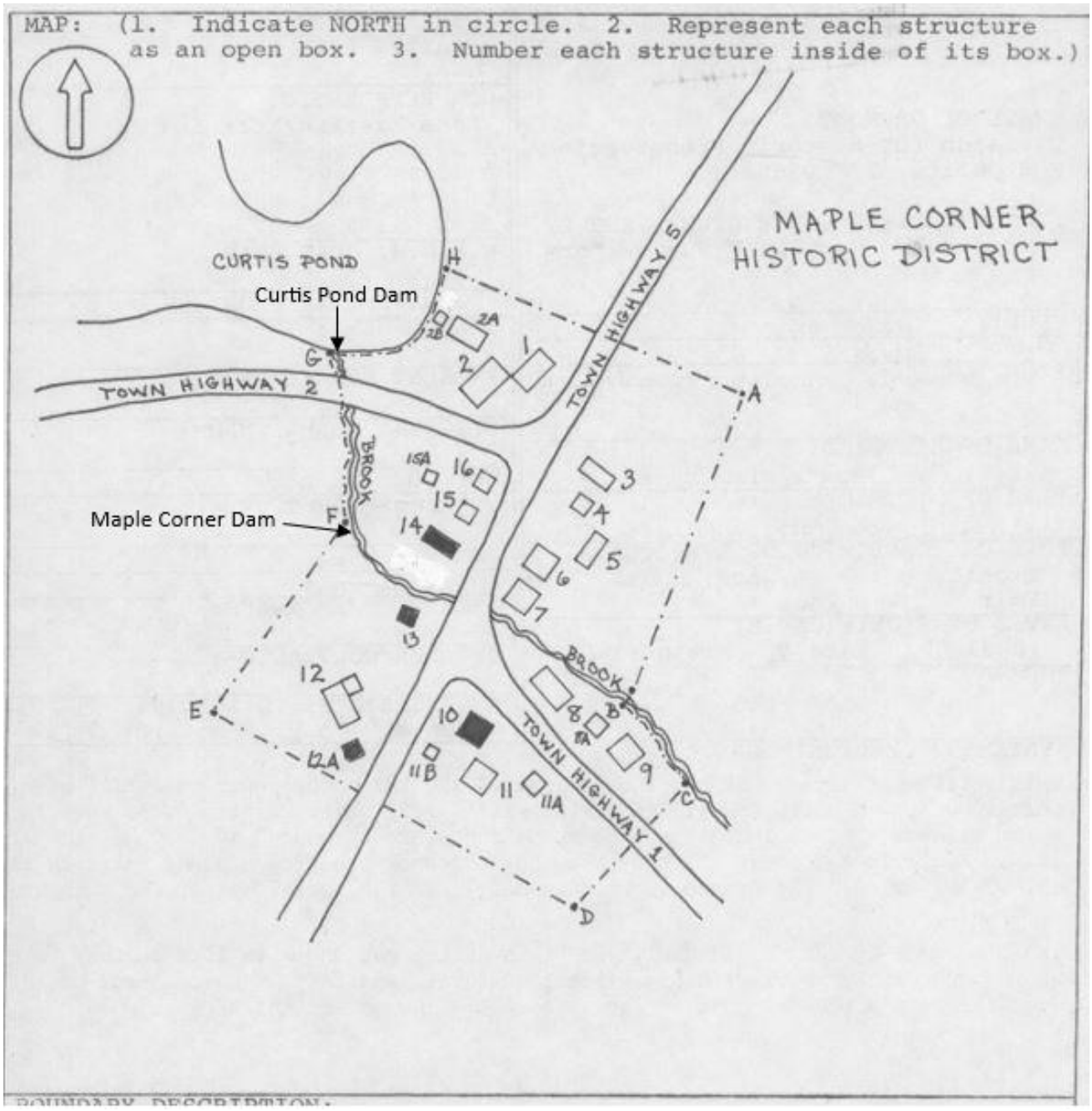

Figure 6. Map of the State Register-listed Maple Corner Historic District with the approximate locations of the Curtis Pond and Maple Corner dams added (VDHP 1980).

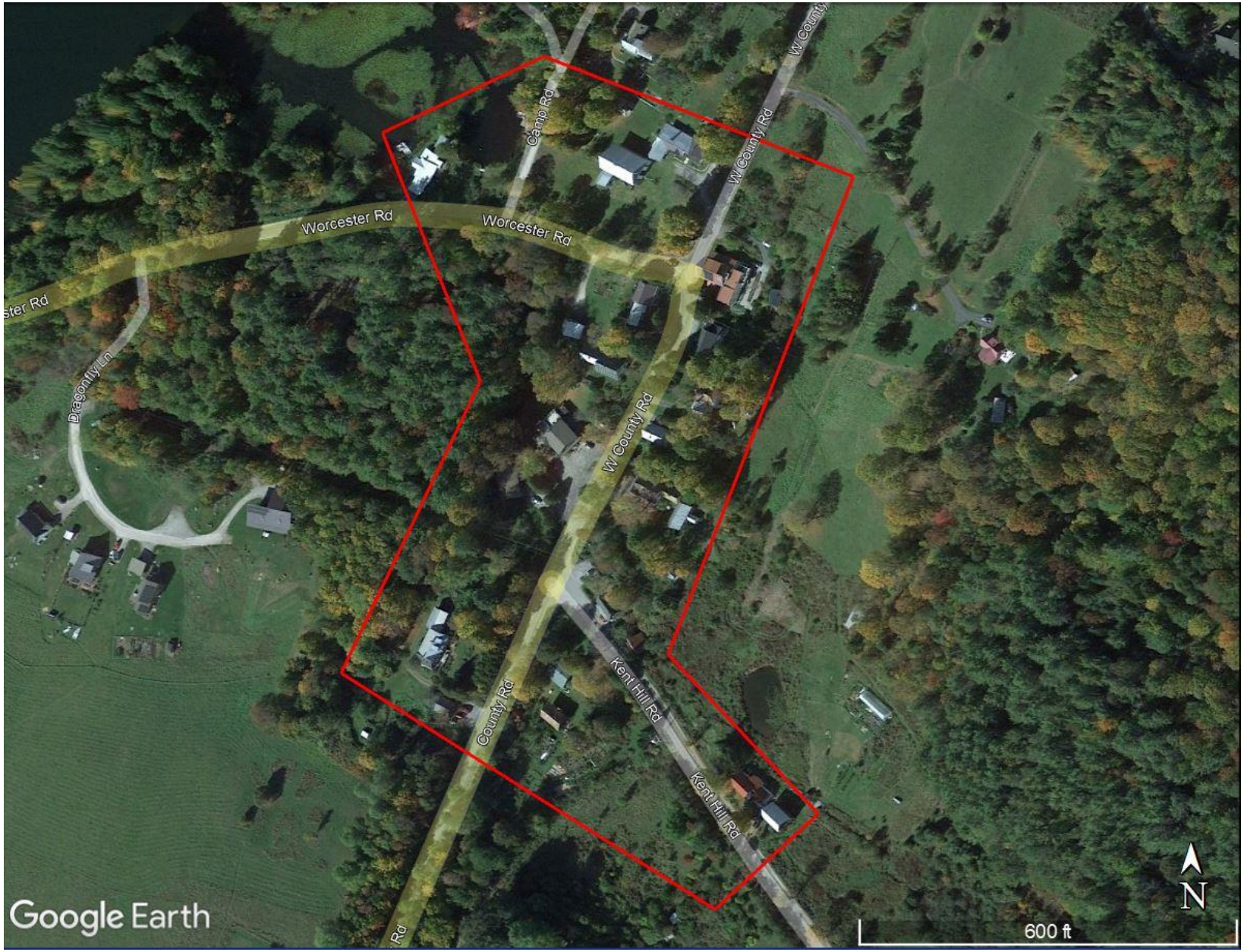

Figure 7. Map showing the Area of Potential Effect for historic resources for the Curtis Pond Dam Rehabilitation Project.

Figure 8. Map showing the Area of Potential Effect for archaeological resources for the Curtis Pond Dam Rehabilitation Project.

the general area. Additionally, the criteria outlined in the VDHP's *Environmental Predictive Model for Locating PreContact Archaeological Sites* were used to establish the general sensitivity for Pre-Contact Native American sites within the proposed APE.

A variety of archival records were used in the preparation of this report including historic maps, land records, newspapers, census records, town histories, vital records, probate records, town records, family histories, and aerial photographs. Several on-line databases were used to access historical information including: www.https://newspapers.com; www.https://familysearch.org; www.https://findagrave.com; and www.https://Ancestry.com. Aerial imagery was accessed at the Vermont Archives and Records Administration Center in Middlesex, Vermont, and the University of Vermont's Howe Library Map Room, as well as through the Vermont Center for Geographic Information's website at www.https://vcgi.vermont.gov/ (VCGI); and Google Earth (2022). The files of the Vermont Division for Historic Preservation (VDHP) were accessed through the Vermont Agency of Commerce and Community Development's Online Resources Center (ORC) at www.https://orc.vermont.gov. Secondary sources were checked at the Vermont Historical Society's Leahy Library in Barre, Vermont; at the University of Vermont's Silver Special Collections, Billings Library Annex, in Burlington, Vermont; and on-line at www.https://books.google.com/. Environmental information was drawn from the VCGI; the USDA's Natural Resources Conservation Service's Web Soil Survey website at www.http://websoilsurvey.nrcs.usda.gov; and from the ORC. The description of the dam was derived from numerous documents held by the Vermont Department of Environmental Conservation Facilities Engineering Division's Dam Safety Program in Montpelier, Vermont,[1] and from a field visit conducted by UVM CAP on April 20, 2023. The historical background section of this report is based heavily on initial land record research conducted by the State of Vermont (https://curtispond.org/dam-documents-2007-current/).

A general environmental setting and detailed historic background for the dam property is followed by historic and archaeological resources review sections. Recommendations for significance and determinations of effect are provided. An overall summary of both reviews concludes the report. A Vermont Architectural Resource Inventory (VARI) form and Determination of Effect (DOE) form were also completed as part of this review and are submitted with this report.

ENVIRONMENTAL SETTING

Calais is located within the Vermont Piedmont physiographic region of the state. This region extends from the Connecticut River Valley to the eastern foothills of the Green Mountains and is characterized by plateau like uplands, steep sided valleys, small hills, deeply incised streams, and many small ponds. The Town of Calais is located towards the western edge of this region and lies about three miles from the eastern foot of the Worcester Range, a chain of mountains that stand just east of the main range of the Green Mountains. The overall topography of Calais is quite uneven and hilly (Figure 9) (Vermont Bureau of Publicity 1914:146). The western boundary of the town runs along a series of named heights including: Long Meadow Hill (1,991 ft amsl); Hersey Hill (1,906 ft amsl); Robinson Hill (1,713 ft amsl); and Hobart Mountain

[1] A branch of the Dam Safety Division of the Agency of Natural Resources (ANR).

(2,139 ft amsl) (Child 1889:224; VTCGI 2023). Within Calais, elevations range from about 720 ft amsl in the Kingsbury Brook Valley up to 2,139 ft amsl on Hobart Mountain in the northwest corner of the town (VCGI 2023).

Calais lies within the Winooski River watershed. The most significant watercourse in town is Kingsbury Brook, [2] the outlet of Sabin Pond, which flows north to south through the east central part of town (Child 1889:224). Other prominent streams include Dugar Brook, Carr Brook, Still Brook, Sodom Pond Brook, and Pekin Brook. The town is also noted for its numerous ponds, the larger ones being Sabin Pond, Mirror Lake (formerly called 'No. 10'), Bliss Pond, Adamant Pond, and Curtis Pond (Vermont Bureau of Publicity 1914:241). The surficial geology of Calais is dominated by glacial till, except in the lower stream valleys. The "soil is generally rich and fertile" and is considered to be most suited for dairy operations (Child 1889:224). The forests are composed of spruce, hemlock, pine, fir, tamarack, ash, elm, poplar, basswood, maple, birch, and beech (Vermont Bureau of Publicity 1914:146).

Curtis Pond in the west central part of Calais is at about 1,218 ft amsl and has a surface area of about 72.93 acres and maximum depth of about 31-32 ft (Figure 10) (DuBois & King Inc., 1970; Tighe & Bond 1980:1/5, VCGI 2023). Much of the land to the north and west of the pond rises steeply, about 200 ft. The land to the east includes a low narrow ridge that rises to about 100 ft above the pond, while the area to the south is somewhat more level. The pond has a drainage area of about 1.38 square miles and is fed by surface runoff and at least four short (less than 3,000 ft) inflowing streams, some spring fed (Dubois & King Inc., 2003; *Rutland Daily Herald* September 11, 2005; VCGI 2023). The pond's unnamed outlet stream[3] is located at its southeastern corner and flows southeast about 1.71 mi (2.75 km) along its thread to its confluence with Pekin Brook (Tighe & Bond 1980:1; VCGI 2023). There is about 480 ft of fall between Curtis Pond and Pekin Brook. Pekin Brook is the outlet of Mirror Lake (Pierce 1917:157). From the confluence with the Curtis Pond outlet stream, Pekin Brook continues for another 2.83 mi (4.56 km) before joining Kingsbury Brook, a primary tributary of the Winooski River (VTCGI 2023).

The USDA NRCS indicates that the soil around the dam is likely to be of the Glover-Vershire complex. These are rocky soils developed in glacial till. Vershire loam is a common upland soil. Often, the uppermost layer in a profile consists of a historically disturbed very dark grayish brown very fine sandy loam (Ap). This is underlain by a dark brown very fine sandy loam (Bw) and a dark olive fine sandy loam (C). Bedrock is often within about 40 inches (1.02 m) of the ground surface. This soil can have an A and a 'thin discontinuous' E in places where it has not been disturbed. The volume of rock in this soil can range from about 5 to 30%. Glover loam is a similar but shallower soil. A typical profile consists of an upper historically disturbed very dark grayish brown very fine sandy loam (Ap) underlain by an olive brown gravelly very fine sandy loam (Bw) sitting on bedrock, which is often only one or two feet (0.3 or 0.6 m) below the ground surface. The rock content ranges from 5-25%. This soil type can have A and E horizons in areas where it has not been previously disturbed. Areas of bedrock outcropping were noted in the traveled way of Camp Road near the dam.

[2] The watercourse is also known as the Kingsbury Branch in the historical records.
[3] Occasionally, this watercourse is referred to 'Curtis Pond Brook' or 'Curtis Pond Outlet' in the historic records.

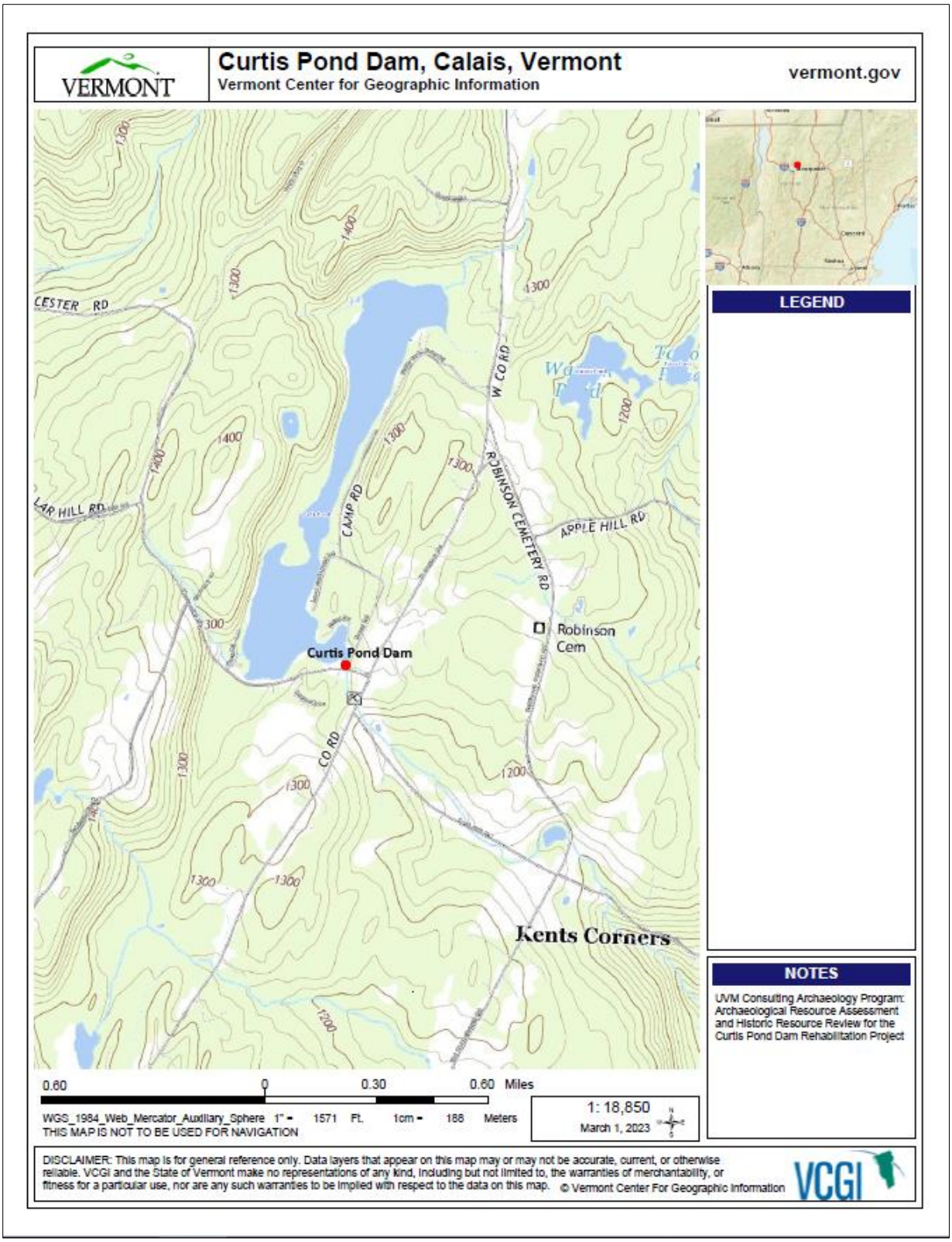

Figure 9. Map showing the location of the Curtis Pond Dam Project in Calais, Washington County, Vermont, in relation to the surrounding topography and hydrology (VCGI).

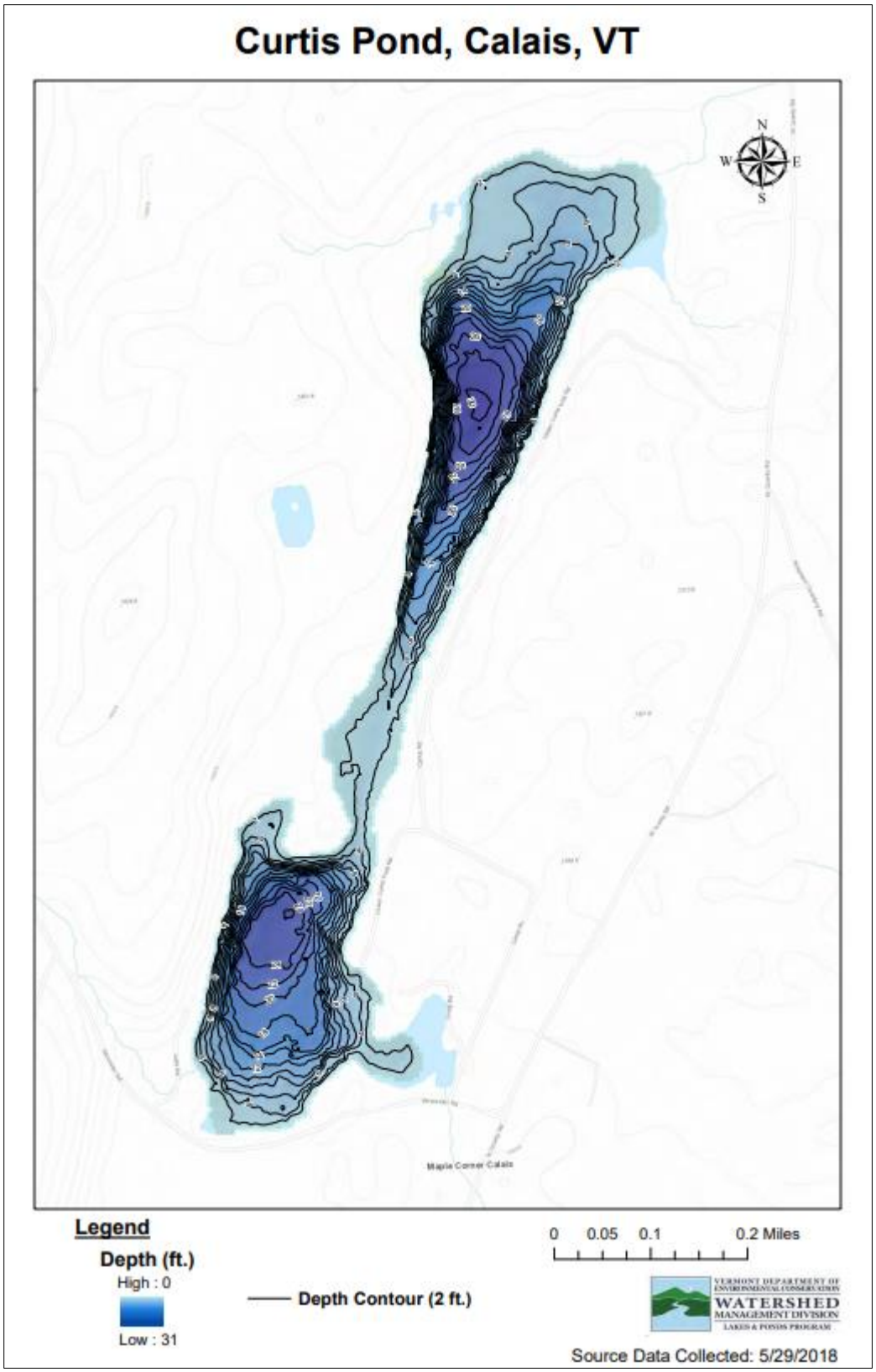

Figure 10. Map showing depth contours in Curtis Pond (lp_curtis.pdf (vermont.gov).

HISTORIC BACKGROUND

The Vermont State legislature created the Town of Calais on October 21, 1780, and Euro-American settlement began ca. 1787 (Hemenway 1882:129, 133). Over time, several hamlets evolved including North Calais (aka. No. 10), East Calais (aka. Moscow), Center Calais (aka. Pekin), South Calais (aka. Adamant / Sodom**)**, Kents Corner, and Maple Corner (*Argus and Patriot* March 28, 1872). Many of these communities grew around small water powered enterprises. Jacob Davis and Samuel Twiss built the first mills near the center of town on Kingsbury Brook between June 6, 1792, and October 2, 1792 (Figure 11) (Child 1889:Part II:68). Eventually, there were "a dozen or so industrial sites" scattered around town including leather & shoe shops, sawmills, a starch factory, woolen mills, an "elaborate machine shop," a carriage factory, and a nail factory (which "turned out the old wrought iron nails") (*Burlington Free Press* December 3, 1910; *Rutland Daily Herald* April 10, 1907; *Vermont Watchman and State Journal* November 8, 1893). In 1910, some of the waterpowers in Calais were described in detail. At Calais Center there were three developments: "the lower one had a head of six feet, and was used to run a wheelwright's shop, this is still in existence, but not used, the two other mills were sawmills and probably each developed about a 15-foot head. The dams have rotted out, and the buildings are gone. At North Calais there were originally four developments, only one of which is now used . . . At East Calais there is a dam, but no definite information" (Burlington Free Press December 3, 1910). As late as 1914, the waterpower in town still included "a sawmill at Adamant; a sawmill and a grist mill at the outlet of Curtis Pond; an abandoned sawmill at North Calais; and a sawmill, grist mill and box factory at East Calais on the Kingsbury Branch [sic]" (Vermont Bureau of Publicity 1914:242). A survey of the town in 2005 identified the remains of "ten dams or dam sites" (Calais Dams Task Force 2005:2-3).

The Curtis Pond Dam is located on Lot #48 of the first division of lots in Calais, this is nominally a 160-acre square lot (theoretically, 40 chains / 2,640 ft / or 160 rods on a side), which was 'drawn to' the original right of Col. Jacob Davis in 1783 (Figure 12) (Calais Proprietors' Book). According to an early tax document, this lot contained about 134 acres of land with the rest being covered by water (CLR 3:10). On November 23, 1808, Col. Jacob Davis sold the lot to Thomas Davis and Timothy Hubbard of Montpelier as part of a group of lots (CLR 2:214½). On September 17, 1810, Davis and Hubbard sold 122¾ acres in the eastern part of Lot #48 to Capt. Samuel Robinson[4] (CLR 2:318). The deed for this subdivision described it as beginning at the northeast corner of Lot #48; then running S36W 172.5 rods (2,846.25 ft / 867.54 m *(note: there is a difference in rods from the original survey)*; then W36N 109 rods (1,798.5 ft / 548.18 m); then N36E 37 rods (610.5 ft / 186.08 m) to the pond; then running along the shore of the pond to the north line of the lot; then east on the original north line of the lot to the beginning (CLR 2:318).

Capt. Samuel Robinson (1742-1827), who was one of the original proprietors of Calais, was a native of Spencer Massachusetts (Child 1889:230; Hemenway 1882:168). He moved from Charlton, Massachusetts, to Calais around 1808 and "built the house where Capt. A.J. Mower now [1882] lives" (Child 1889:230; Hemenway 1882:168). On January 25, 1811, Samuel

[4] Samuel Robinson's home farm appears to have included part of Lot #48 and part of Lot #33 (e.g., see CLR 3:226, 3:227). However, more research is needed to confirm this.

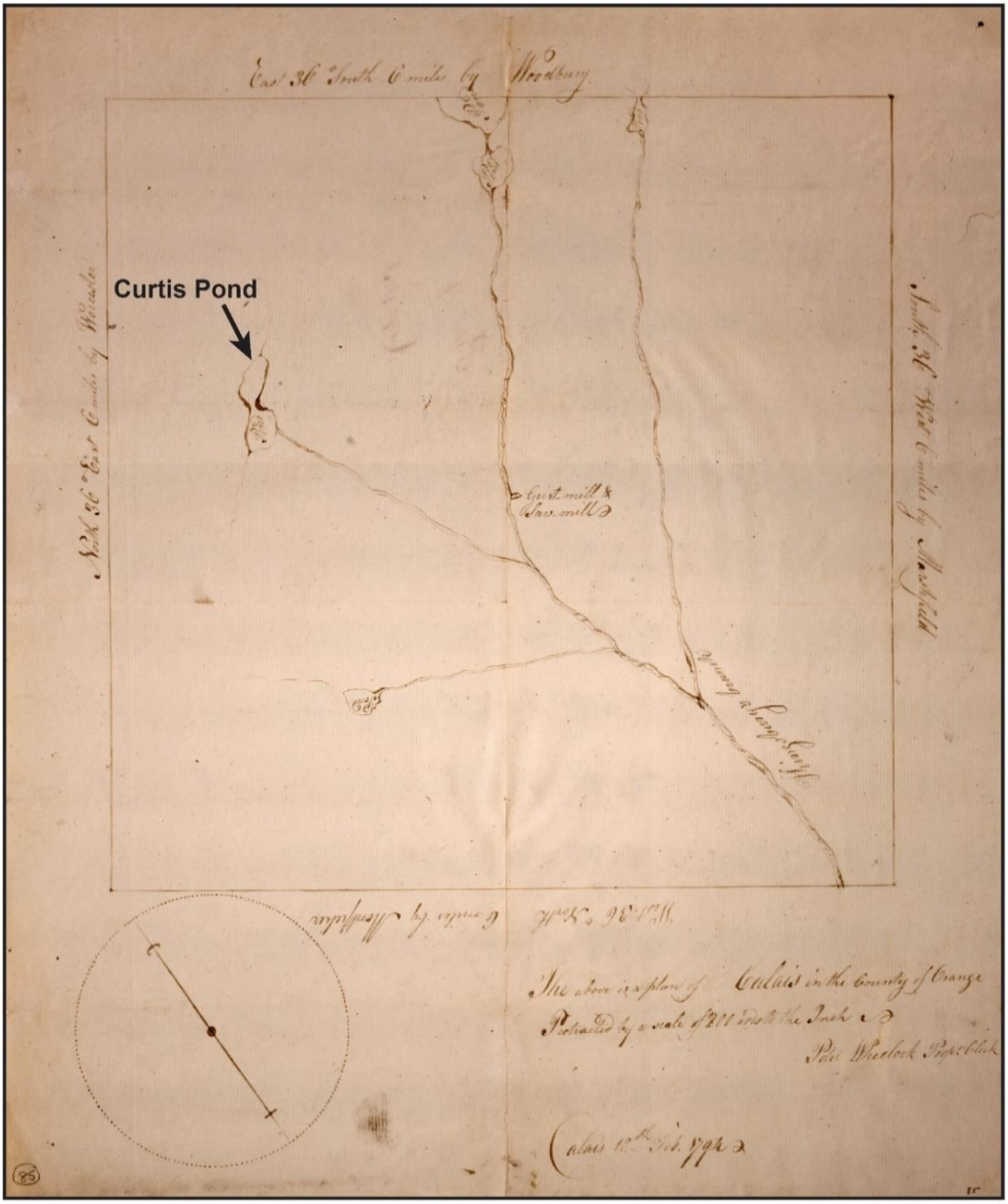

Figure 11. Map of Calais, Vermont, 1794 (Vermont Surveyor's General Papers Vol. 2:85).

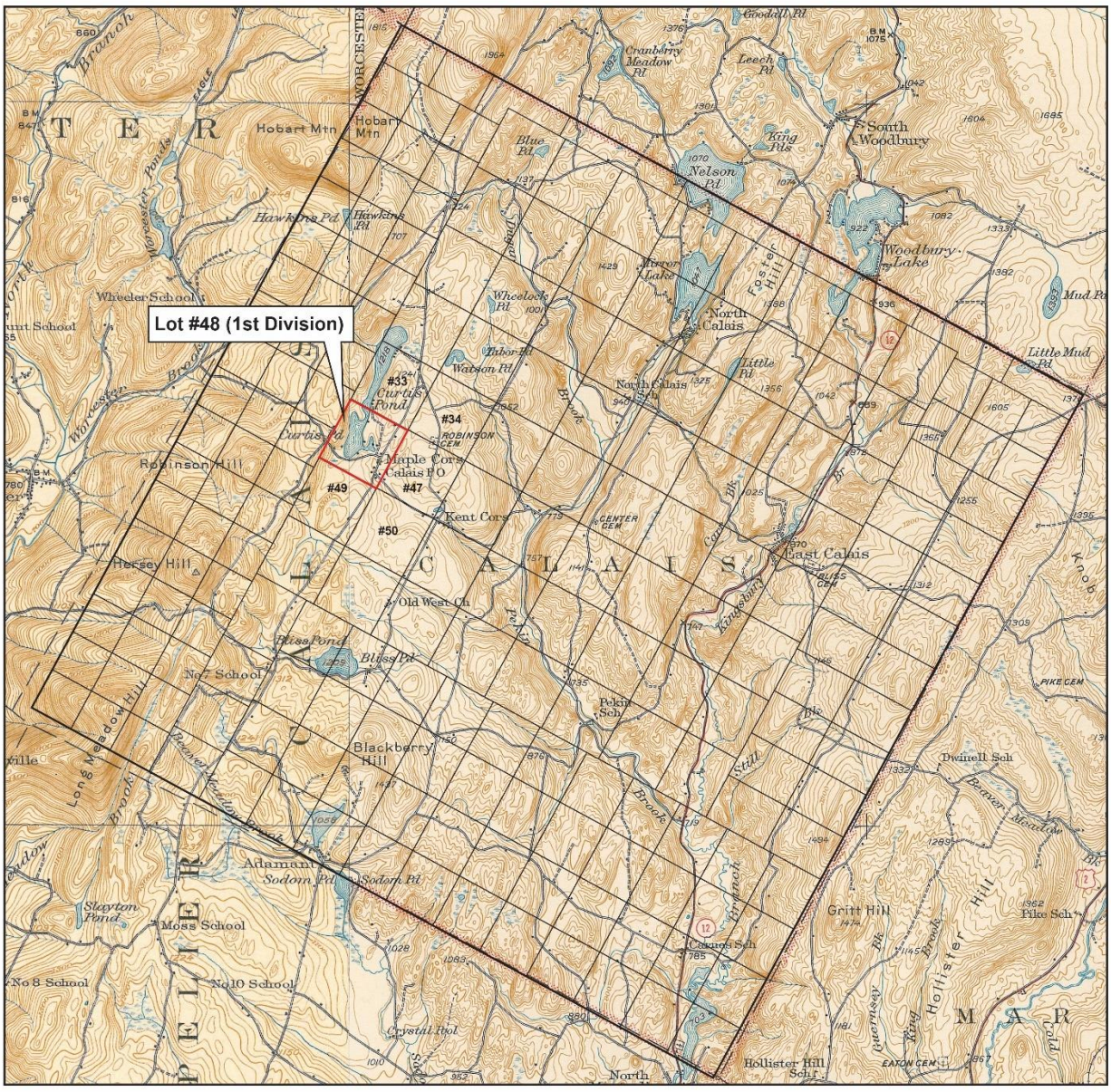

Figure 12. The original lotting plan for the Town of Calais, Vermont, projected onto two early USGS topographic maps (USGS 1921, 1943).

Robinson sold 100 acres of his 122¾-acre parcel to his son, William Robinson (1785-1849),[5] for $360 (CLR 2:335). This 100-acre parcel started at the southeast corner of Lot #48; then ran W36N 109 rods (1,798.5 ft / 548.18 m); then N36E 37 rods (610.5 ft / 186.08 m) to the pond; then up the pond about 104 rods (1,716 ft / 523 m); then E36S parallel with the dividing line between Lots #33 and #48 to the east line of Lot #48; then S30W on the line of the lot 141 rods (2,226.5 ft / 709.12 m) to the beginning (CLR 2:335). In this deed, Samuel Robinson reserved "two full shares of mill privileges on the rapids of the brook that runs out of the pond" while transferring one full share in the same to William (CLR 2:335). Samuel Robinson also reserved the right to select "suitable ground for mill yards and dams" as well as the right of passing to and from those areas (CLR 2:335). While Samuel and William Robinson clearly recognized the potential for mills on the Curtis Pond outlet stream, it does not appear that they developed any sites (Figure 13). On May 12, 1813, William and Samuel Robinson sold the same 100-acre parcel on Lot #48, including the possible mill seat(s) on the outlet stream, to Marshall Mower of Green, Kennebec County, Massachusetts (now Maine) for $500 (CLR 3:35).[6]

From the archival records, it appears that Marshall Mower likely first developed both the Maple Corner Dam and the Curtis Pond Dam sites between 1813 and 1817. Marshal Mower (1773-1831) was born in Charlton, Massachusetts, a son of Jonathan Mower (1730-1816) and Elizabeth Bemis (1732-1802) (Mower 1924:16-17; 28-29). According to a family history, Marshal Mower "was a man of commanding presence, tall, erect, of large physique and attractive features, and an excellent bass singer" (Mower 1923:29). In 1790, he married Charity Curtiss (1775-1843) of Charlton, a daughter of the Rev. Caleb Curtiss, the first settled minister of Charlton, and his first wife, Charity Combs (Curtiss 1903:38; Mower 1923:29). In ca. 1802-1803, Marshal Mower moved his family[7] to Greene, Maine, where he joined his older brothers and his widowed father who had moved there previously, "and settled on the grant from his father in the center of town" (Mower 1924:16-17; 28-29). In ca. 1813-1814, then about 40 years of age, Marshal Mower moved "his family by ox team to Calais Vt.," where his brother-in-law, Caleb Curtis, then resided (Curtiss 1903:38; Mower 1923:29). On June 1, 1817, Marshal Mower sold a half-acre of his 100-acre parcel on Lot #48 to Caleb Curtis (CLR 3:373). The half-acre lot was described as beginning at the west end of the dam that was located on the west side of the road on Lot #48; then running south two rods (33 ft / 10.06 m); then east as far as the mill dam extends; then north so far as will contain half an acre; then west until it strikes a square, then south to the beginning (CLR 3:373).[8] This deed also transferred the right to flow any other land behind the dam not included in the half acre parcel that may be "necessary for carrying the mill" as well as "the sole control of the water at the upper dam at the outlet of the standing pond" (meaning the Curtis Pond Dam) (CLR 3:373).[9]

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[5] According to a town history, William Robinson (1785-1849) moved to Calais at about the same time as his father (ca. 1808) (Hemenway 1882:168). William Robinson's wife died "in 1836 and about 1840 he removed to Charlton [Massachusetts]" (Hemenway 1882:168).

[6] This transaction left a strip of land on the north end of Lot #48 containing 22¾ acres and 19.5 rods (abutting Lot #33) in the hands of Samuel Robinson (CLR 2:335).

[7] Marshall and Charity Mower had fourteen children between 1790 and 1815 (Mower 1923:30).

[8] This half acre lot was most likely located at or near the site of the Maple Corner Dam on the outlet brook as it has a good impoundment area.

[9] Capt. Marshall Mower continued to live in Calais until his death on January 19, 1831 "of a cancer" (*Vermont Patriot and State Gazette* January 24, 1831).

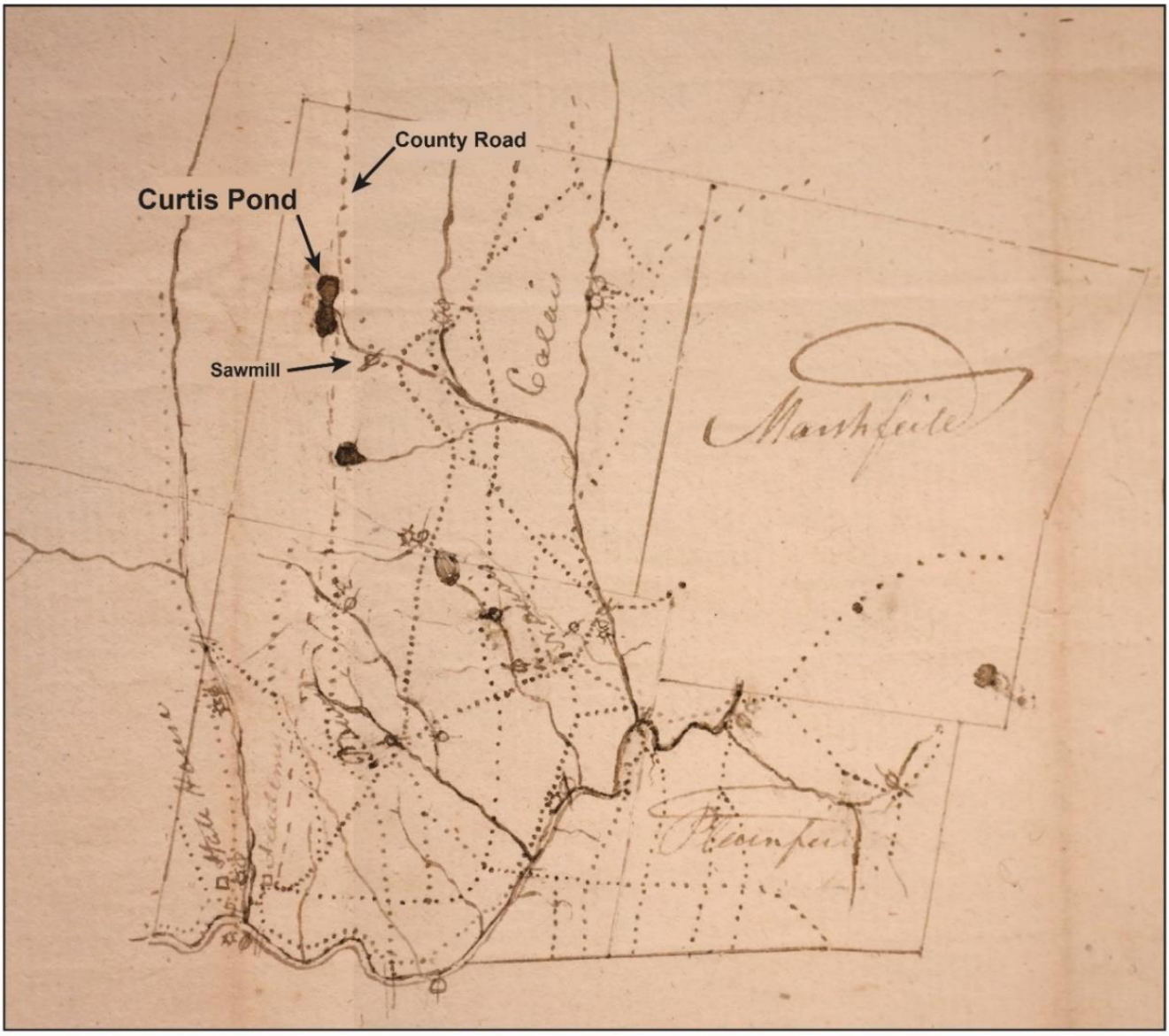

Figure 13. Detail of an early map (n.d.) of Montpelier, Calais, Plainfield, and Woodbury, Vermont, showing the "public and town roads," as well as streams and mills (Vermont Surveyor's General Papers, Vol. 2:44). The sawmill indicated at the Curtis Pond outlet Brook on this map appears to be located east of West County Road and could be the Robinson Mill at Kents Corner.

Col. Caleb Curtiss (1770-1836) was a son of the Rev. Caleb Curtiss and his first wife, Charity Combs, of Charlton, Massachusetts (Child 1889:228; Curtiss 1903:38, 69-70). Col. Caleb Curtiss' first wife, Polly Davis (1794-1801), was a daughter of Levi Davis and a niece of Col. Jacob Davis, the original owner of Lot #48 (Child 1889:228; Curtiss 1903:38, 69-70; Hemenway 1882:152).[10] Caleb and Polly Curtiss settled in Calais around 1795-1799 and built a homestead "on a rise of ground near the head" of Curtis Pond (*Argus and Patriot* July 17, 1889; Child 1889:228; Curtiss 1903:70; Hemenway 1882:152). Although Caleb Curtiss was primarily a farmer, he owned a gristmill on the outlet brook for about a decade (Calais Town and Vital Records 2:134-135, 2:260; Hemenway 1882:152). On December 15, 1828, Caleb Curtis sold his half acre parcel on Lot #48 along with the right to flow the land behind that dam and the "sole control of the water at the upper dam at the outlet of the standing pond" to Dwight Marsh of Calais for $200 (CLR 5:171). 'Uncle' Dwight Marsh (ca. 1794-1886) was a War of 1812 veteran and skilled violinist[11] who was also variously described as a joiner and cooper (U.S. Census 1840, 1850, 1860; *Vermont Watchman and State Journal* July 8, 1885, August 4, 1886).

On March 18, 1833, Dwight Marsh sold two mill properties in Calais to William Hutchins and Moses Hutchins of Montpelier for $800 (CLR 5:466). One of these properties was the half acre parcel with the dam and flowage rights and the right to control the upper dam at the outlet of Curtis Pond[12] (CLR 5:466). Shortly afterwards, on April 25, 1833, William Hutchins and Moses Hutchins transferred the same land, which was then referred to as "known by the name of the 'Dwight Marsh Mills' & lying near and at the outlet of Curtis Pond," back to Dwight Marsh by quit claim (CLR 6:59). On May 4, 1835, Dwight Marsh sold four pieces of land to Lewis Bancroft for $800 (CLR 6:192). Again, one of these pieces was the half acre lot and two water privileges that Dwight Marsh bought from Caleb Curtis on December 15, 1828 (CLR 6:192).[13] On May 2, 1837, Lewis Bancroft sold the same property that he bought from Dwight Marsh on May 4, 1835, to John Morgan[14] of Calais for $950 (CLR 6:451).

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[10] Caleb Curtiss' second wife was Anna Robinson (1776-1814), a daughter of Capt. Samuel Robinson, and his third wife was the widow Polly (Doty) Daggett (1770-1836), who he married in 1816 (Child 1889:228; Curtiss 1903:69-70; Hemenway 1882:168).

[11] Reportedly, his violin had been made in the early 1600s (*Woodstock Post* May 30, 1873).

[12] The second lot in this deed [located on the north side of present day Kent Road] was a non-contiguous three acre parcel with a mill, dwelling, and other buildings on it described as beginning on the north line of the road [Kent Hill] at a point 18 rods (297 ft / 90.52 m) from southeast corner of Lot #48 in the original east line of the lot; then following said line 25 rods (412.5 / 125.73 m); then N48W about 22 rods (363 ft / 110.64 m); then S36W 15 rods (247.5 ft / 75.44 m) to the north line of the highway then following on the highway to the beginning (CLR 5:466). Dwight Marsh had purchased this land from Caleb C. Mower, a son of Marshall Mower, on May 17, 1827 (CLR 4:533). Caleb Mower got this land as part of a 10-acre lot from Gaius Allen on April 4, 1825 (CLKR 4:396). This was part of the 50 acres Marshal Mower sold to Gaius Allen. The mill on this property was probably built ca. 1825 and 1827 (CLR 4:396; 4:533).

[13] The other pieces in this transfer included about 12 acres on Lot #47 that were bought from Elon Robinson on November 16, 1834; the three acres of land that Caleb Curtis Mower deeded to Dwight Marsh on May 17, 1827; and another part of Lot #48 described as beginning one rod (16.5 ft / 5.03 m) southwest of the center of road and one rod northwest of the southeast corner of the house; then S66W 5 rods (82.5 ft / 25.15 m); then N66E 4 rods (66 ft / 20.12 m) to the south boundary of the highway; then north to the beginning: this deed specified that "there shall be no dam built between the mill pond which I have now conveyed and the road." (CLR 6:192).

[14] This may be the same John Morgan who was "in the hottest of the fight at the Battle of Tippecanoe" and who died in Calais on May 7, 1855, at 68 years of age (*Burlington Weekly Free Press* June 1, 1855).

On the same day, May 2, 1837, John Morgan purchased a 1¾-acre parcel with a sawmill on it from Ezekiel Kent 2nd and Lewis Bancroft (CLR 6:452). This land was generally located south of Worcester Road, west of West County Road, and east of the outlet stream and included a right to build a dam (see Appendix II for more information about this lot prior to 1837). On July 6, 1837, John Morgan sold a few properties to Richard W. Tobey of Calais for $1,400 (CLR 6:521). This included all the land that he bought from Lewis Bancroft (as an individual) on May 2, 1837, and the land that he bought from Ezekiel Kent 2nd and Lewis Bancroft as business partners on the same day (May 2, 1837), including all the mills, dams, and water privileges connected with the two properties (CLR 6:521). Richard West Tobey (1800-1874), son of Zoeth Tobey (1764-1812),[15] was "a farmer, hotel-keeper and mill-owner at Calais, Vt., E. Montpelier, Walden, and Royalton, Vt." (Tobey and Pope 1905:121, 168).

On January 31, 1840, Richard Tobey sold two properties on Lot #48 to John Robinson (ca. 1802-1882), a farmer, for $525 (CLR 7:201; Find-a-Grave, Gravestone/Memorial, Robinson Cemetery, Calais, Vermont; U.S. Census 1850). This sale included the same half acre with its water rights that Caleb Curtis sold to Dwight Marsh on December 15, 1828, and the same land that was deeded to Abdial Kent by Jared Green on May 4, 1837 (meaning the 1¾ acre with the sawmill) (CLR 7:201). On February 18, 1842, John Robinson sold the same land that he bought from Tobey on January 31, 1840, as well as another part of Lot #48 also bought from Tobey on the same day to John W. Hall of Calais for $520 (CLR 7:508). On March 6, 1845, John Hall sold the same property back to John Robinson for $400 (CLR 8:311). It may be at about this time, ca. 1845, that John Robinson built a machine shop on the property a few rods west from the bridge on West County Road over the outlet brook (see CLR 10:124). This shop was powered by water taken by an 'aqueduct'[16] from the sawmill dam (CLR 10:55). In ca. 1847-1848, iron working machinery was installed in this shop and the space was occupied by N.W. Bancroft, a machinist, for the manufacture of wool processing machinery as well as doing 'job work,' until ca. 1854[17] (Child 1889:229; *Vermont Patriot and State Gazette* August 3, 1848; Walton 1853:54).

On April 26, 1847, John Robinson sold a half-acre from the north part of the 1¾-acre parcel with a house on it to Dwight Marsh[18] (CLR10:27). On March 6, 1848, John Robinson obtained a perpetual lease from George Kent to flow additional land on the banks of Curtis Pond by raising the "stone dam" at the outlet of the pond "above said John's sawmill near the highway" one foot (CLR 10:413). On April 4, 1850, John Robinson sold his combined

[15] Zoeth Tobey (1764-1812),[15] a native of Dartmouth, New Hampshire, settled in Calais in 1799 and "carried on a farm" until ca. 1805 (Tobey and Pope 1905:121, 168). Zoeth Tobey lived in eastern New York from ca. 1805 to 1810 before returning Calais (Tobey and Pope 1905:121, 168).

[16] Whether this 'aqueduct' was an in-ground head race or an above ground flume or penstock is not known at this time.

[17] N.W. Bancroft appears to have moved to Burlington prior to 1858 where he invented a butter churn and later made mop handles (*Burlington Free Press* August 11, 1858; *Burlington Weekly Free Press* April 13, 1860). However, more research is needed to conform this.

[18] This house parcel was located at the southwest corner of Worcester Road and West County Road. The half-acre was more specifically described as beginning on the west side of West County Road near the schoolhouse at the junction of the road from Worcester; then running south on the west side of West County Road to a point 30 feet south of the dwelling house "now on said land;" then turning westward and running "in front" of the house and its woodshed to a point 12 ft west of the woodshed; then running north parallel with the West County Road to the Worcester Road; then on that road to the beginning (CLR 10:27). This house is likely SR#15 in the Maple Corner Historic District.

mechanics shop and sawmill property to George D. Tewksbury, George W. Scott, and Charles Scott (CLR 10:32) This included the same land that Jared Green sold to Abdial Kent on January 31, 1840 and the land that Richard Tobey sold to John Robinson on January 31, 1840 (the latter including the land and water rights that Caleb Curtis sold to Dwight Marsh on December 15, 1828), as well as the leased right to raise the upper dam from George Kent; but excepting the half acre that was sold to Dwight Marsh on April 26, 1847 (CLR 10:32). They sold the land back to John Robinson on the same day, July 1, 1850 (CLR 10:54). On the same day July 1, 1850, John Robinson sold a part of his combined mechanics shop and sawmill property to George Tewksbury (CLR 10:55). The part transferred to Tewksbury lay north of a division line described as beginning on the east side brook at the end of a bank wall [possibly a training wall] at a point 2 rods and 10 links (33 ft / 10.06 m) north of the northwest corner of the machine shop then running east to a point, being in a straight line with the north end of the shop, three rods (49.5 ft / 15.09 m) east of the northeast corner of the shop; then south parallel with the east side of the shop to the highway. The part of the property transferred to Tewksbury included the sawmill and the privilege of flowing the natural pond but reserved a "privilege of keeping in repair the aqueduct that is used to convey water from said sawmill dam to the wheel in said shop and also the privilege of keeping in repair said sawmill dam . . . and I also reserve the privilege of drawing water through said aqueduct & from the natural pond sufficient for the use of said shop" (CLR 10:222).

On October 18, 1854, John Robinson leased "all the shop or factory near his dwelling house on Lot #48," the same "hitherto occupied by N.W. Bancroft for a machine shop with the land, waterpower, water wheel, shafting, gears, drums, belting, and all machinery to R.A. Wilson of Montpelier for five years for use as a shop or factory for $150 a year (Figure 14) (CLR 11:109). By 1856, the woolen manufactory of R.A. Wilson at "West Calais" was producing cassimeres, satinetts, and doeskins with flannels "manufactured to order" (*Green-Mountain Freeman* April 17, 1856). However, this appears to have been a short-lived enterprise. In October of 1856, the pay structure of the rent was changed from monthly installments to an annual lump sum (CLR 11:342). A mention in *Walton's Vermont Register* for 1857 is the last reference to R.A. Wilson's wool business in Calais that was uncovered during the preparation of this report (Walton 1857:66).

While John Robinson held onto his part of the property with the mechanics shop on it, George Tewksbury sold his approximately one-acre parcel with the sawmill on it to Nathan W. and Helen Bancroft on July 5, 1851 (CLR 10:222). They sold the same property to Abdial Kent on April 23, 1852 (CLR 10:313). Kent sold a small strip of land (20 rods of ground) abutting the west side of Dwight Marsh's place to Marsh for his garden on August 2, 1853 (CLR 11:70). Kent then sold the rest of the approximately one-acre sawmill lot back to John Robinson on March 18, 1859 (CLR 12:125). This reunited the machine shop and the sawmill properties (along with their respective water rights).

On November 5, 1866, John Robinson sold several parcels in Calais to his son, Edwin E. Robinson (1835-1915) (CLR 13:284; Find-a-Grave [on-line database] Gravestone/Memorial, Robinson Cemetery, Calais, Vermont;). These parcels included 60-acres on Lot #48 purchased from George Kent on March 6, 1848 (CLR 9:163); the lease to flow land at Curtis Pond acquired from George Kent on March 6, 1848 (CLR 10:413); the land on the north side of the highway

Figure 14. Detail of H.F. Walling's *Map of Washington County, Vermont* (1858).

between the stone dam and the highway bought from George Kent on March 6, 1848 (CLR 9:164); a little strip of land located west of the bridge on West County Road and south of the machine shop bought from Ira Kent on October 14, 1850 (CLR 10:124); the one acre with the sawmill on it bought from Abdial Kent on March 18, 1859 (CLR 12:125); the half acre with its water rights that Caleb Curtis sold to Dwight Marsh on December 15, 1828, and part of the sawmill lot purchased from John Hall on March 6, 1845 (CLR 8:311); and some land in the southeast corner of Lot #48 bought from Ira Kent on December 23 1847 (CLR 9:109).

On March 11, 1868, Edwin Robinson sold the 'Red Shop and mill' along with "the entire water privilege . . . in the upper or main dam and all the land, buildings, privileges & appurtenances thereto belonging on the stream above and below said dam" that John Robinson conveyed to me, to his brother, William C. Robinson (CLR 13:421; *Montpelier Evening Argus* March 1, 1915). William C. Robinson (1838-1875) started life out as a farmer (U.S. Census 1870*; Vermont Vital Records 1720-1908*). However, around 1870, he became a successful manufacturer of revolving horse rakes, which he sold through agents in Montpelier, Cabot, Plainfield, Craftsbury, Wolcott, Barre, Hardwick, East Montpelier, Waterbury, Middlesex, Stowe, Brookfield, Northfield, and Washington (*Argus and Patriot* July 6, 1871; *Vermont Watchman and State Journal* July 6, 1870). This type of horse drawn mechanical hay rake was introduced after the Civil War and each was able to "replace the labor of six men."[19]

The success probably led Robinson to hold more water in the lower dam. On January 25, 1870, William Robinson bought about 0.5 to 0.75 of an acre on the banks of the small pond located between the 'stone dam' [probably meaning the outlet dam] and William Robinson's shop from John V.R. Kent (CLR 13:577). This lot began two feet east of the southwest corner of the east abutment of the Worcester Road crossing; then ran S23.5W 4 rods [66 ft] and 6.75 ft (crossing the brook); then S52E 4 rods [66 ft] and four ft (to stone near pond); then S28W 7 rods [115.5 ft] and 5.25 ft (to a stone near the end of the dam to sd pond); then S2E 3 rods [49.5] and 3.25 ft; S27.5E to William Robinson's line near the brook (at a point parallel with the front side of the shop); then north in Robinsons line to the highway; then west to the beginning (CLR 13:577).[20]

In 1871, it was reported that W.C. Robinson's horse rakes, "stand high with farmers, as they deserve to, being really a superior article" (*Argus and Patriot* June 22, 1871). On November 5, 1872, William Robinson sold one acre including what had become known as the Red Shop and the entire water privilege in the upper and lower dams to D. Albert and Louise M. Marble (Figure 15)[21] (CLR 14:179).[22] On September 14, 1874, Marble sold the 1.25-acre (by estimation)

[19] The Iowa Agriculturist For the Farm (uni.edu).

[20] In 1871 William C. Robinson made an agreement with Oramel S. Dodge, another landowner on Curtis Pond to regulate the water level (CLR 14:120). To keep an acceptable level, in the spring of each year Robinson or Dodge could "hoist the waste gate" to being the water level 20 in below the "raceway" (possibly meaning the spillway) in exchange for additional flowage rights (CLR 14:120).

[21] The Beers map of 1873 suggests that the 'Horse Rake Factory' was on the south side of the brook, while D.A. Marble had a residence on the north side. This conflicts with the data from the land records. Further research into the lot south of the brook may resolve this discrepancy.

[22] In 1872, a newspaper noted that at Kents and Maple Corner there was "a lumber mill, horse-rake and last block manufactory, store, harness, and blacksmith's shops" (*Argus and Patriot* March 28, 1872).

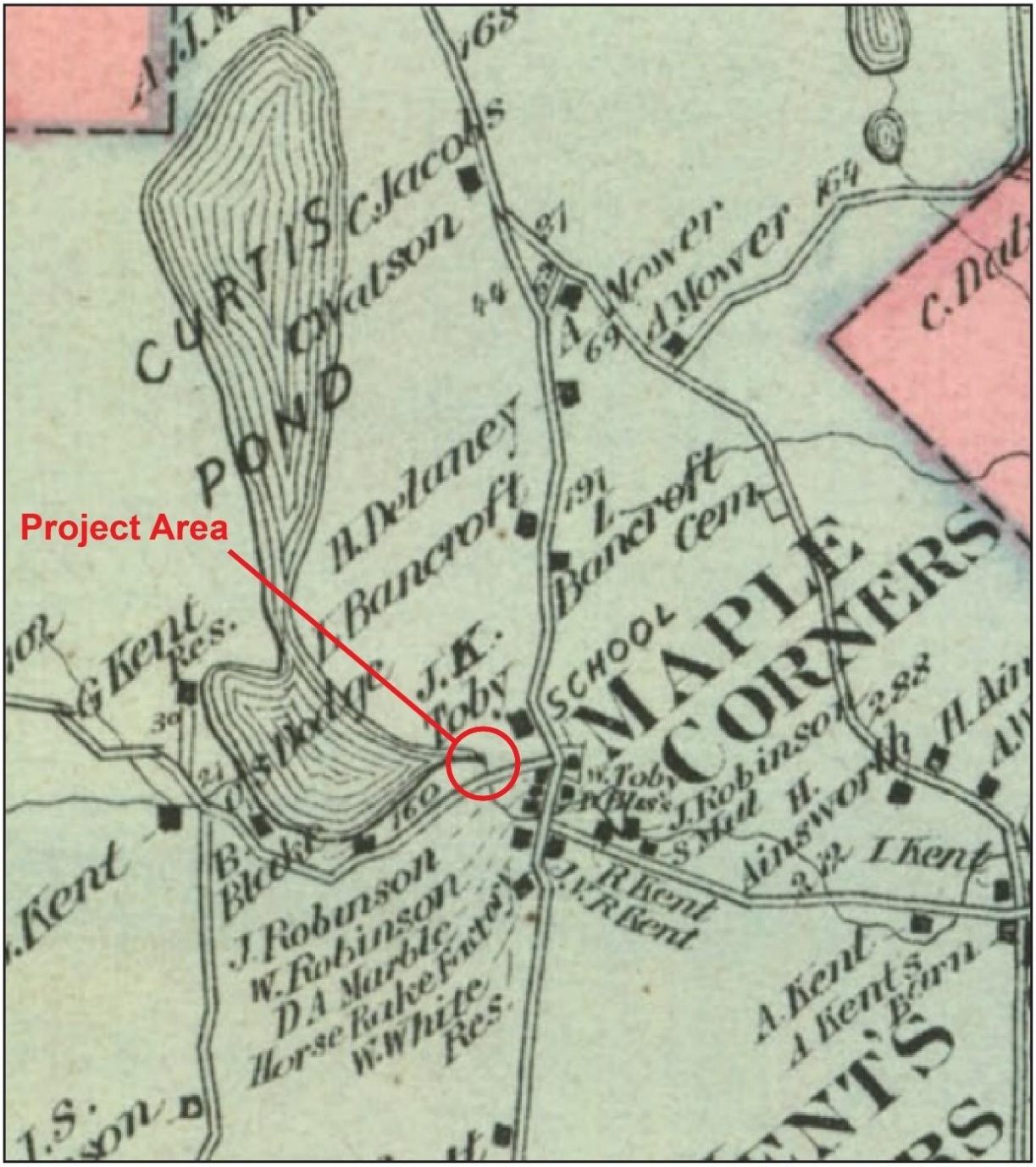

Figure 15. Detail of the map of Calais in F.W. Beers' *Atlas of Washington County, Vermont* (1873).

Red Shop property with all of its water privileges back to William Robinson (CLR 14:282).[23] On October 6, 1875, William C. Robinson, then described as "an enterprising businessman of Calais, drowned himself . . . in a cistern in his yard," which was located "a few feet from the door" in a fit of insanity believed to have been caused by severe illness (*Argus and Patriot* October 7, 1875; *Vermont Journal* October 16, 1875; *Vermont Vital Records 1720-1908*). His estate inventory listed his "shop & machinery therein with land & water privileges connected" valued at $1,500 (*Vermont Wills and Probate Records 1749-1999* ca. 1875 Estate of William C. Robinson of Calais, Vermont).

In the summer of 1876, it was noted,

> "Maple Corner at Calais has been selected by the people from the city this summer for a place to spend the hot weather, which is not a bad selection . . . It is proposed to open a boarding house at the Red Shop, clear out the mineral spring at that place and make a good thing of it" (*Argus and Patriot* August 2, 1876).

However, this plan was not carried out, as on August 2, 1876, William C. Robinson's estate sold "the machine shop and water privilege at Maple Corner" known as the Red Shop property to LeRoy A. Kent (CLR 14:411; *Vermont Christian Messenger* August 10, 1876). LeRoy Kent (1843-1911) was a native of Calais, the "youngest child of Ira and Polly (Curtiss) Kent" and a grandson of Col. Caleb Curtiss (*Montpelier Evening Argus* July 25, 1911). L.A. Kent was a prominent merchant and businessman in Calais and Hardwick (*Montpelier Evening Argus* July 25, 1911). On March 4, 1880, L.A. Kent sold the Red Shop and its water privileges to Olin Tillotson (CLR 15:55). Olin S. Tillotson (1854-1956), a mechanic and cooper, from East Elmore bought the shop with the intention of "making horse rakes and do general repairing" (Tillotson 1995:37-39; U.S. Census 1880; *Vermont Christian Messenger* February 12, 1880; *Vermont Vital Records 1720-1908*). However, on March 30, 1881, Tillotson sold the property back to L.A. Kent (CLR 17:210).

Over the next few decades, L.A. Kent improved the 'Red Shop' property at Maple Corner in a variety of ways. In 1882, he installed a new shingle machine (*Vermont Watchman and State Journal* July 5, 1882).[24] In November of 1883, it was reported, "L.A. Kent has just completed a very nice stone dam at Maple Corner"[25] (*Argus and Patriot* November 7, 1883). This last reference likely refers to the Maple Corner Dam closest to the Red Shop, and may have been repairs rather than the construction of a completely new dam. In 1887, Kent made "thorough repairs on the Red Shop at Maple Corner and expects to put in a grist mill" (*Rural Vermonter* October 21, 1887). In 1888 it was noted that, "the grist-mill recently put into the 'Red Shop' at Maple Corner by L.A. Kent is a boon to farmers in this vicinity, saving them miles of travel" (*Vermont Watchman and State Journal* January 4, 1888).[26] In 1894, L.A. Kent moved the

[23] In 1874, Robinson contracted with D.A. Marble, who was to make 50 horse rakes at his shop at Maple Corner, but this deal ended in litigation (*Vermont Watchman and State Journal* April 7, 1875).
[24] At this time, the day-to-day operations were handled by "G.I. Cady, who is doing most kinds of job work" (*Vermont Watchman and State Journal* July 5, 1882).
[25] This might refer to a reconstruction of the Maple Corner Dam?
[26] Around this time, ca. 1889, Oscar Ainsworth was running this grist mill (*Burlington Free Press* November 13, 1889). This newspaper article remarked that "L.A. Kent is entitled to the thanks of the community for the benefit of so good a grist mill at such a convenient point" (*Burlington Free Press* November 13, 1889).

"shingle machine from the Red Shop at Maple Corner to the saw-mill at Kent's Corner" (*Vermont Watchman and State Journal* May 9 1894). In October of 1895, L.A. Kent made "extensive repairs on the dam at the outlet of the main pond at Maple Corner" (*Vermont Watchman and State Journal* October 16, 1895). In 1895, he installed a 'gasoline engine' into his grist mill at Maple Corner (*Argus and Patriot* December 25, 1895). This, however, was "not intended to take the place of the water power, but to be used only when the water is insufficient to do the business" (*Argus and Patriot* December 25, 1895). From ca. 1897 to 1901, L.A. Kent's Red Shop / gristmill was operated by Walter Ward who also installed butter box machinery there in 1898[27] (*Daily Journal* December 5, 1899; *Hardwick Gazette* April 1, 1898; *Montpelier Evening Argus* January 22, 1901; *Vermont Watchman and State Journal* November 3, 1897, March 30, 1898). In 1902, Ernest Lamphere oversaw "the Red Shop, Maple Corner, making butter boxes, running the grist mill and he also keeps a stock of feed for sale" (*Vermont Watchman and State Journal* March 12, 1902).

On March 30, 1903, LeRoy Kent, then of Hardwick, sold the Red Shop property at Maple Corner to George Elgin Mann (CLR 17:210; see also CLR 14:472; *Hardwick Gazette* March 19, 1903; *Vermont Watchman and State Journal* April 2, 1903).[28] George Mann (1870-1953), moved with his parents, Albert and Elsie (Keith) Mann, from Plainfield to Calais when he was young (*Barre Daily Times* November 30, 1953; *Montpelier Evening Argus* December 1, 1953). In 1903, George E. Mann added "a repair and blacksmith shop" to the property (*Vermont Watchman and State Journal* June 18, 1903). That year he also repaired "his shop and mill" and reconfigured the power system "so as to have all the water and make the best use of it" (*Hardwick Gazette* October 22, 1903). In this work he repaired the dam, installed a new penstock and "got in a waterwheel and shafting" (*Vermont Watchman and State Journal* December 3, 1903). In 1906, Mann built an addition onto the Red Shop (Figures 16 and 17) (*Daily Journal* May 17, 1906).

On October 4, 1930, George and Florence Mann sold the Red Shop property to Howard Lackey[29] (CLR 21:205).[30] Howard Lackey sold the Red Shop property to the Adamant Cooperative on June 25, 1945 (CLR 23:146). On the night of October 12-13, 1947, the three story "130-year-old frame building," which was "first used as a sawmill, grist mill and a

[27] In 1897: "Walter Ward has moved into the Red Shop building at Maple Corner and is to run the grist-mill" (*Vermont Watchman and State Journal* November 3, 1897). In 1898: "Walter Ward is putting in butter box machinery at the old Red Shop at Maple Corner" (*Hardwick Gazette* April 1, 1898; *Vermont Watchman and State Journal* March 30, 1898). In 1899: "Walter Ward has moved his family back to his farm but is still running the grist mill" (*Daily Journal* December 5, 1899). In 1901: "the local grist mill has again opened its doors to the public with Walter Ward in charge" (*Montpelier Evening Argus* January 22, 1901).

[28] In 1903, George Elgin Mann also "bought the C.E. Robinson House at Maple Corner" (*Vermont Watchman and State Journal* May 7, 1903).

[29] After selling the Maple Corner General Store, blacksmith shop, and sawmill, Mann bought a 50-head dairy farm in Calais, "where he resided until the time of his retirement" (*Montpelier Evening Argus* December 1, 1953; *Palladium and News* April 21, 1937). On this farm, Mann also raised deer, which he shipped "to parks the country over," swan, fox, racoon, mink, goats, African and White China Geese, and Pekin ducks (*Palladium and News* April 21, 1937). He also, it was said, "once tried his hand at alligators" and there "was quite a stir about Cutis Pond the time one of his alligators got loose. The critter never did show up again and Mr. Mann believes he just naturally perished during the first cold spell" (*Deerfield Valley Times* April 23, 1937). For pets, he also had "a bear, a dog, and a cat" (*Palladium and News* April 21, 1937).

[30] See CLR 19:89 and 21:205 for descriptions of changes to the north line of the Red Store lot (establishing the current parcel boundary).

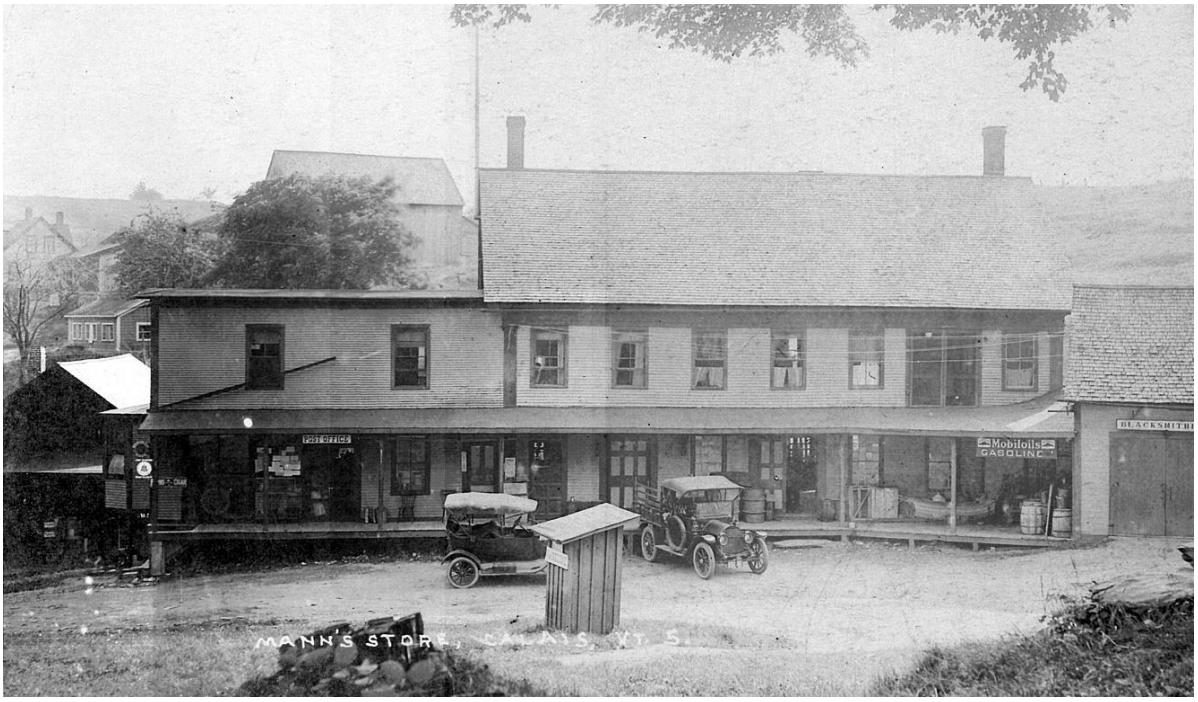

Figure 16. Postcard view of Mann's Store (1903-1930), in Calais, Vermont. The Red Shop is in the middle, the store and post office are to the left and the blacksmith shop is to the right. Further to the right, out of frame, there was a barn and shed structure that extended about 80 feet northwesterly along the stream.

Figure 17. Photograph of Mann's Store in 1913 labeled the "Maple Corner Daylight Department Store, Calais, Vt," (UVM Landscape Change Program LS00146_00).

blacksmith shop, but which then housed the co-op, the post office, and an apartment burned down in less than two hours after the "explosion of an oil burner" (*Rutland Daily Herald* October 14, 1947). Reportedly, the flying sparks set fire to the roof of a barn owned by G. Elgin Mann and the roof of Gregory Belcher place, located "up the hill from the store," and threatened the house of Harrison Fowler (*Barre Daily Times* October 13, 1947). The old building, it was said, was "eaten up like a piece of paper by the flames" (*Barre Daily Times* October 13, 1947). Later, in 1947, the Maple Corner Adamant Consumers Cooperative began building a new store on the same land and by December it was reported that, "the foundation is now completed for the new building which will replace the store destroyed by fire last month. The new store will be a cement block structure 24 ft by 18 ft in size with modern store layout" (*Vermont Farm Bureau News* December 1, 1947). A new post office was built at about the same time (*Times Argus* December 2, 1980). The store may have been enlarged later, possibly, ca. 1974-1979 (unconfirmed). The property was sold to the Maple Corner Store Inc., on June 14, 1973, and then to Marion Anderson on October 8, 1976 (CLR 28:136; CLR 27:301). It is now owned by Maple Corner Community Store Inc. (0.52 acres) (VCGI 2023).

The ownership of Curtis Pond Dam becomes unclear when the property was sold to Howard Lackey in 1930. The original creation of the water right at the Curtis Pond Dam was not a transfer of the land that the dam was located on but just a right to control the water. This problem was compounded by the fact that the right was linked to a non-contiguous property. The sale of the Red Shop property in 1930 to Howard Lackey does not specifically mention the water rights at the Curtis Pond Dam as either transferred or reserved (CLR 21:205). When Stephen Haybrook inspected the dam in the summer of 1950, the owner was, or was at least listed as, George E. Mann (Haybrook 1951). Furthermore, the ownership of the dam is not claimed in land transfers related to either of the abutting properties (to the east and west). Rather, in ca. 2001, it was reported that "a lawyers search turned up two deeds one from 1906 and one from 1925. . . one of the deeds specifically shows property lines that don't include the dam and the other contains language that states the abutting landowners don't have control of the dam" (*Burlington Free Press* June 1, 2001). According to the Calais Dams Task Force report (2005), "the chain of title led to ownership by Candace Beardsley & John E. Fothergill via Candace's Parker forebears [Arthur and Christie Parker see CLR 29:263 and 24:205]. Candace and Jeff have disclaimed title; subsequently Candace's father has also disclaimed title. The title now rests with the heirs of Elgin Mann or, effectively, in limbo" (Calais Dams Task Force 2005).

HISTORIC RESOURCE ASSESSMENT

Curtis Pond Dam

Architectural Description

The Curtis Pond Dam (Vt. State ID #40.09), located at Latitude 44.3765 NAD83; Longitude -72.4957 (NAD 83), is a stone masonry and earth fill gravity dam[31] built across a shallow, narrow, steep sided ravine just below the natural outlet of Curtis Pond (Figure 18) (Anonymous 2003; DuBois & King Inc., 1970; Dubois & King Inc., 2003). According to civil engineer, Morris J. Root PE. (2008), "the natural control for the Curtis Pond outlet is a ledge outcrop about 150 feet upstream of the stone dam" (Root 2008). Root stated that, "if the stone dam were removed, the water level in the pond would drop four feet" (Root 2008). Similarly, according to the engineering firm of DuBois & King, "prior to the construction of the dam, there were two smaller, natural ponds located further upstream. The dam raised the water level by approximately 7 feet, resulting in a combination of the two ponds into the current configuration of Curtis Pond."[32] In 1889, a visitor to the town viewed the inundated area behind the Curtis Pond Dam and noted that "this pond, . . . is not the pond proper, for upon observation it proved the outlet of the same, dammed for the purpose of furnishing motive power to run a shingle mill close by" (*Argus and Patriot* July 17, 1889). The same writer also observed that, "the main pond" was, in fact, two areas "connected by a narrow channel" (*Argus and Patriot* July 17, 1889).

The Curtis Pond Dam has an overall length of about 113 ft (34.44 m) and a maximum height of about 12 ft (3.66 m) (Dubois & King Inc., 2003; Tighe & Bond 1980a:1). The dam is composed of a large dry laid rubble stone wall that supports a mass or "upstream blanket"[33] of sand, gravel, and earth fill (Anonymous 2003; Barranco 1979; DuBois & King Inc., 1970; Dubois & King Inc., 2003; Tighe & Bond 1980a:1). The crest ranges from 16 to 21 ft (4.88 to 6.4 m) thick and is of slightly "uneven height and alignment" (Figure 19) (Dubois & King Inc., 2003; Tighe & Bond 1980a:1). According to Jeffery W. Tucker PE, test borings taken on site indicate "that the dam core primarily consists of sands with traces of weathered rock and stones" (Tucker 2003).[34] The approach channel is reported to have a 1:1.5 to 1:2 slope and a gravelly bottom (Tighe & Bond / SCI Consulting Engineers 1980b). Furthermore, "log posts" have been reported in the approach channel "sticking up from bottom" (Tighe & Bond / SCI Consulting Engineers 1980b). During the UVM CAP field visit, a local informant indicated that some of the exposed log posts may have been pulled up and removed in the late 20th century to make the area safer for swimmers. These observations indicate that the upstream part of the dam in the approach channel may have been built with an inclined, planked, gravel and sand filled crib work to help make it watertight. Part of the unevenness at the top of the structure could be in part

[31] Historically, this type of structure was described as 'a stone dam with earth filling.'
[32] Letter: DuBois & King Inc., to Robert J. Belisle dated September 25, 2003. DSP Document
[33] It is possible that the sand / gravel used in the dam may have been sourced near East Calais, which has been noted as being very sandy. For example, in 1893, one observer noted that, "towards East Calais, the soil was found to be very sandy and in a dry time one moves in a cloud of dust. It is sand everywhere. The village of East Calais is neat and tidy, despite the sand" (*Vermont Watchman and State Journal* November 8, 1893). Modern geologic surveys indicate that the area near East Calais has large lake sand deposits associated with Glacial Lake Winooski.
[34] The maximum probe depth was 40 inches (101.6 cm) (Root Engineering 2005:1).

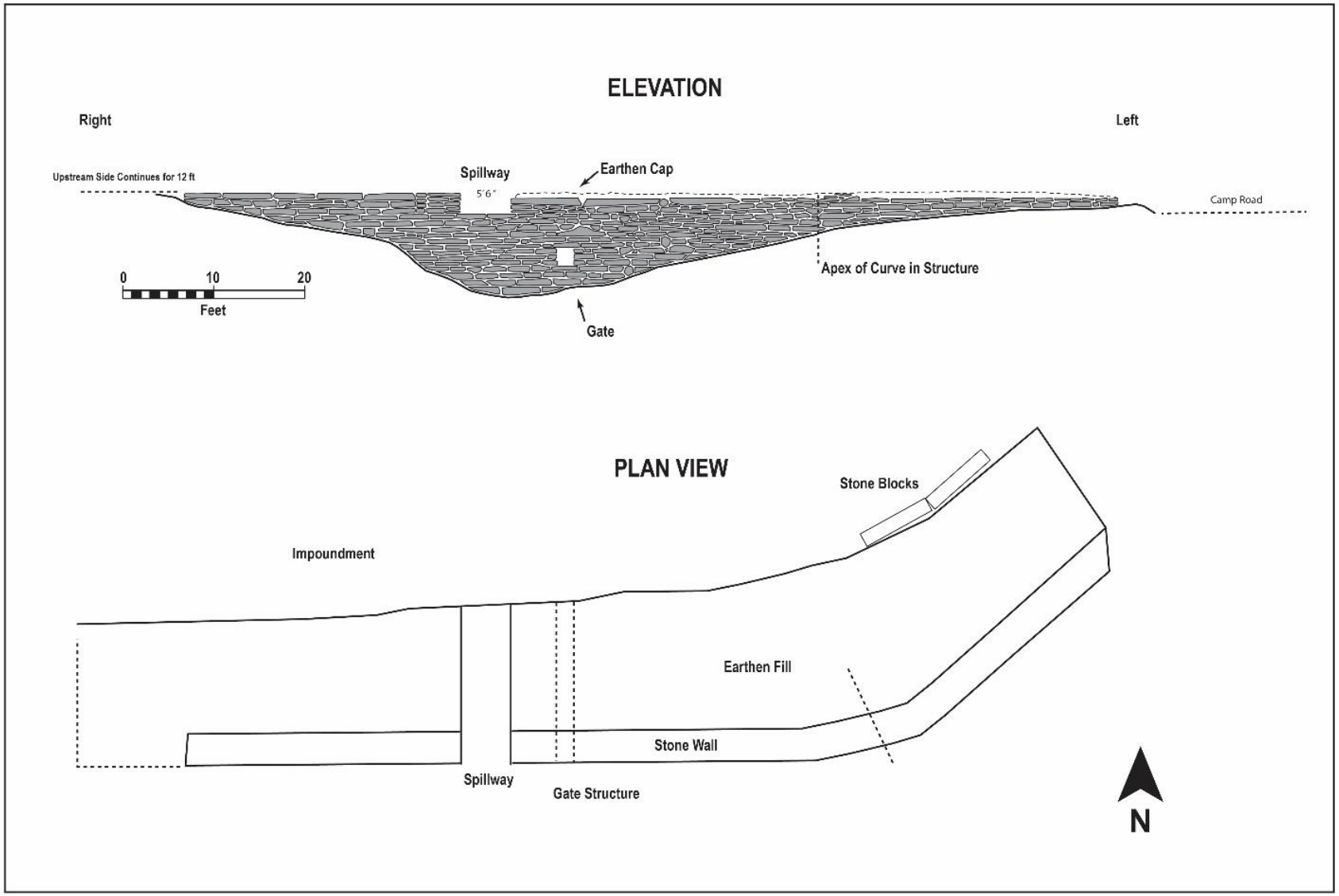

Figure 18. Elevation and plan view of the Curtis Pond Dam, Calais, Washington County, Vermont.

Figure 19. View looking west southwest along the crest of the Curtis Pond Dam.

because around 1951 the "the overflow notch was boarded up so that the pond level reached the top of the dam and the whole structure served as a spillway" (Haybrook 1951).

The stones used in the masonry wall were generally unfinished quarried stone (Figure 20). Many of the stones were medium sized, having a surface exposure on the face of the dam of about 1 to 4 ft in length and about 6 to 8 inches in height. However, a significant number of stones were larger, from 6 to 8 ft long and about 7 to 9 in high. Smaller stones (shims), about 6 x 3 in or less, were interspersed among the other stones throughout the structure. The cap stones on the ventral part of the structure tended to be of the larger size (Root Engineering 2005:1). Plug and feather quarry marks were noted on some of the stones (Figure 21) (Gage and Gage 2015). These marks are series of drilled holes, about ¾" in diameter and about 3" deep that were spaced about 6 to 7" apart (on center).[35] Although the masonry wall is largely of dry laid construction, there are areas of mortar pointing, most likely from attempts to counter the leaks and seepage through the structure (Tighe & Bond / SCI Consulting Engineers 1980b). A state dam inspector noted that between ca. 1975 and 1979 portions of the "spillway and other parts of the dam" had been "mortared up" (Barranco 1979). Finally, there is a discernable line of stones along the top edge of the upstream part of the structure, but it is not as substantial or as organized as the downstream wall (Figures 22 and 23). However, it has been noted that "the actual interior construction of the dam upstream of the stonewall is not known" (Anonymous 2003). While the dam appears to be composed of single masonry wall, "some concern has been expressed about the existence of an upstream wall . . . The lack of observable evidence does not preclude the fact that a stone wall may be uncovered in the course of excavating the upstream fill" (Root Engineering 2005:2).

[35] Some researchers have indicated that this quarrying method dates to after ca. 1818 (Gage and Gage 2015).

Figure 20. View east of downstream stone masonry wall of the Curtis Pond Dam showing unfinished quarried stone used in the construction.

Figure 21. Closeup view of downstream stone masonry wall of the Curtis Pond Dam showing several stones bearing plug and feather quarry marks.

Figure 22. View looking southwest of the upstream side of the Curtis Pond Dam.

Figure 23. View looking northwest of stone on the upstream side of the Curtis Pond Dam.

This dam does not have a built apron and appears to be founded on ledge (Tighe & Bond / SCI Consulting Engineers 1980b). About 12 ft 8 in of ledge is visible on the right-hand bank immediately downstream of the dam; beyond this ledge, going downstream, there is a short low rubble stone training wall about 19 ft 4 in long (Figure 24). The principal dam features include the primary spillway and one outlet structure. The primary spillway is roughly located near the center of the in-channel part of the dam. The primary spillway is 5.67 ft (1.73m) long[36] and runs 17 ft (5.18m) from the upstream side to the downstream side of the dam. The spillway's channel bottom is mainly composed of large flat stones "set in mortar or pointed" (Tighe & Bond / SCI Consulting Engineers 1980b). However, "a mortar or concrete slab has been placed over part of the spillway channel bottom" at the approach chute (Tighe & Bond 1980a:1; Tighe & Bond / SCI Consulting Engineers 1980b). Above the bottom, the sides of the spillway channel are lined with intermittently mortared stones (DuBois & King Inc., 1970). This stonework is carried upwards 25 in (0.64 m) on the right-hand side and 19 in (0.48 m) on the left-hand side (Figure 25). The spillway has a straight drop to the tailwater pool (DuBois & King Inc., 1970; Tighe & Bond 1980a:1). There is a single 2 by 2.2 ft dry-laid stone rubble "old outlet or drain" located "near the bottom of the dam to the left of the spillway" (Anonymous 2003; Barranco 1979; DuBois & King Inc., 1970; Tighe & Bond / SCI Consulting Engineers 1980b) (Figure 26). This structure extends at least 5 ft 8 in into dam (and possibly, in places, up to 8 ft from the downstream face) (DuBois & King Inc., 1970; Tighe & Bond 1980a:1; Tighe & Bond / SCI Consulting Engineers 1980b). However, the upstream end of the structure "appears to be covered with fill" and is "blocked off" (Barranco 1979; Tighe & Bond / SCI Consulting Engineers 1980b). The downstream stone wall has been carried from the in-channel area onto the sides of and slightly above the level the natural ravine to form the dam's wings. The left side of the structure curves back upstream while the right side is straight (Figure 27). Presently, there are no stoplogs or stoplog slots, forebay structures, control devices, or flashboards visible on this dam (Tighe & Bond 1980a:1; Tighe & Bond / SCI Consulting Engineers 1980b).

Disturbances

The area around the dam has been subject to various historic period ground disturbances. For example, Camp Road was opened in the early 20th century. This road presently runs within 4 – 5 ft (1.22 – 1.52 m) of the eastern end of the dam (Figure 28). The cut down grade of the road appears to have ledge outcroppings in places. In ca. 1951 "there was "a boathouse at the upstream face of the dam"; it was no longer extant by 1962 (Figures 29 – 31) (Haybrook 1951; Geotechnics and Resources 1962). In ca. 1966/1967, a camp/house was built on the property to the west of the dam (Figures 32 and 33). At the time, it was reported that, the area beside the dam has been "dug up & graded" another reference reads "in preparing the site for the proposed house construction, the owner has been doing some clearing and stripping of materials adjacent to the downstream face on the right-hand side of the dam"[37]. By 1970, "a small wooden foot bridge" had been placed over the top of the spillway and "the sandy beach area on top of the dam" was being "used by the owner [of the house] to cultivate flowers etc., to improve the appearance of the area" (DuBois & King Inc., 1970). A stone culvert that carries the Curtis Pond

[36] As early as the 1950s, the dam was identified as having a significant issue with its inadequate discharge capacity and minor problems with insufficient maintenance and surface disintegration (Haybrook 1953:37).

[37] See Anonymous note in file dated 6/6/66; also see Office Memorandum Donald W. Webster Curtis Pond Dam for the Record May 24, 1966; Documents on file: Vermont Department of Environmental Conservation Facilities Engineering Division, Dam Safety Program, Montpelier, Vermont.

Figure 24. View southwest of ledge and stone training wall along the right-hand bank immediately downstream of the Curtis Pond Dam.

Figure 25. View northwest of the primary spillway of the Curtis Pond Dam; note stone lining sidewall within spillway.

Figure 26. View north of the Curtis Pond Dam; note location of the low outlet structure, to the right of the primary spillway (approximate center of image).

Figure 27. View northwest of the Curtis Pond Dam showing the curve of its left-hand side.

Figure 28. View northeast of Camp Road from the east end of the Curtis Pond Dam.

Figure 29. View east of two submerged, large, quarried stone blocks on the left-hand upstream side of the Curtis Pond Dam that are possibly related to a mid-1900s boat house .

Figure 30. Photograph of "Mann's Boat House, Calais, VT." (Vermont Historical Society, Leahy Library, Barre, Vermont).

Figure 31. Detail of a 1942 aerial photograph showing the project location and surrounding area (Air Mapping Corp. 1942). The appearance of the dam in this photo suggests that the spillway may have been blocked off at this time, raising the impoundment and causing nearly the whole structure to become a primary spillway; it is also possible that the boathouse mentioned in the records appears in the image. Also note the "Red Shop" complex before the fire of 1947 and its position directly along the stream.

Figure 32. View west across crest of dam of buildings located at the west end of the Curtis Pond Dam.

Figure 33. View west of buildings located at the west end of the Curtis Pond Dam; crest od dam at left.

outlet stream under Worcester Road below the dam was replaced sometime after 1980 (Dubois & King, on file at Vermont Dam Safety Office) (Figure 34). As late as 2005, "there was an area near the left abutment being used as a sandbox. [and] it appeared as if some disturbance to the crest was occurring as a result" (Root Engineering 2005:1).

The dam has also been subject to damage over the years. Records indicate that in the late 1940s- early 1950s, the spillway was blocked up and the water was allowed to rise as to overflow a large portion of the dam's crest (see Figure 30). Furthermore, in the latter 20th century, the Curtis Pond Dam was overtopped at least twice, once in 1972 and once in 1984. In May of 1972, water was "pouring over and leaking through the dam," and there was real concern that it was "in danger of being swept away, but sandbags were hauled in, and the danger seemed to pass" (*Rutland Daily Herald* May 5. 1972; *Times Argus* barre May 5, 1972). The second event occurred on June 7, 1984 (*Burlington Free Pres*s June 8, 1984). It appears that after the flood of 1973, in ca. 1978, "5 truckloads of gravel" were "dumped on the upstream face of dam to try to seal leaks" (Barranco 1979). Additionally, "rocks have been filled in where originals have fallen out" (Root Engineering 2005:1). In ca. 2001, a 7 by 3 ft and 2 to 3 ft deep sinkhole opened on the left upstream side of spillway crest, exposing the "gravelly fill;" this was "filled with sandbags flat rocks" and/or "sod and soil" (Finucane, Vosburg, and Barranco 2001; *Hardwick Gazette* June 20, 2001; Root Engineering 2005:1). Finally, at present, the uppermost four feet in the center of the downstream masonry wall leans out (downstream) from plumb, "as much as 10 inches," likely due to frost action in the earth embankment behind the wall" (DuBois & King Inc., 1970; Root Engineering 2005:1; Tighe & Bond 1980a:1).

Figure 34. View southwest of metal culvert that carries the Curtis Pond outlet stream under Worcester Road south of the dam.

Maple Corner Dam

Architectural Description

The Maple Corner Dam (Vt. State ID #40.16) is located about 300 ft (91.4 m) downstream and about 20 ft below the level of the Curtis Pond Dam on the outlet brook of Curtis Pond (Figures 35 – 37). Its former impoundment area is very roughly estimated at 0.2-0.3 acre. Research indicates that this dam site was likely first developed for the ca. 1813 grist mill; it was operating for the sawmill built in the 1830s, and it later also powered the ca. 1845 machine shop. It may have been rebuilt in 1883, when it was reported that "L.A. Kent has just completed a very nice stone dam at Maple Corner" (*Argus and Patriot* November 7, 1883). This dam may have been further modified by George E. Mann in 1903. However, this dam fell out of use before 1930, when it was described as "the stone dam which used to hold water for mill purposes" (CLR 21:205). It was not included on the state dam survey of the early 1950s and may have already been breached at that time (not just simply abandoned as those were often included in the survey) (Haybrook 1952). It was once part of a water system that included the Curtis Pond Dam.

The Maple Corner Dam is a dry laid rubble stone masonry dam, founded mainly on ledge, at least the portion in the stream channel. The structure is about 90 (27.43 m) in length and was minimally 10.25 ft (3.12 m) high. However, it is noted that a significant amount of the crest is missing, and it is likely that this structure was more in the range of 12 to 14 ft (3.66 to 4.27 m) high originally (Figure 38). This dam has been heavily damaged by natural forces and, probably, by stone robbing. However, it appears to have been constructed of two parallel and almost interlocking stone masonry walls with the interior space filled with rock, sands, and earth (Figure 39). The in-channel portion of the crest was probably about 7 to 7 ft 6 in thick.

The dam was set perpendicularly across the brook (290 E of N). The stones used were mainly broad, flat, and relatively thin. The larger stones range up to 52 x 35 x 4 in / 40 by 3 ft by 5 in; no quarry marks were noticed. On the left-hand side of the structure there is an obvious construction joint that could represent the divide between the dam proper and a building foundation (possibly built at a different time) and/or is a relic of the possible dam reconstruction episode (Figure 40). The section from the joint to the east end of the structure is 13 ft 3 in. Also, it was noted that the lowest roughly 2 ft of the portion of the dam in the stream channel, where the dam structure integrated with the bedrock, the structure incorporated some thicker stones as well as some large, rounded boulders.

Included in the total length of this dam is, very roughly, a 26 to 41 ft long rubble stone wall and earthen berm wing on its right-hand side (Figure 41). Since about 15 ft near this section of the dam had also evidently been breached and overtopped, it is difficult to pinpoint an exact length. In this area, stones have been displaced up to 8 ft down the stream bank. However, the first section of this part of the dam is also composed of two infilled stone walls, each about 22 in (1.8 ft) thick. The crest is about 6 ft thick nearer the stream channel but tapers down to about 5 ft 3 in going west. The stones used in the wing are generally more rounded and range from about 4 x 6 x 3 in to about 18 x 19 x 8 in. The last 13 feet of this section of the dam (going west) consists of medium sized surface stones about 4 ft thick.

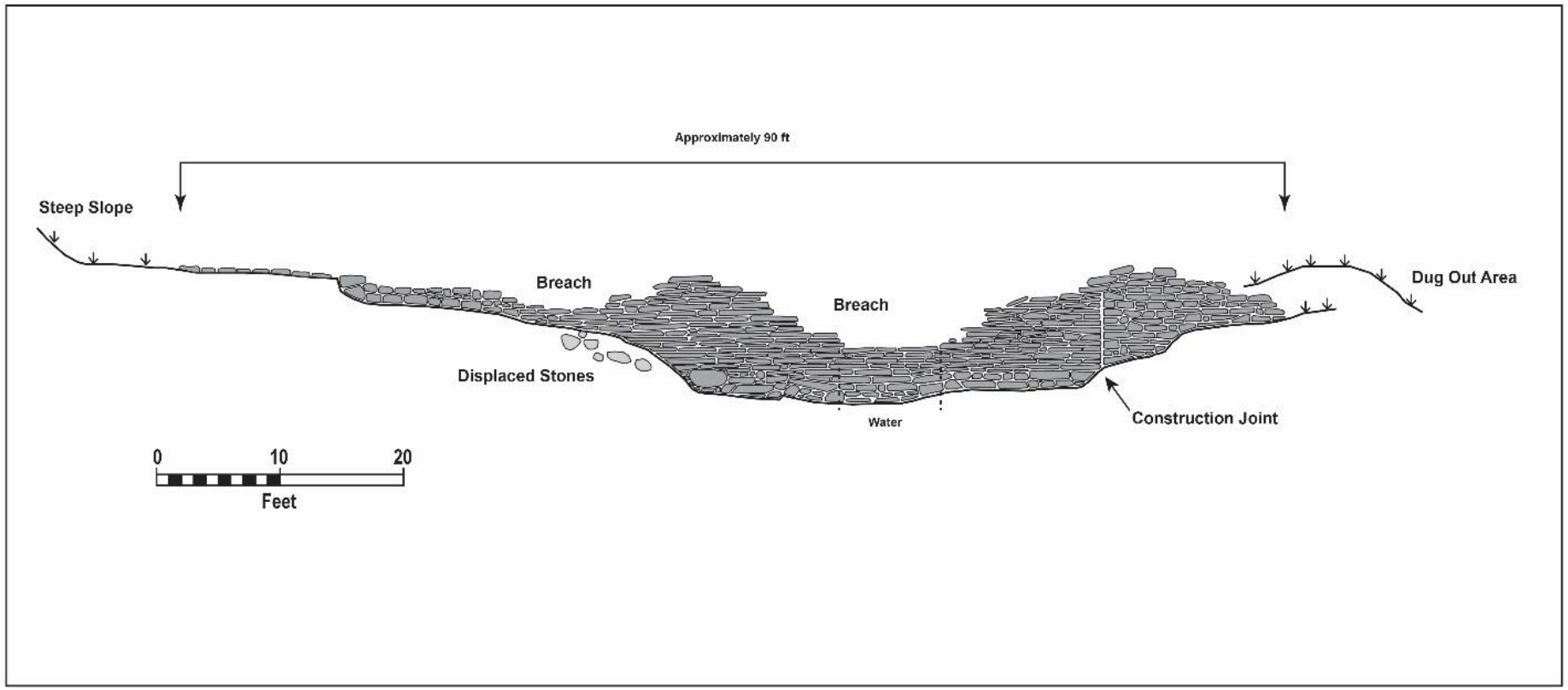

Figure 35. Downstream sketch elevation of the Maple Corner Dam.

Figure 36. View of the downstream elevation of the Maple Corner Dam, looking northwest.

Figure 37. View of the former impoundment area of the Maple Corner Dam looking north toward the Worcester Road culvert and the Curtis Pond Dam beyond.

Figure 38. View west across the crest of the Maple Corner Dam.

Figure 39. View of the upstream side of the Maple Corner Dam, looking southwest.

Figure 40. View north of the downstream side of the Maple Corner Dam showing a large construction joint, possibly marking the division between a foundation (right) and the dam (left).

Figure 41. View southwest of upstream side of the Maple Corner Dam; note stone wall and berm on right hand side of dam.

No additional structures were observed in the approach channel and no gate structures or evidence of headworks were observed on the dam. It is possible that such features were either lost in the larger breached section in the main channel, especially a low outlet, and/or the power system associated with the dam channeled water through the mill/shop by 'aqueducts,' or penstocks / flumes, and then discharged the water back into the stream through a tailrace structure now no longer evident on the ground surface.

Disturbances

Downstream of the on the left-hand bank there is a possible wall or modified ledge beginning about 30 ft from the dam and extending downstream for about another 30 ft, which may be related to the old 'Red Shop' complex of buildings, specifically the barn and shed, that were located along the stream and burned in 1947 (Figure 42). Additionally, about 13 ft to the east of the end of the dam on the left-hand bank is an area 34 by 41 ft that appears to have been modified / excavated out (Figure 43). This area is clearly visible on the LIDAR map (see Figure 2). Associated with this area are some discontinuous sections of stacked stone, which may represent portions of a foundation (Figure 44). A possible septic tank / mound may be located behind the modern store, and a new buried sewage line runs from the store and under the brook about 26 ft downstream from the dam. A metal pump bolted to a concrete machine base was also observed on the right-hand stream bank below the dam.

Figure 42. Possible wall or modified ledge on the east stream bank south of the Maple Corner Dam which may be related to the former 'Red Shop' complex of building.

Figure 43. View northeast of the dug-out area to the east of the Maple Corner Dam.

Figure 44. View northeast of the dug-out area to the east of the Maple Corner Dam; note stones.

Maple Corner Historic District

Curtis Pond Dam and its associated Maple Corner Dam are located within the Maple Corner Historic District (Survey No. 1205-27), which was added to the State Register of Historic Places on December 15, 1989 (see Figure 6) (VDHP 1980). The district is described as a settlement that grew up around a crossroads and the water power potential of Curtis Pond; resources within the district date from ca. 1820 – 1920. At the time of the State of Vermont Division for Historic Preservation's Historic Sites & Structures Survey (1980), the district contained 16 contributing buildings, plus the two dams that fall within the district boundaries. One of the contributing resources, a carriage barn (#2A), was converted into a house and moved ca. 2006 – 2008 (Google Earth Historical Imagery); although some alterations and updates have occurred, all other resources within the Maple Corner Historic District remain relatively unaltered (Figures 45 – 62). The house on the west bank at the Curtis Pond Dam is not included in the Maple Corner Historic District and review confirmed that it does not contribute to the district due to date of construction (ca. 1966) and it also does not appear individually eligible for the State or National Register of Historic Places.

National Register Recommendations and Eligibility

The Curtis Pond Dam and the Maple Corner Dam were once part of a water system that served several business enterprises from as early as 1813 through the early 20th century, including a saw mill, grist mill (an early one and later mill), wool processing machinery shop, woolen goods manufacturing shop, horse rake shop, shingle mill and butter box factory. Records clearly indicate that a dam was first built at the Curtis Pond outlet site between 1813 and 1817; the lower dam was also likely built around this time. Records suggest that the Curtis Pond Dam was primarily used for water control and storage, while the lower, Maple Corner Dam, was used for power generation. Historic documents also indicate that no mills were built on or at the Curtis Pond Dam. The materials used in the earliest Curtis Pond Dam construction are not stated; however, a stone dam is specifically mentioned as being located at the outlet of the pond by the early 1840s.[38] It is known that this structure underwent extensive repairs at least once in 1895. It is not known if the present dams include intact parts of the original structures, though it is likely that materials were reused throughout the history of dam construction and repair.

The Curtis Pond and Maple Corner dams and their early harnessing of water power for industry were vital to the development of the village of Calais from the early 19th century through the early 20th century, and the Curtis Pond Dam and its impoundment of Curtis Pond continues to provide important recreational activity to the village today. Both dams lie within the State Register-listed Maple Corner Historic District which retains its integrity of location, design, setting, materials, workmanship, feeling and association. The Maple Corner Historic District is recommended as a significant historic resource eligible for inclusion on the National Register of Historic Places. The district is recommended as eligible under Criterion A for its broad pattern of historic development of 19th century villages and industry in Vermont, and also under Criterion C because the buildings and structures that comprise the Maple Corner Historic District embody the distinctive characteristics of type, period, materials and a method of construction.

[38] In 1951, state dam inspector Stephen Haybrook, stated that the Curtis Pond Dam "is an old dam" (Haybrook 1951).

Figure 45. View north of #1 (ca. 1835 house) and #2 (ca. 1885 barn) within the Maple Corner Historic District.


Figure 46. View northeast of buildings #1 (ca. 1835 house) and #2 (ca. 1885 barn) within the Maple Corner Historic District.

Figure 47. View northeast of building #2A (ca. 1900 former carriage barn) within the Maple Corner Historic District; note this building was moved and renovated as a house c. 2006 – 2008.

Figure 48. View northeast of building #2A (ca. 1900 former carriage barn) (left) and 2B (n.d. sugarhouse) (right) within the Maple Corner Historic District.

Figure 49. View southeast of building #3 (ca. 1860 barn) within the Maple Corner Historic District.


Figure 50. View east of building #4 (ca. 1870 community hall) within the Maple Corner Historic District; this building was moved to this site in 1923 from Gospel Hollow.

Figure 51. View northeast of building #5 (ca. 1858 school) within the Maple Corner Historic District.

Figure 52. View northeast of building #6 (ca. 1885 house) within the Maple Corner Historic District.

Figure 53. View northeast of building #7 (ca. 1850 house) within the Maple Corner Historic District.

Figure 54. View east of buildings #8 (ca. 1885 house) and #8A (ca. 1880 shed) within the Maple Corner Historic District.

Figure 55. View east of building #8A (ca. 1880 shed) within the Maple Corner Historic District; this structure is built over the stream.

Figure 56. View north of building #9 (ca. 1820 house and attached barn) within the Maple Corner Historic District.

Figure 57. View southwest of buildings (left to right) #11A (ca. 1880 small barn), #11 (ca. 1850 barn) and #10 (non-contributing house) within the Maple Corner Historic District.

Figure 58. View west of buildings (left to right) #11 (ca. 1850 barn), #11B (ca. 1920 shed) and #10 (non-contributing house) within the Maple Corner Historic District.

Figure 59. View west of building #12 (ca. 1835 house) within the Maple Corner Historic District.

Figure 60. View north of building #14 (non-contributing Maple Corner Store) within the Maple Corner Historic District; this building replaced the "Red Shop" complex that burned in 1947.

Figure 61. View northwest of building #15 (ca. 1820 house) within the Maple Corner Historic District.

Figure 62. View northwest of building #16 (ca. 1848 house) within the Maple Corner Historic District.

ARCHAEOLOGICAL RESOURCES ASSESSMENT

Precontact Native American

The Vermont Division for Historic Preservation's Vermont Archaeological Inventory (VAI) indicates that there are no previously reported precontact Native American sites within a 0.62 mi (1 km) radius of the project area. However, one precontact Native American site, VT-WA-0003, is located just over three miles to the north-northeast of the project area in the town of Woodbury. This is a unique petroglyph site located near Cranberry Meadow Pond. A GIS version of the VDHP's *Environmental Predictive Model for Locating Archaeological Sites* indicates that the proposed project area may include up to four key sensitivity factors for precontact Native American archaeological sites including: Drainage Proximity Presence, Waterbody Proximity Presence, Stream-Waterbody Proximity Presence, and Level Terrain Figure 63). The VDHP's paper version of the predictive model is a checklist that scores an area's proximity to a set of environmental features important to precontact Native American communities. A score of 32 or greater indicates that an area may be archaeologically sensitive, while a score of 0 to 31 indicates that an area may be non-sensitive. This project area scores a 44 indicating that it could be sensitive for precontact Native American sites (Appendix III).

Sensitivity and Recommendations

As a result of the field visit, no locations within the APE for the Curtis Pond Dam Rehabilitation project were identified as potentially sensitive for precontact Native American sites. Though visual inspection and hand coring, it was determined that the land on either side of the dam, currently above the water level and within the proposed APE, was generally too sloped for precontact Native American sites. Furthermore, records indicate that the APE has been previously altered by historic period activity including dam construction and repair (including truckloads of material dumped), the construction of a mid-20th century house, outbuilding and leach field on the west bank of the stream, the construction and use of Camp Road on the east bank, and road / culvert construction on Worcester Road. Therefore, no significant precontact Native American archaeological resources are expected within the proposed project's APE and no further archaeological studies are recommended.

Historic

The Vermont Division for Historic Preservation's VAI also indicates that there are no previously reported historic archaeological sites within the APE of the proposed project area. Based on historic research, no potential significant historic archaeological sites, such as intact foundation remains associated with former mill buildings or structures, were expected within the APE, and none were identified during the field visit.

Sensitivity and Recommendations

As a result of the field visit, no locations within the APE for the Curtis Pond Dam Rehabilitation project were identified as potentially sensitive for significant historic era sites. The sole historic building that was once located at the dam within the APE, an early to mid-19th century boat house, was situated primarily within the impoundment against the upstream side of the Curtis Pond Dam. Two submerged stone blocks identified within the water along the east

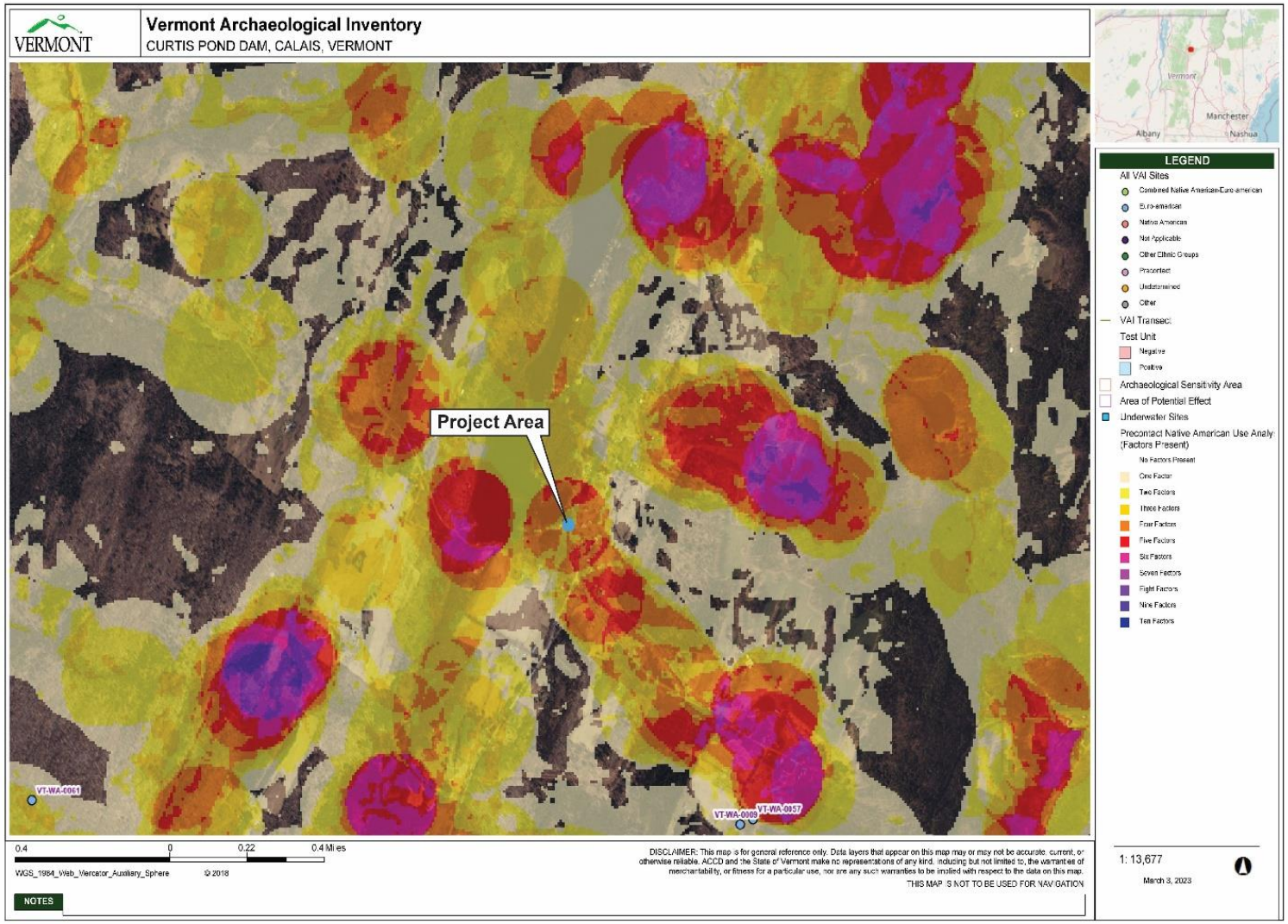

Figure 63. GIS based Archeological Sensitivity Map for the Curtis Pond Dam Rehabilitation Project in Calais, Washington County, Vermont (ORC).

stream bank are possibly associated with the boat house, but no other remains area expected. If cribwork associated with the dam was once present on its upstream side, it has likely been largely disturbed by reported removal in the late 20th century. Therefore, no significant historic era archaeological resources are expected within the proposed project's APE and no further archaeological studies are recommended.

SUMMARY AND RECOMMENDATIONS

The Curtis Pond Association proposes the rehabilitation of the Curtis Pond Dam which is located on a tributary to Pekin Brook near the outlet of Curtis Pond, on the north side of Worcester Road and west side of Camp Road, in Calais, Washington County, Vermont. Proposed project work, which primarily includes the construction of a concrete dam along the upstream side of the existing Curtis Pond Dam and the widening of the spillway from 5 ft to 10 ft, will stabilize the Curtis Pond Dam and ensure the continued impoundment of Curtis Pond and its use for recreational activities. Kate Kenny and Catherine Quinn of the University of Vermont Consulting Archaeology Program conducted an Historic Resource Review and Archaeological Resources Assessment of the proposed project to assist with satisfying permit requirements, including Section 106 of the National Historic Preservation Act. Extensive background research was conducted and field inspection of the project area was conducted by Kenny and Quinn on April 20, 2023.

Historic Resource Recommendations

Based on the recommendation that the Curtis Pond Dam is a significant historic resource eligible for inclusion in the National Register of Historic Places as a contributing component to the Maple Corner Historic District, this assessment recommends that the rehabilitation of the dam will result in an Adverse Effect on historic resources. Specifically, the construction of a concrete wall behind the existing historic dam will be visible within the viewshed, and the widening of the spillway from 5 ft to 10 ft along with the construction of a new concrete spillway will significantly alter the appearance of the Curtis Pond Dam.

DuBois & King, Inc. have considered alternatives to the widening of the spillway but have concluded that in order to meet Vermont Dam Safety Section mandates the best alternative is to widen the spillway to 10 ft and install a concrete spillway (Personal Communication, Jeffery Tucker, DuBois & King). General alternatives considered included: 1) A new drop inlet style spillway that could convey base flow through the new low level outlet. This alternative was ruled out because the day-to-day discharge over the existing spillway would be eliminated (i.e.: dried up) as water would flow through the pipe under the dam and not over the spillway as current. It was concluded elimination of the waterfall for much of the year, particularly summer months, would have a significant negative impact. Also, the presence of the state-threatened Lessor Bur Reed could be impacted due to the construction of a new concrete structure within the pond upstream of the dam; and 2) Keeping the spillway as is and raising the concrete wall higher to contain the 50-year design flood (as mandated by the VT Dam Safety Section). This alternative has the negative impacts of a higher concrete wall resulting in increased flooding to properties and habitat around the periphery of the pond, and the existing spillway is not brought up to current design standards. The structural integrity and stability of the existing spillway would not

meet current dam safety standards and replacing the existing stone spillway with a new reinforced concrete spillway is a requirement of the VT Dam Safety Section.

To assist with mitigation of the Adverse Effect, the HRR therefore recommends the following:

1. Complete a Division for Historic Preservation Historic Resources Documentation Package (HRDP). This HRR contains the majority of the components of the documentation package; additional photographs, including photographs taken during project work, keyed to plans/maps, along with a photograph index would complete the documentation package. Construction photographs should record any unknown details about the dam that are exposed, such as the possible existence of an upstream wall, details about the low gate on the upstream side, and any other potential features that may be encountered, including crib work remains.
2. Line the training walls of the concrete spillway with stone salvaged from project work on the dam and/or with matching stone (if there is not enough salvaged stone).
3. Line the new concrete dam (at least the visible portions) with stone similar to the historic structure. The new dam will be visible above the waterline and the concrete structure will not be compatible with the Maple Corner Historic District. Lining it with stone will lessen the visual impact.
4. Install an informational sign at the dam summarizing its history and the project work that took place. Since stone lining is recommended on the new concrete dam, information on the sign should clearly identify historic versus new components.

Archaeological Resource Recommendations

No significant precontact Native American or Historic era archaeological resources are expected within the proposed project's APE and no additional archaeological studies are recommended within the APE for the proposed Curtis Pond Rehabilitation project as currently planned. Staging and sediment disposal areas are currently not identified, so will require Archaeological Resources Assessment prior to project work.

The Vermont State Historic Preservation Office (SHPO) will have the opportunity to review and comment on all recommendations presented in this review prior to project work. Any substantial changes to the current project plans would require additional review.

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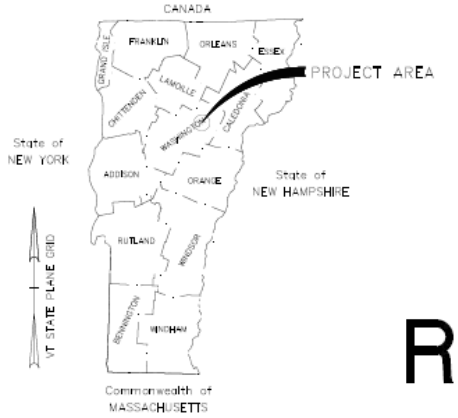
APPENDIX I: PLAN SHEETS

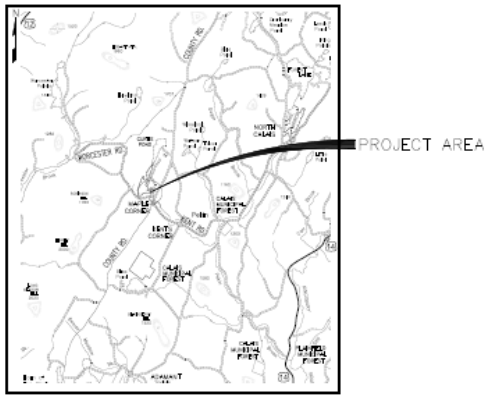


LOCATION MAP
NOT TO SCALE

TOWN OF CALAIS, VERMONT

CURTIS POND DAM REHABILITATION PROJECT

FINAL DESIGN (100%) – FOR APPROVAL
MAY 16, 2023



LOCATION PLAN
SCALE: 1" = 1 MILE

DuBois & King inc.
engineering
planning
management
development

LIST OF DRAWINGS

TITLE	SHEET NO.
TITLE SHEET	C1
GENERAL NOTES	C2
EXISTING CONDITIONS AND BASELINE LAYOUT	C3
EXISTING CONDITIONS	C4
NEW CONDITIONS SITE PLAN	C5
NEW CONDITIONS ELEVATION VIEW	C6
NEW CONCRETE WALL CUTOFF TYPICAL SECTIONS I	C7
NEW CONCRETE WALL CUTOFF TYPICAL SECTIONS II	C8
BASELINE TYPICAL SECTIONS	C9
CONCRETE DETAILS	C10
CIVIL DETAILS AND EPSC DETAILS	C11
WETLAND IMPACT PLAN	C12
LESSER BUR-REED MITIGATION PLAN	C13

C1

FINAL DESIGN
NOT FOR CONSTRUCTION

GENERAL PROJECT NOTES:

1. THE PURPOSE OF THIS PROJECT IS TO REHABILITATE COMPONENTS OF THE CURTIS POND DAM AND INSTALL A NEW CONCRETE CUTOFF WALL ALONG THE UPSTREAM FACE OF THE DAM.
2. THE PROJECT OWNER IS THE TOWN OF CALAIS, VERMONT. AN OWNER'S REPRESENTATIVE WILL BE APPOINTED PRIOR TO CONSTRUCTION TO REPRESENT THE OWNER DURING THE PROJECT.
3. TOPOGRAPHY SHOWN ON THESE PLANS IS BASED ON FIELD SURVEY COMPLETED BY THE VERMONT DEPT. OF ENVIRONMENTAL CONSERVATION, FALCONER ENGINEERING DIVISION IN MAY 2003.
4. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. IN CASE OF CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWING AND/OR SPECIFICATION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
5. THE CONTRACTOR SHALL BE FAMILIAR WITH THE EXISTING CONDITIONS OF THE SITE AND SURROUNDINGS PRIOR TO BIDDING ON OR PERFORMING THE WORK.
6. THE CONTRACTOR SHALL BID AND PERFORM THE WORK FROM A COMPLETE SET OF PLANS AND SPECIFICATION, AND SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY CONFLICTS WITHIN THE CONSTRUCTION DOCUMENTS.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY DUBOIS & KING DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES. IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR ENGINEER HERE ON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS, WHICH MAY BE REQUIRED BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
8. THE CONTRACTOR SHALL BID AND PERFORM THE WORK IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL CODES, SPECIFICATIONS, REGULATIONS, STANDARDS, AND DETAILS.
9. SUBMIT SHOP DRAWINGS AND PRODUCT LITERATURE (MANUFACTURER'S LITERATURE, CUT SHEETS, APPLICATION PROCEDURES, ETC.) FOR ALL PRODUCTS FOR USE IN THE PROJECT, FOR APPROVAL BY THE ENGINEER.
10. A SET OF CONSTRUCTION PLANS AND TECHNICAL SPECIFICATIONS SHALL BE ON SITE AND IN GOOD CONDITION AT ALL TIMES DURING CONSTRUCTION ACTIVITIES.
11. NO DEVIATION OR DEPARTURE FROM THE DESIGN INTENT PRESENTED IN THE CONTRACT DOCUMENTS (PLANS AND SPECIFICATIONS) WILL BE ALLOWED UNLESS AUTHORIZED BY DUBOIS & KING, INC. (D&K) AND APPROVED BY THE STATE DAM SAFETY SECTION.

CONSTRUCTION NOTES

1. LOCATE STAGING AREAS AWAY FROM SENSITIVE AREAS INCLUDING WETLANDS AND STREAM BUFFERS.
2. CONTRACTOR SHALL LAYOUT THE CONSTRUCTION BASELINES AND STAKE OUT LIMITS OF PROPOSED WORK PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY SHORING, WATER DIVERSION, AND DEWATERING REQUIREMENTS NEEDED FOR THE PROJECT.
4. ALL WORK SHALL TAKE PLACE IN THE DRY. THE CONTRACTOR SHALL DEWATER ALL WORK AREAS PRIOR TO DISTURBANCE. WATER REMOVED FROM WORK AREAS SHALL BE DISCHARGED TO A FILTER BAG LOCATED GREATER THAN 100 FEET FROM ANY FLOWING NON-TURBID WATER.
5. SHOULD A FILTER BAG BE USED TO CONTROL SEDIMENT, A REPLACEMENT FILTER BAG SHALL BE ONSITE AT ALL TIMES. THE FILTER BAGS SHALL BE ENGINEER PROVIDED, ONE TIME ONLY.
6. ANY EXCESS MATERIAL SHALL BE DISPOSED OF OFFSITE AT NO ADDITIONAL COST UNLESS OTHERWISE APPROVED IN ADVANCE BY THE VT DEC.

MEETINGS, SUBMITTALS, AND REQUIRED INSPECTIONS

1. THE CONTRACTOR SHALL PARTICIPATE IN AN ON-SITE PRE-CONSTRUCTION CONFERENCE.
2. THE CONTRACTOR SHALL SUBMIT A CONTROL OF WATER PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION, AT A MINIMUM THE CONTROL OF WATER PLAN SHALL CONFORM TO SPECIFICATION SECTION 2401—DEWATERING AND FOLLOW THE GUIDANCE IN THE CONTROL OF WATER NOTES ON THIS SHEET.
3. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER MATERIAL CUTS FOR ALL MATERIALS AND ITEMS USED ON THE PROJECT PER THE SPECIFICATIONS SECTION 1305—SUBMITTALS.
4. THE CONTRACTOR SHALL PROVIDE THE ENGINEER 48-HOUR PRIOR NOTICE FOR ANY PLACEMENT OF CONCRETE AND EMBANKMENT FILL.
5. THE ENGINEER WILL BE REQUIRED TO OBSERVE AND APPROVE CRITICAL ASPECTS OF THE CONSTRUCTION PRIOR TO EXECUTION. THESE CRITICAL ITEMS WILL BE IDENTIFIED AT THE PRE-CONSTRUCTION CONFERENCE. FAILURE OF THE CONTRACTOR TO PROVIDE THE ENGINEER WITH A MINIMUM OF 48-HOUR NOTICE MAY RESULT IN DELAYS OF THE PROJECT.

PERMITS

1. THE FOLLOWING PERMITS ARE BEING SECURED FOR THIS PROJECT:
   a. PERMIT TO CONSTRUCT OR ENTER A DAM – TYPE C.
2. THE CONTRACTOR IS RESPONSIBLE FOR BEING FAMILIAR WITH THE REQUIREMENTS OF THE PERMITS PRIOR TO BIDDING, AND FOR COMPLYING WITH THEM DURING CONSTRUCTION.
3. A COPY OF THE PERMITS SHALL BE ONSITE DURING ALL CONSTRUCTION ACTIVITIES.

UTILITIES

1. THE LOCATION OF UTILITIES SHOWN ON THESE PLANS, IF ANY, IS APPROXIMATE, AND DUBOIS & KING MAKES NO CLAIM TO ITS ACCURACY OR COMPLETENESS.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
3. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING AND DETERMINING ALL UTILITIES (ABOVE AND BELOW GROUND) WITHIN THE PROJECT LIMITS, AND TO TAKE THE NECESSARY PRECAUTIONS TO PROTECT UTILITIES DURING CONSTRUCTION. CONTACT DIG-SAFE AT 1-800-DIG-SAFE (WWW.DIGSAFE.COM).
4. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND PROCEEDING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BE DETERMINED AND AGREED UPON BEFORE PROCEEDING WITH THE WORK.

RESTORATION OF SURFACES

1. THE CONTRACTOR MUST APPLY A COURSE OF CRUSHED GRAVEL TO THE CONSTRUCTION ACCESS DRIVES AND STAGING AREAS AS DIRECTED BY THE ENGINEER TO MAINTAIN ACCESS AND STAGING OF MATERIAL UPON EXIT. AT THE COMPLETION OF WORK, THE CONTRACTOR MUST REMOVE THE GRAVEL AND RE-GRADE, SEED, AND MULCH THE DISTURBED AREA.
2. AT THE COMPLETION OF WORK, THE CONTRACTOR MUST RESTORE ACCESS ROADS AND STAGING AREAS TO PRE-CONSTRUCTION CONDITION. RESTORATION SHALL INCLUDE PLACEMENT OF GRAVEL ON EXISTING DRIVES AND / OR APPLICATION OF TOPSOIL, GRASS SEED, FERTILIZER, AND MULCH TO AFFECTED GRASSED AREAS.

PROPOSED CONSTRUCTION SEQUENCE

1. PREPARE STAGING AREA AND STABILIZE ACCESS TO THE DAM SITE.
2. INSTALL SILT FENCE AND EROSION CONTROL MEASURES AT THE DAM SITE.
3. ESTABLISH CONTROL OF WATER MEASURES AND BEGIN LOWERING WATER LEVEL IN CURTIS POND DAM. DRAWDOWN SHALL NOT PROGRESS FASTER THAN 6 INCHES PER ANY 24 HOUR PERIOD.
4. CLEAR TREES AND SHRUBS FROM THE DAM EMBANKMENT AND WITHIN THE IDENTIFIED WORK AREA.
5. CONSTRUCT THE COFFERDAM ON THESE PLANS.
6. PLACE TOP SOIL, SEED AND MULCH. SEE SPECIFICATIONS SECTION 02483.
7. CONDUCT FINAL INSPECTION WITH VT DEC AND ENGINEER.
8. INITIATE REFILLING OF THE WORK AREA. WHEN THE WORK AREA IS FILLED, REMOVE THE TEMPORARY COFFERDAM.
9. BEGIN RESTORING CURTIS POND TO THE DESIGN WATER LEVEL BY PARTIALLY CLOSING THE LOW LEVEL VALVE.

MATERIAL NOTES

1. THE CONTRACTOR SHALL HAVE A SET OF THE TECHNICAL SPECIFICATION ON SITE DURING ALL CONSTRUCTION ACTIVITIES.
2. ALL MATERIALS USED ON THIS PROJECT SHALL CONFORM TO THE SPECIFICATIONS. FOR ANY DISCREPANCY BETWEEN THE PLANS AND MATERIAL SPECIFICATIONS, THE TECHNICAL SPECIFICATIONS SHALL TAKE PRECEDENCE (NEW NOTES CONTAINED ON THESE PLANS).
3. ALL EARTHEN MATERIAL USED ON SITE SHALL BE PLACE AND COMPACTED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS. NEW EARTHEN MATERIAL SHALL BE CONSISTENT WITH ON-SITE MATERIAL. THE CONTRACTOR SHALL RECEIVE PRIOR APPROVAL FROM THE ENGINEER BEFORE IMPORTING NEW EARTHEN MATERIAL TO THE SITE.

CONCRETE NOTES

1. NO BACKFILL SHALL BE PLACED AGAINST ANY NEWLY PLACED CONCRETE UNTIL THE ENGINEER HAS APPROVED THE WORK AND SHALL NOT OCCUR PRIOR TO SEVEN (7) DAYS AFTER BEING POURED OR ACHIEVES 85% OF THE SPECIFIED COMPRESSIVE STRENGTH HAS BEEN REACHED.
2. THE CONTRACTOR, AT THE EXPENSE OF THE CONTRACTOR, SHALL REPAIR ANY DAMAGE TO NEWLY PLACED CONCRETE.
3. WHERE THE CONCRETE IS TO BE PLACED BY PUMPING, THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF ONE WEEK PRIOR TO PLACEMENT FOR REVIEW OF PROCEDURES TO BE USED. THE CONTRACTOR SHALL OBTAIN AND REVIEW ACI 304 "PLACING CONCRETE BY PUMPING METHODS". PROVISION FOR BACK-UP PUMPING EQUIPMENT SHALL BE MADE BY THE CONTRACTOR.
4. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1—1/2 INCH BY 1—1/2 INCH, UNLESS OTHERWISE NOTED.
5. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
6. THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF 24 HOURS IN ADVANCE OF ALL CONCRETE OPERATIONS.
7. FOOTINGS SHALL BE PLACED ON CLEAN, SOUND BEDROCK. THE CONTRACTOR SHALL REMOVE ALL DELETERIOUS MATERIAL, DUST AND PARTICLES FROM THE BEDROCK SURFACE PRIOR TO CASTING CONCRETE.
8. IF THE EXISTING TOP OF BEDROCK IS LOCATED ABOVE THE BOTTOM OF FOOTING TWO (2) FEET OR LESS, THE BEDROCK MAY BE EXCAVATED DOWN TO THE INDICATED BOTTOM OF FOOTING OR THE BOTTOM OF FOOTING ELEVATION MAY BE ADJUSTED DOWN TO THE TOP OF BEDROCK. ALL OVER BREAKAGE BELOW THE BOTTOM OF FOOTING SHALL BE REPLACED WITH CONCRETE, CLASS C.
9. IF THE EXISTING TOP OF BEDROCK IS ABOVE THE BOTTOM OF FOOTING BY MORE THAN TWO (2) FEET, THE FOOTING ELEVATION MAY BE ADJUSTED ACCORDINGLY. BEFORE ANY ADJUSTMENT IS MADE IN THE FOOTING ELEVATION, THE ENGINEER SHALL BE NOTIFIED FOR APPROVAL OF THE ADJUSTMENT.
10. IF THE TOP OF EXISTING BEDROCK IS TWO (2) FEET OR LESS BELOW THE BOTTOM OF FOOTING ELEVATION, THE FOOTING SHALL BE PLACED TO THE TOP OF COMPETENT BEDROCK AS SHOWN USING CONCRETE, CLASS C.
11. IF THE TOP OF EXISTING BEDROCK IS LOCATED MORE THAN TWO (2) FEET BELOW THE BOTTOM OF THE FOOTING, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND PREPARE AND SUBMIT A PROFILE OF THE BEDROCK SURFACE IN THE VICINITY OF THE FOOTING. THE CONTRACTOR SHALL NOT PERFORM ANY FURTHER WORK ON THE SUBSTRUCTURE UNTIL NOTIFIED IN WRITING BY THE ENGINEER.
12. ALL CONCRETE WORK SHALL COMPLY WITH THE LATEST ACI SPECIFICATIONS (ACI—350).
13. ALL CAST-IN-PLACE CONCRETE, INCLUDING THE CUT-OFF WALL, SPILLWAY TRAINING WALLS, AND SPILLWAY SLAB SHALL BE CLASS A (4,000 PSI) CAST-IN-PLACE CONCRETE. SEE SPECIFICATIONS SECTION 03300.
14. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
15. CONTRACTOR SHALL SUBMIT REINFORCING SHOP DRAWINGS FOR REVIEW BY THE ENGINEER, PRIOR TO PURCHASING MATERIALS.
16. HOT WEATHER CONCRETE PLACEMENT SHALL BE IN ACCORDANCE WITH ACI 305R.
17. COLD WEATHER CONCRETE PLACEMENT SHALL BE IN ACCORDANCE WITH ACI 306R.
17. PVC WATER STOPS SHALL BE GREENSTREAK, DUNNSEAL TYPE, STYLE NO. 705, 724, OR APPROVED EQUAL.
18. HYDROPHILIC WATER STOPS SHALL BE VOLCLAY, WATERSTOP—RX, TYPE RX-101, GREENSTREAK NO. 594 SWELL STOP, OR APPROVED EQUAL.
19. PROVIDE CONSTRUCTION JOINTS AT ALL LOCATIONS OF DISCONTINUOUS CONCRETE PLACEMENT.

EROSION CONTROL NOTES

1. TEMPORARY EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) MEASURES ARE REQUIRED THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD.
2. ALL EPSC ACTIVITIES SHALL CONFORM TO CURRENT VT DEC LOW RISK SITE HANDBOOK FOR EROSION PREVENTION AND SEDIMENT CONTROL.
3. ALL EARTHMOVING AND GRADING PERFORMED BETWEEN OCTOBER 15 AND APRIL 15 SHALL CONFORM TO APPROVED WINTER CONSTRUCTION PRACTICES, AS PRESENTED IN THE VT DEC LOW RISK SITE HANDBOOK FOR EROSION PREVENTION AND SEDIMENT CONTROL.
4. THE CONTRACTOR SHALL BE AWARE OF ALL DISCHARGE INTO THE OUTLET CHANNEL. SHOULD THERE BE VISUALLY DISCOLORED SEDIMENT-LADEN WATER ENTERING THE OUTLET CHANNEL THE CONTRACTOR SHALL DETERMINE THE SOURCE OF THE DISCOLORED DISCHARGE. IF THE CAUSE OF THE DISCOLORED DISCHARGE IS FROM CONSTRUCTION ACTIVITIES, ALL OPERATIONS MUST CEASE UNTIL THE DISCHARGE IS NO LONGER DISCOLORED. ALTERNATIVE MEANS OF CONSTRUCTION SHALL BE ADMINISTERED AS TO AVOID ADDITIONAL RELEASE OF DISCOLORED DISCHARGE INTO THE OUTLET CHANNEL.
5. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL INSTALL SILT FENCING AND EROSION CONTROL DEVICES AS SHOWN ON THESE PLANS. EROSION CONTROLS SHALL BE LOGICALLY PHASED WITH CONSTRUCTION ACTIVITIES AND AS DIRECTED BY THE ENGINEER OR OWNERS REPRESENTATIVE.
6. THE EROSION CONTROLS SHALL BE INSPECTED DAILY PRIOR TO INITIATION OF THE DAY'S ACTIVITIES. MAINTENANCE SHALL TAKE PLACE AT THAT TIME.
7. THE CONTRACTOR SHALL TOPSOIL, SEED AND MULCH THE DISTURBED AREAS WITHIN 7 DAYS OF INITIAL DISTURBANCE. AFTER THIS TIME, ANY DISTURBANCE IN THE AREA MUST BE STABILIZED AT THE END OF EACH WORKDAY. ALL AREAS OF DISTURBANCE MUST HAVE PERMANENT STABILIZATION WITHIN 48 HOURS OF REACHING FINAL GRADE. THE FOLLOWING EXCEPTIONS MAY APPLY:
   A) STABILIZATION IS NOT REQUIRED IF THE EARTHWORK IS TO CONTINUE IN THE AREA WITHIN THE NEXT 24 HOURS AND THERE IS NO PRECIPITATION FORECAST FOR THAT SAME PERIOD OF TIME.
   B) STABILIZATION IS NOT REQUIRED IF THE EARTHWORK IS OCCURRING WITHIN A SELF-CONTAINED EXCAVATION, WITH A DEPTH OF 2 FEET OR GREATER AND NO DISCHARGE.
8. ALL SLOPED AND DISTURBED AREAS SHALL BE GRADED SMOOTH AND FREE OF POCKETS WITH SUFFICIENT SLOPE TO ENSURE DRAINAGE.
9. ALL SLOPES GREATER THAN 1V:2H SHALL BE TREATED WITH BIODEGRADABLE EROSION CONTROL BLANKET. TYPE S150BN AS MANUFACTURED BY NORTH AMERICAN GREEN OR APPROVED EQUAL. THE BLANKET SHALL BE STAPLED WITH BIODEGRADABLE STAPLES, OVERLAPPED, AND SHINGLED CORRECTLY RELATIVE TO WATER FLOW, AND INSTALLED IN GENERAL ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND SPECIFICATIONS.
10. INSTALLATION OF VEGETATION SHALL BE CONDUCTED ACCORDING TO THE TECHNICAL SPECIFICATIONS SECTION 02483.
11. REMOVAL OF EPSC MEASURES SHALL ONLY BE DONE FOLLOWING THE APPROVAL OF THE ENGINEER ALL DISTURBANCES CAUSED BY THE REMOVAL SHALL BE REPAIRED IMMEDIATELY.

TEMPORARY SUPPORT OF STONE WALLS

1. THE EXISTING STONEWALLS WALLS ARE TO REMAIN UNDISTURBED DURING CONSTRUCTION, UNLESS OTHERWISE NOTED HEREIN.
2. THE PORTIONS OF STONEWALLS TO BE REMOVED OR PARTIALLY REMOVED SHALL BE DONE IN A MANNER THAT DOES NOT COMPROMISE OR DESTABILIZE THE PORTIONS OF THE WALL THAT IS TO REMAIN.
3. THE CONTRACTOR SHALL PROVIDE ADEQUATE BRACING AND OTHER SUPPORT TO PREVENT MOVEMENT OF THE STONEWALLS DURING CONSTRUCTION.
4. CONTRACTOR SHALL SUBMIT A SPECIFIC METHODS AND MEANS PLAN TO THE ENGINEER THAT WILL PROVIDE THE REQUIRED BRACING NEEDED TO MAINTAIN THE STABILITY OF THE WALLS DURING CONSTRUCTION.

CONTROL OF WATER NOTES

GENERAL REQUIREMENTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF WATER THROUGHOUT THE DURATION OF THE PROJECT. ANY CHANGES TO THE CONTROL OF WATER PROCEDURE AS OUTLINED HEREIN WILL BE SUBJECT TO APPROVAL OF THE ENGINEER AND THE VERMONT AGENCY OF NATURAL RESOURCES (VANR). OBTAINING THE APPROVAL FOR ANY CHANGES TO THE PROCEDURES FROM VANR SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. THE CONTRACTOR SHALL NOT REGULATE DOWNSTREAM FLOWS NOR ALTER THE NATURAL FLOW REGIME EXCEPT WHEN NECESSARY FOR MAINTENANCE, INSPECTION, CONSTRUCTION, OR PROJECT SAFETY. DURING PERIODS WHEN DOWNSTREAM FLOW REGULATION IS NECESSARY, INCLUDING THE REFILLING OF THE POND, MINIMUM DOWNSTREAM CONSERVATION FLOWS, AS NOTED IN THE FOLLOWING TABLE, SHALL BE RELEASED UNLESS INFLOW IS LESS THAN THE SEASONAL CONSERVATION FLOW.

ANNUAL PERIOD	MINIMUM DISCHARGE, CFS	MINIMUM DISCHARGE, GPM
JUNE 1 TO SEPTEMBER 30	0.69	310
OCTOBER 1 TO MARCH 31	1.38	620
APRIL 1 TO MAY 31	5.52	2,478

NOTE: FLOWS NOTED CORRESPOND TO A 1.38 SQUARE MILE (883 ACRES) DRAINAGE AREA.

3. WHEN INFLOW INTO THE POND IS LESS THAN THE SEASONAL CONSERVATION FLOW, UP TO 10 PERCENT OF THE INSTANTANEOUS INFLOW MAY BE USED TO REFILL THE POND WHILE DISCHARGING THE REMAINDER DOWNSTREAM, UNDER NO CIRCUMSTANCES SHALL DOWNSTREAM FLOWS BE INTERRUPTED.
4. DOWNSTREAM FLOWS SHALL BE MAINTAINED AT ALL TIMES. DURING THE INSTALLATION OF THE COFFERDAMS, BYPASS FLOWS SHALL BE ACHIEVED WITH THE USE OF PUMPS. UPON INSTALLATION OF THE COFFERDAMS AND DEWATERING OF THE WORK AREA, MINIMUM STREAM FLOWS WILL BE MAINTAINED. PUMPS CAPABLE OF MEETING MINIMUM STREAM FLOWS SHALL BE ON SITE AT ALL TIMES DURING CONSTRUCTION TO BE USED IN CASE OF EMERGENCY. DURING PERIODS WHEN THE CONTRACTOR IS USING PUMPS TO MAINTAIN MINIMUM FLOWS, BACKUP SYSTEMS SHALL BE ONSITE IN CASE OF FAILURE OF ANY ONE PUMP.
5. ALL WORK, INCLUDING SEDIMENT AND OTHER EXCAVATED MATERIAL REMOVAL, PLACEMENT OF NEW MATERIAL, AND TEMPORARY CONTROL OF WATER SHALL BE PERFORMED IN THE DRY.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION, MAINTENANCE AND OPERATION, AND REMOVAL FOR THE CONTROL OF WATER, INCLUDING A TEMPORARY COFFERDAM, CONTROL OF WATER PLAN, PUMPING, EROSION PROTECTION AND SEDIMENT CONTROL PLANS, AND ALL OTHER ELEMENTS OF WATER CONTROL DURING CONSTRUCTION AND FOR REFILLING OF THE DEWATERED AREA FOLLOWING CONSTRUCTION.
7. THE CONTROL OF WATER PLAN SHALL ALSO INCLUDE THE CONTRACTOR'S PLAN TO SAFELY RELOCATE ANY STRANDED AQUATIC WILDLIFE FROM THE WORK AREAS DURING THE DEWATERING PROCESS.
8. THE CONTRACTOR SHALL DESIGN AND SUBMIT A SITE-SPECIFIC CONTROL OF WATER PLAN, EROSION PROTECTION AND SEDIMENT CONTROL PLAN, AND TEMPORARY COFFERDAM PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO IMPLEMENTATION OF THE WORK. PRIOR TO APPROVAL OF THE COFFERDAM DESIGN BY APPLICABLE REGULATORY AGENCIES, IF REQUIRED, SEE SHEET C12 FOR ADDITIONAL NOTES FOR THE LOCATION OF THE COFFERDAM. SEE ADDITIONAL INFORMATION REGARDING THE CONTROL OF WATER IN SPECIFICATION SECTION 01010.
9. THE TEMPORARY COFFERDAM IS ANTICIPATED TO BE A PRE-FABRICATED SYSTEM, SUCH AS AN AQUA-BARRIER (OR EQUIVALENT), SEALED AT ITS BASE. THE TEMPORARY COFFERDAM IS EXPECTED TO BE INSTALLED IN THE WET.
10. THE COFFERDAM DESIGN SHALL MAINTAIN THE POND AT ITS NORMAL WATER LEVEL EL. 1217.75', PLUS FREEBOARD.
11. THE TOP OF THE COFFERDAM SHALL EXTEND A MINIMUM OF 2-FT ABOVE THE RETAINED WATER LEVEL FOR FREEBOARD. THE CONTRACTOR SHALL FIELD CONFIRM THE MAXIMUM DEPTH OF WATER AT THE COFFERDAM LOCATION AND CONFIRM THE RESULTING COFFERDAM SIZE BASED ON THE EARTHWORK SURVEY. THE BOTTOM OF THE POND IS AT APPROXIMATELY EL. 1213.0. ALLOWING FOR ~1-FT OF POND BOTTOM COMPRESSION, THE RETAINED DEPTH OF WATER WILL BE APPROX. 5.75-FT AT BASE FLOW CONDITIONS. A MINIMUM 8-FT HIGH COFFERDAM IS EXPECTED.
12. THE PLANS SHALL INCLUDE REQUISITE DRAWINGS AND CALCULATIONS AND SHALL BE SEALED BY A VT LICENSED PROFESSIONAL ENGINEER HAVING EXPERIENCE WITH SIMILAR SYSTEMS. THE CONTROL OF WATER PLAN SHALL BE CONSISTENT WITH THE REQUIREMENTS OF THESE CONSTRUCTION DOCUMENTS. THE COFFERDAM DESIGN SHALL INCLUDE CALCULATIONS TO DOCUMENT IT IS STABLE AGAINST MOVEMENT FOR A MINIMUM OF 1-FT OF OVERTOPPING.
13. THE EROSION PROTECTION AND SEDIMENT CONTROL PLAN IS REQUIRED TO INCLUDE PUMPING OF SEDIMENT-LADEN WATER FROM THE WORK AREA TO GEOTEXTILE FILTER BAGS, OR APPROVED EQUIVALENT.

CONTROL OF WATER DURING CONSTRUCTION

1. DURING CONSTRUCTION, THE WORK AREA SHALL REMAIN DEWATERED BY MEANS OF PUMPING. THE DISCHARGE SHALL BE PUMPED DIRECTED TO AN APPROVED UPLAND AREA. THE CONTRACTOR IS ENCOURAGED TO PUMP DIRECTLY INTO FILTER BAGS TO FURTHER PREVENT TURBID WATER FROM REACHING THE DOWNSTREAM CHANNEL.
2. THE CONTRACTOR SHALL INSPECT THE COFFERDAMS DAILY, AND—EACH MORNING. MAINTENANCE SHALL TAKE PLACE PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES SCHEDULED FOR THAT DAY.

REFILLING REQUIREMENTS

1. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL RECEIVE WRITTEN AUTHORIZATION TO REFILL THE WORK AREA, ALLOWING THE WATER TO REACH THE INVERT OF THE NEW OUTLET GATE VALVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REFILLING OF THE WORK AREA AND SHALL PROVIDE PERSONNEL TO MONITOR THE OPERATION AS NEEDED ON A DAILY BASIS. THE CONTRACTOR SHALL CAREFULLY MONITOR ALL COMPONENTS OF THE DAM FOR SIGNS OF LEAKAGE OR DISTRESS AND REPORT ANY FINDINGS TO THE ENGINEER.
2. THE REFILLING OF THE POND TO THE FULL LEVEL SHALL BE ACHIEVED BY CLOSING THE GATE VALVE INCREMENTALLY. AT A MINIMUM, DOWNSTREAM CONSERVATION FLOWS SHALL BE MAINTAINED, PURSUANT TO ITEM #5 ABOVE.
3. WHEN REFILLING, THE POND SHALL BE CAREFULLY MONITORED AND OUTFLOW ADJUSTMENTS MADE. THINGS SHALL HAVE TO NOT FURTHER DRAWDOWN THE GREATER POND BY RELEASING FLOW AT A RATE GREATER THAN THE RATE OF FLOW INTO THE POND.
4. ONCE THE WATER SURFACE REACHES THE PRINCIPAL CREST THE VALVE CAN BE FULLY CLOSED AND REFILLING SHALL BE CONSIDERED COMPLETE.

ONGOING MAINTENANCE AND OPERATIONS

1. THESE PROCEDURES SHALL BE UTILIZED DURING ALL FUTURE OPERATIONS AND MAINTENANCE ACTIVITIES INCLUDING THE DRAWDOWN AND REFILLING OF THE POND, CONDUCTED BY THE OWNER.
2. DURING PERIODS WHEN THE CONTRACTOR AND/OR OWNER IS USING PUMPS TO MAINTAIN MINIMUM FLOWS, BACKUP SYSTEMS SHALL BE ONSITE IN CASE OF FAILURE OF ANY ONE PUMP.

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BEDFORD, NH
LACONIA, NH

PROFESSIONAL SEAL

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION

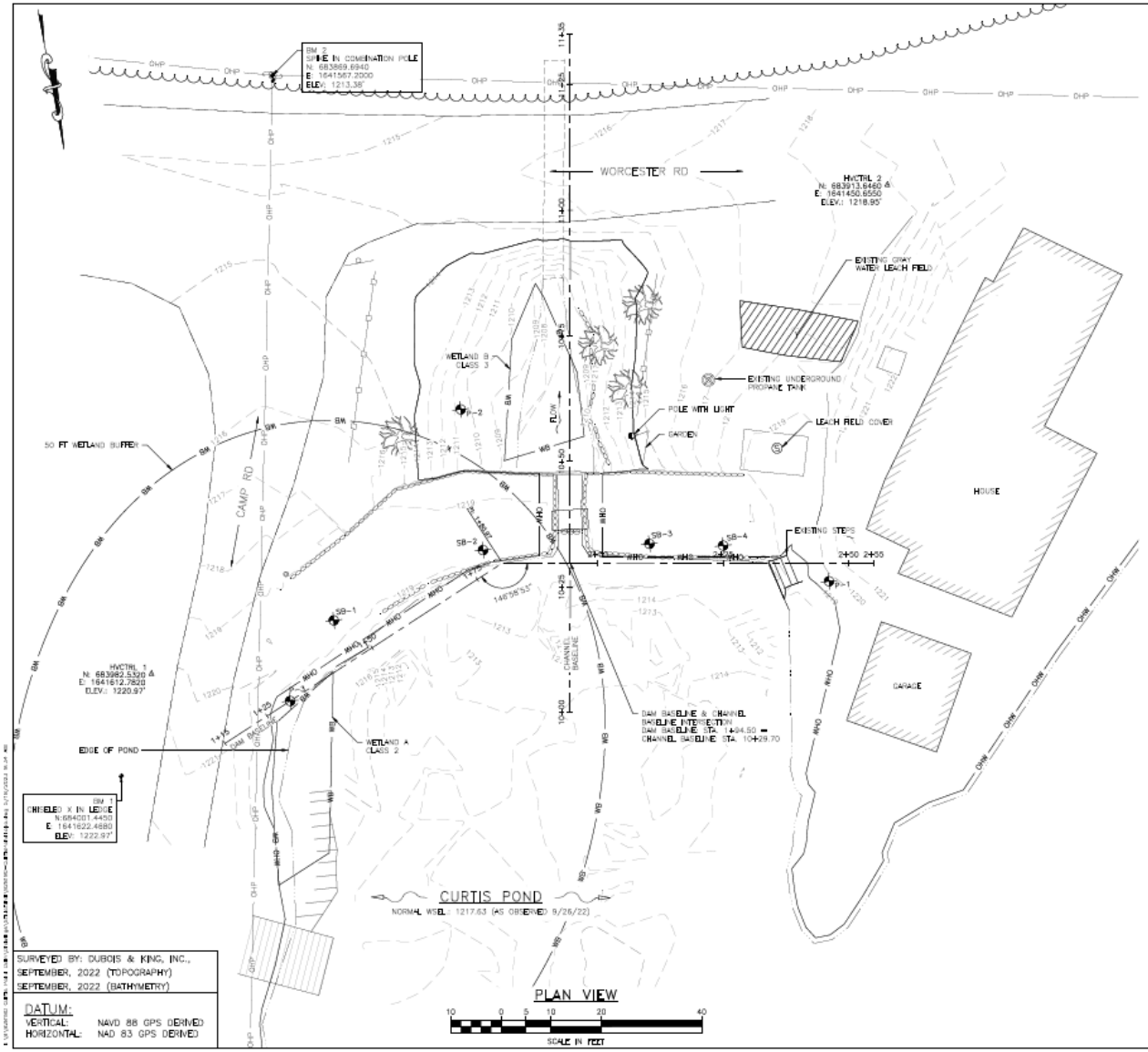
TOWN OF CALAIS
3120 PEKIN
BROOK ROAD
EAST CALAIS,
VERMONT, 05650

CURTIS POND DAM REHABILITATION PROJECT

SHEET TITLE
GENERAL NOTES

DRAWN BY	DATE
HLP	MAY 16, 2023
CHECKED BY	D&K PROJECT #
CWJ	028190
PROJ. MGR.	D&K ARCHIVE #
JWT	

SHEET NUMBER
C2



LEGEND

EXISTING:

- CONTOUR – 1 FT INTERVAL
- CONTOUR – 5 FT INTERVAL
- WATER LEVEL (O.H.W. or O.L.W.)
- BEDROCK OUTCROP
- SURVEY STATION
- BURIED PROPANE TANK
- LIGHT POLE
- TREE LINE
- TREE (CONIFER)
- TREE (DECIDUOUS)
- DOCK
- BORING
- AUGER PROBE
- DRY HYDRANT
- OVERHEAD POWER LINE
- UTILITY POLE
- STONE WALL
- WOOD FENCE
- PROJECT DELINEATION FENCE
- SEWER MANHOLE
- ORDINARY HIGH WATER (O.H.W)
- TOP OF DAM SPOT ELEVATION

NOTE:

1. TOPOGRAPHIC INFORMATION SHOWN IS BASED ON TOPOGRAPHIC AND BATHYMETRIC SURVEY COMPLETED BY DUBOIS & KING IN SEPTEMBER 2022.
2. ONLY THE IDENTIFIED BENCHMARKS (BM1 AND BM2) ARE TO BE USED FOR VERTICAL CONTROL.

PROJECT COORDINATE TABLE

POINT	NORTHING	EASTING
BM 1	684001.45	1641622.47
BM 2	683869.69	1641567.20
HVCTRL 1	683982.53	1641612.78
HVCTRL 2	683913.65	1641450.66
DAM BASELINE		
14+25	683996.93	1641596.32
14+50	683987.38	1641573.22
14+81	683975.55	1641544.57
2+00	683976.22	1641526.18
2+50	683985.40	1641477.03
2+55	683986.32	1641472.12
CHANNEL BASELINE		
104+00	684005.34	1641532.13
114+00	683907.04	1641513.78
114+35	683872.63	1641507.35

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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION	BY

TOWN OF CALAIS
3120 PEKIN BROOK ROAD
EAST CALAIS, VERMONT, 05650

CURTIS POND DAM REHABILITATION PROJECT

SHEET TITLE

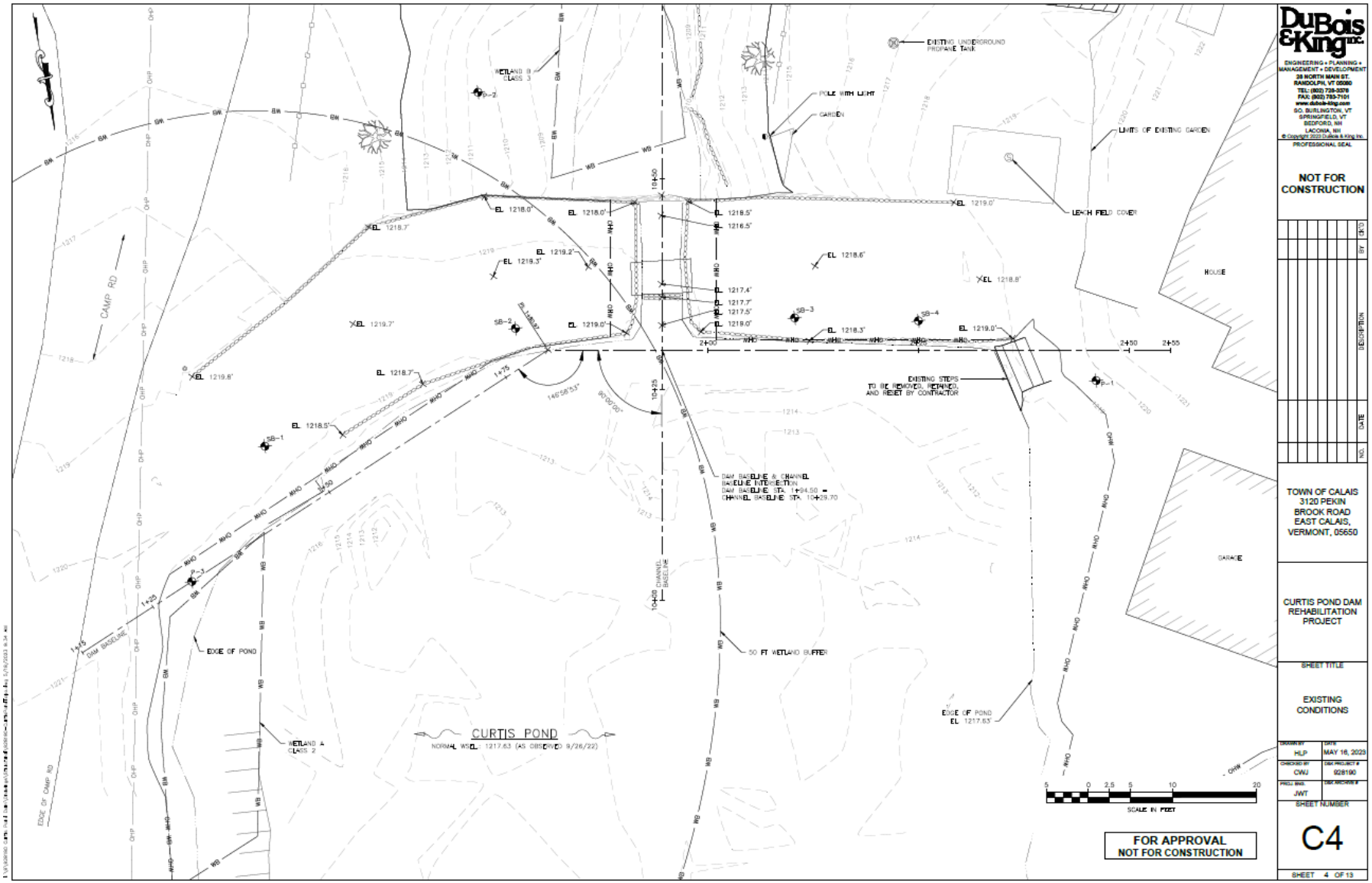
EXISTING CONDITIONS AND BASELINE LAYOUT

DRAWN BY	DATE
HLP	MAY 16, 2023
CHECKED BY	D&K PROJECT #
CWJ	928190
PROJ. ENG.	D&K ARCHIVE #
JWT	

SHEET NUMBER

C3

SHEET 3 OF 13


CAMP RD
EDGE OF CAMP RD
CURTIS POND
NORMAL WSEL 1217.63 (AS OBSERVED 9/26/22)
EDGE OF POND
EDGE OF POND EL 1217.63'
WETLAND A CLASS 2
WETLAND B CLASS 3
50 FT WETLAND BUFFER
DAM BASELINE & CHANNEL BASELINE INTERSECTION
DAM BASELINE STA 1+84.50 =
CHANNEL BASELINE STA 10+29.70
EXISTING STEPS TO BE REMOVED, RETAINED, AND RESET BY CONTRACTOR
EXISTING UNDERGROUND PROPANE TANK
POLE WITH LIGHT
GARDEN
LIMITS OF EXISTING GARDEN
LEACH FIELD COVER
HOUSE
GARAGE
SB-1
SB-2
SB-3
SB-4
P-1
P-2
P-3
SCALE IN FEET
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PROFESSIONAL SEAL
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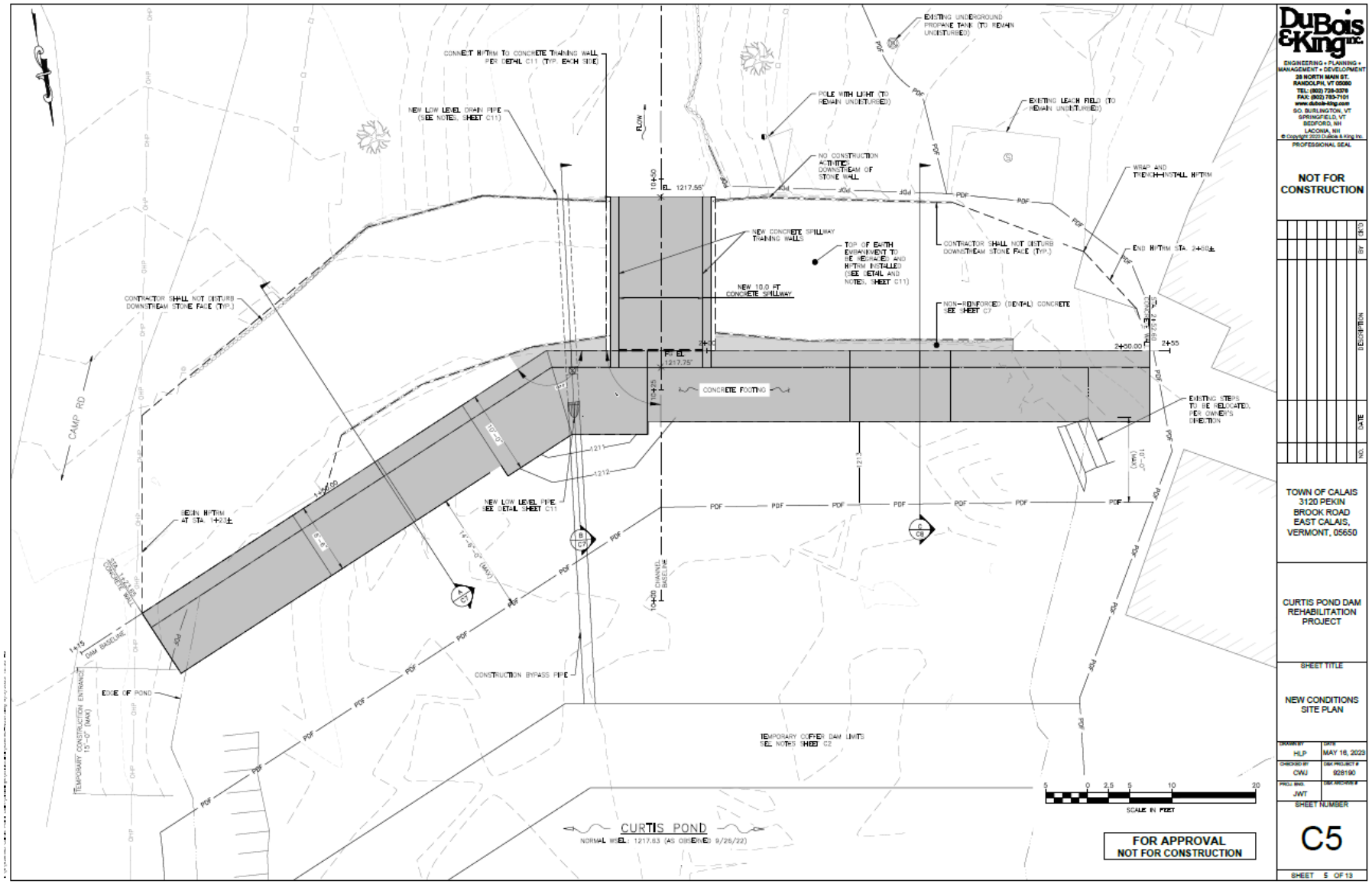
DESCRIPTION
DATE
NO.
TOWN OF CALAIS
3120 PEKIN
BROOK ROAD
EAST CALAIS,
VERMONT, 05650
CURTIS POND DAM REHABILITATION PROJECT
SHEET TITLE
EXISTING CONDITIONS
DRAWN BY HLP
DATE MAY 16, 2023
CHECKED BY CWJ
DUB PROJECT # 028190
PROJ. MGR. JWT
DUB ARCHIVE #
SHEET NUMBER
C4
SHEET 4 OF 13



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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION	BY

TOWN OF CALAIS
3120 PEKIN BROOK ROAD
EAST CALAIS, VERMONT, 05650

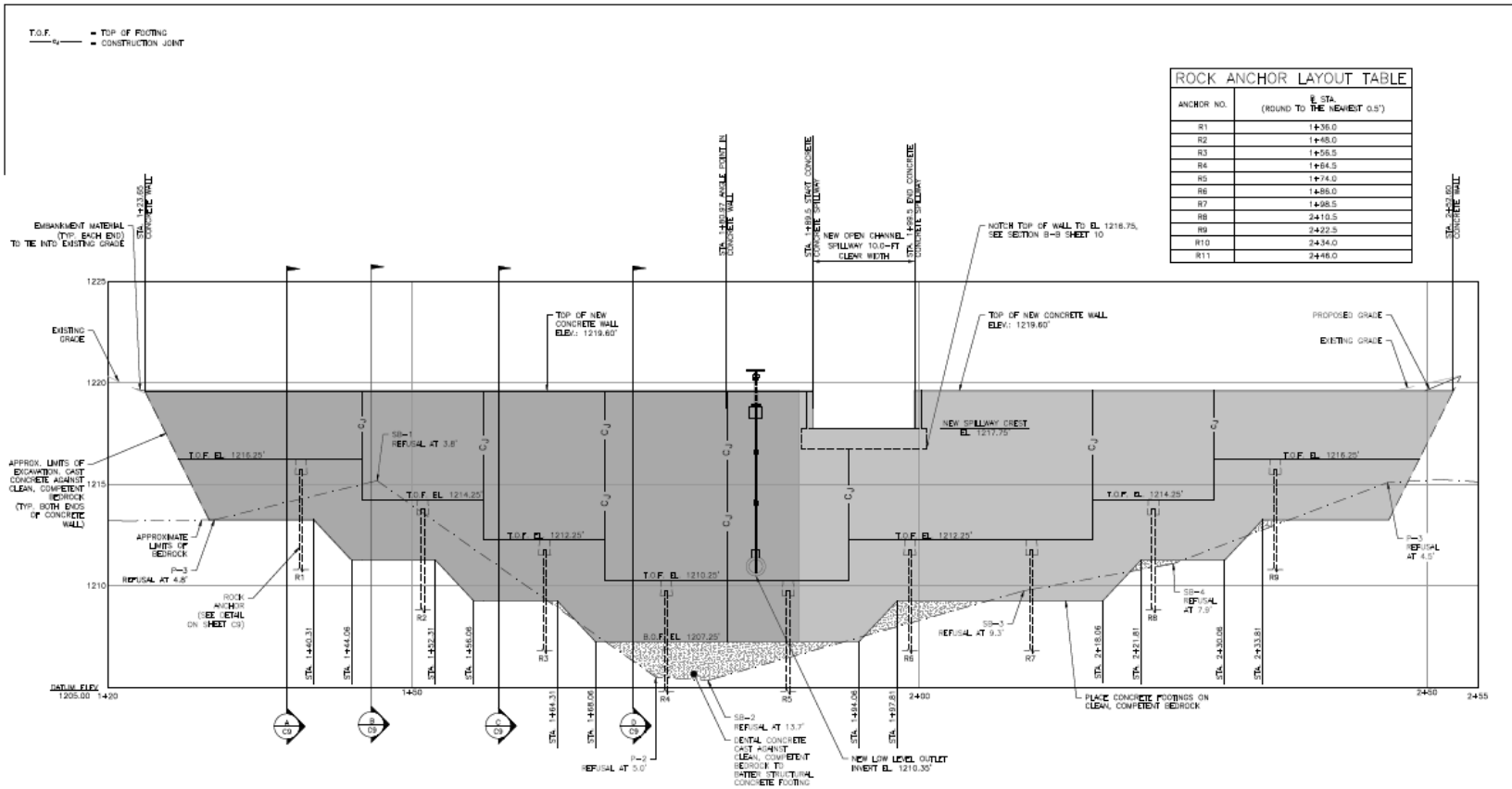
CURTIS POND DAM REHABILITATION PROJECT

SHEET TITLE
NEW CONDITIONS SITE PLAN

DRAWN BY	DATE
HLP	MAY 16, 2023
CHECKED BY	D&K PROJECT #
CWJ	928190
PROJ. ENG.	D&K ARCHIVE #
JWT	

SHEET NUMBER
C5

SHEET 5 OF 13



ROCK ANCHOR LAYOUT TABLE

ANCHOR NO.	℄ STA. (ROUND TO THE NEAREST 0.5')
R1	1+36.0
R2	1+48.0
R3	1+56.5
R4	1+64.5
R5	1+74.0
R6	1+86.0
R7	1+98.5
R8	2+10.5
R9	2+22.5
R10	2+34.0
R11	2+46.0

ROCK ANCHOR DESIGN

ANCHOR NO.	DESIGN DEPTH	WORKING CAPACITY (KIPS)
R1	16.0'	80
R2	16.0'	80
R3	16.0'	100
R4	17.0'	110
R5	18.0'	110
R6	18.0'	100
R7	17.0'	100
R8	16.0'	80
R9	16.0'	80

NOTE: SEE NOTES SHEET C9 REGARDING VERIFICATION OF ROCK COMPETENCY.

NOTES:

1. BEDROCK FOUNDATION SHALL BE CLEANED AND INSPECTED BY ENGINEER PRIOR TO PLACEMENT OF NEW CONCRETE FOOTING.
2. LOCATION OF BEDROCK SHOWN ON THESE PLANS ARE BASED ON SOIL BORINGS AND ARE TO BE CONSIDERED APPROXIMATE.
3. SEE SHEET 9 FOR REINFORCING DETAILS AND ROCK ANCHOR DETAILS.
4. DEPTH OF REFUSAL IS SHOWN BELOW GROUND SURFACE (BGS).
5. BLASTING, OR ANY USE OF EXPLOSIVES, SHALL NOT BE USED ON THIS PROJECT.

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PROFESSIONAL SEAL

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NO. | DESCRIPTION | BY | DATE

TOWN OF CALAIS
3120 PEKIN BROOK ROAD
EAST CALAIS, VERMONT, 05650

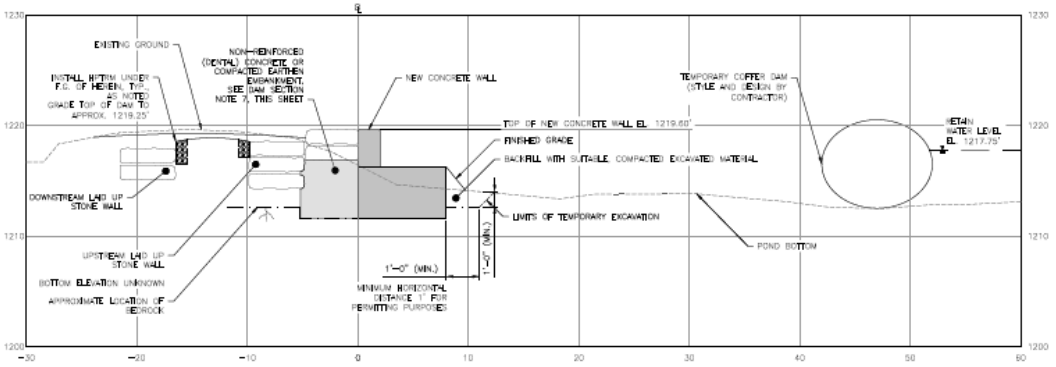
CURTIS POND DAM REHABILITATION PROJECT

SHEET TITLE
NEW CONDITIONS ELEVATION VIEW

DRAWN BY	DATE
HLP	MAY 16, 2023
CHECKED BY	D&K PROJECT #
CWJ	928190
PROJ. ENG.	D&K ARCHIVE #
JWT	

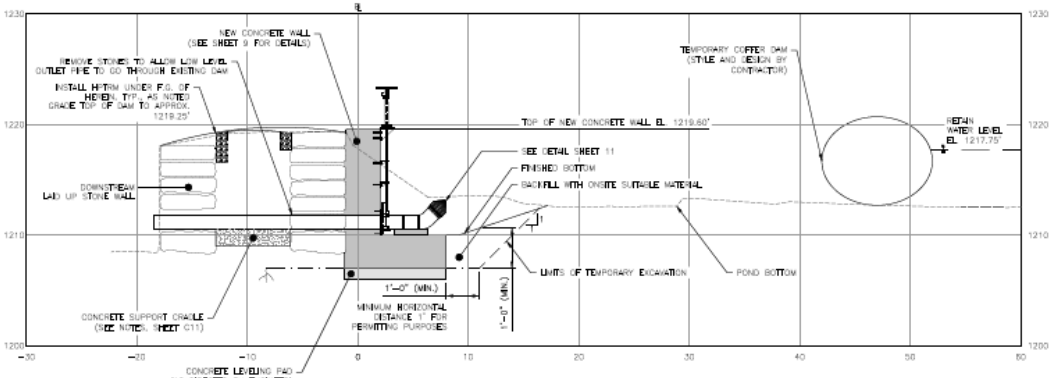
SHEET NUMBER
C6

SHEET 6 OF 13



A C5 SECTION – DAM LEFT
SCALE: 1" = 5'

STA. 1+24.50 – STA. 1+80.97



A C5 SECTION – LOW LEVEL OUTLET
SCALE: 1" = 5'

STA. 1+80.97 – STA. 1+88.50

FOR APPROVAL
NOT FOR CONSTRUCTION

SCALE IN FEET

HIGH PERFORMANCE TURF REINFORCED MATTING (HPTRM) NOTES:

1. THE CONTRACTOR SHALL INSTALL HIGH PERFORMANCE TURF REINFORCED MATTING (HPTRM) ALONG THE ENTIRE LENGTH OF THE TOP OF DAM AS SHOWN AND NOTED IN THESE PLANS.
2. LIMITS OF HPTRM INSTALLATION SHALL EXTEND FROM THE UPSTREAM SIDE OF THE DAM TO THE DOWNSTREAM STONEWALL, AND LEFT TO RIGHT BETWEEN STATIONS 1+23 TO 2+50. THE FINAL HPTRM LIMITS SHALL BE DETERMINED IN THE FIELD AND SHALL COVER THE ENTIRE REGRADED TOP OF DAM.
3. THE HPTRM SHALL ANCHOR TO THE LEFT AND RIGHT ENDS OF THE NEW CONCRETE SPILLWAY AND SHALL NOT EXTEND OVER THE SPILLWAY.
4. THE HPTRM SHALL ANCHOR TO NEW UPSTREAM CONCRETE WALL AND THE EXISTING DOWNSTREAM STONEWALL AND THE LEFT AND RIGHT SIDES OF THE NEW CONCRETE SPILLWAY TRAINING WALLS.
5. THE HPTRM SHALL BE A 3-DIMENSIONAL, LOFTY, WOVEN POLYPROPYLENE GEOTEXTILE, COMPOSED OF POLYPROPYLENE MONOFILAMENT YARNS WOVEN INTO A UNIFORM CONFIGURATION. THE HPTRM SHALL MEET INTERNAL QUALITY CONTROL TESTS ACCREDITED BY THE GEOSYNTHETIC ACCREDITATION INSTITUTE – LABORATORY ACCREDITATION PROGRAM (GAI-LAP) AND SHALL BE NTPEP APPROVED FOR AASHTO STANDARDS.
6. HPTRM SHALL BE PYRAMAT 75 OR APPROVED EQUIVALENT.
7. MINIMUM DESIGN PERFORMANCE VALUES SHALL INCLUDE (NOT LIMITED TO):
   - MASS/UNIT AREA = 13.5 OZ./SY
   - THICKNESS = 0.40 INCH
   - LIGHT PENETRATION = 10%
   - COLOR = GREEN
   - GRAB TENSILE STRENGTH = 4000 X 3000 LB/FT
   - GRAB ELONGATION = 40 X 35 %
   - FLEXIBILITY = 0.534 IN-LB
   - UV RESISTANCE = 90% RETAINED AT 8,000 HOURS
   - VELOCITY (VEGETATED) = 20 FT/SEC
   - SHEAR STRESS (VEGETATED) 16 LB/SF
8. CONTRACTOR SHALL INSTALL AND ANCHOR THE HPTRM IN STRICT ACCORDANCE WITH MANUFACTURER'S PERPENDICULAR CHANNEL INSTALLATION AND MAINTENANCE GUIDELINES AND AS ILLUSTRATED HEREIN.
9. CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER / SUPPLIER AND COORDINATE AND CONDUCT A FIELD PRE-INSTALLATION AND MAINTENANCE MEETING WITH THE ENGINEER AND OWNER TO REVIEW THE REQUIRED INSTALLATION PROCEDURES, INCLUDING SUBGRADE PREPARATION.
10. THE HPTRM SHALL NOT BE INSTALLED UNTIL THE ENGINEER HAS APPROVED THE TOP OF DAM SUBGRADE. THE HPTRM SHALL BE INSTALLED IMMEDIATELY FOLLOWING THE SUBGRADE APPROVAL.
11. SUBGRADE SHALL BE UNIFORM, SMOOTH AND FREE OF ALL ROCKS, CLODS, VEGETATION OR OTHER OBJECTS OTHER THAN TOPSOIL. THE SUBGRADE SHALL BE COMPACTED AND FIRM PRIOR TO THE PLACEMENT OF TOPSOIL.
12. THE CONTRACTOR SHALL COVER AND PROTECT THE EXPOSED SUBGRADE PRIOR TO AND DURING INSTALLATION AND PREVENT ANY DAMAGE FROM RAIN OR OTHER WEATHER EVENT, EQUIPMENT OR OTHER CONSTRUCTION OPERATIONS.
13. THE VEGETATION WILL BE ESTABLISHED BY BROADCAST SEEDING OR HYDROSEEDING. 50% OF THE SEED SHALL BE PLACED BELOW THE HPTRM AND THE REMAINING 50% OF SEED SHALL BE PLACED ON TOP OF THE HPTRM.
14. THE BOTTOM 50% OF SEED SHALL BE PLACED PRIOR TO PLACEMENT OF THE HPTRM. A TEMPORARY EROSION CONTROL BLANKET SHALL BE PLACED ON TOP OF THE SEEDED HPTRM TO PROVIDE PROTECTION DURING SEED GERMINATION AND ESTABLISHMENT.
15. CONTRACTOR SHALL WATER THE SEED AS RECOMMENDED BY THE MANUFACTURER.

DAM SECTION NOTES:

1. THE EXTENT OF THE STONEWALL ON THE UPSTREAM SIDE OF THE DAM IS UNKNOWN. THE CONTRACTOR SHALL COMPLETE AN INSPECTION OF THE DAM FOLLOWING DEWATERING AND VERIFY THE INFORMATION SHOWN WITHIN THESE PLANS WITH THE RESIDENT ENGINEER.
2. THE DESIGN INTENT IS TO INSTALL THE NEW CAST-IN-PLACE CONCRETE DAM AS CLOSE TO THE EXISTING DAM AS PRACTICABLE. THE SECTIONS DEPICT A VERTICAL FACE FOR NEW CONCRETE TO BE CAST TO, HOWEVER, EXCAVATION OF THE UPSTREAM FACE OF THE EXISTING DAM MAY BE REQUIRED TO INSTALL THE NEW CONCRETE DAM.
3. THE EXPOSED PORTIONS OF THE NEW CONCRETE WALL AND NEW CONCRETE SPILLWAY TRAINING WALLS SHALL HAVE STONES PLACED ALONG THE UPSTREAM AND DOWNSTREAM VERTICAL FACES TO CREATE A STONEWALL FINISHED APPEARANCE.
4. EXISTING STONES SHALL BE STOCKPILED AND REPLACED TO CREATE A LAID STONE APPEARANCE TO REPRODUCE THE EXISTING FINISH.
5. THE OWNER, ENGINEER AND CONTRACTOR SHALL FIELD REVIEW AND AFFIRM THE SPECIFICS OF THIS REQUIREMENT DURING THE PRECONSTRUCTION MEETING.
6. ALL CONTRACTOR COSTS FOR THIS WORK SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO REINFORCED CONCRETE.
7. IF SPACING BETWEEN NEW CONCRETE DAM AND EXISTING STONE DAM IS LESS THAN 24-INCHES, CONTRACTOR SHALL BACKFILL WITH DENTAL CONCRETE. OTHERWISE, BACKFILL WITH EARTHEN EMBANKMENT MATERIAL AND COMPACT PER SPECIFICATIONS.

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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION	BY

TOWN OF CALAIS
3120 PEKIN BROOK ROAD
EAST CALAIS, VERMONT, 05650

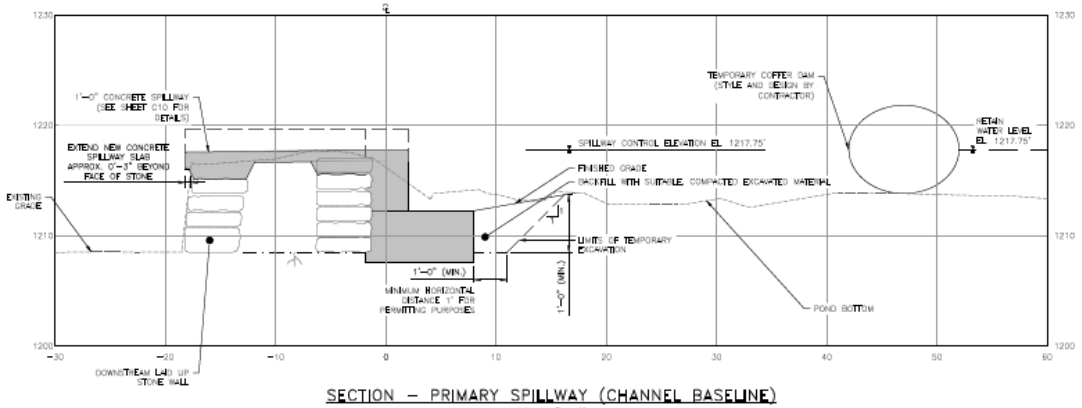
CURTIS POND DAM REHABILITATION PROJECT

SHEET TITLE
NEW CONCRETE CUTOFF WALL TYPICAL SECTION

DRAWN BY	DATE
HLP	MAY 16, 2023
CHECKED BY	D&K PROJECT #
CWJ	928190
PROJ. MGR.	D&K ARCHIVE #
JWT	

SHEET NUMBER
C7

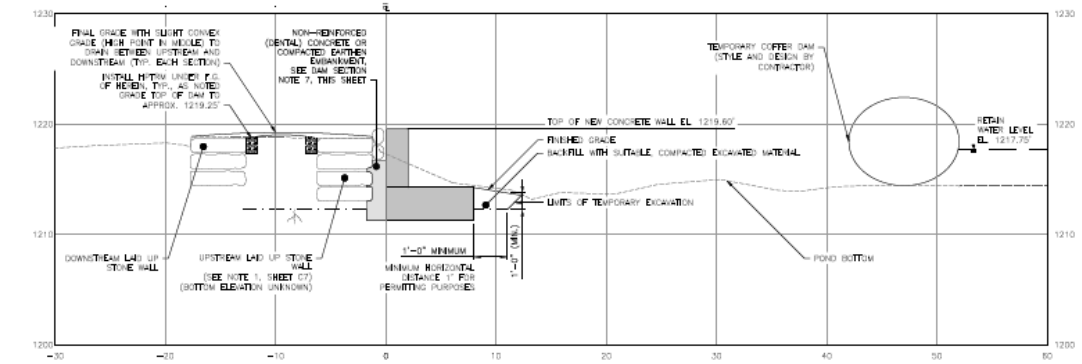
SHEET 7 OF 13



SECTION – PRIMARY SPILLWAY (CHANNEL BASELINE)

SCALE: 1" = 5'

STA. 1+88.50 – STA. 2+00.50



C5 SECTION – DAM RIGHT

SCALE: 1" = 5'

STA. 2+00.50 – STA. 2+51.75

5 0 2.5 5 10 20

SCALE IN FEET

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PROFESSIONAL SEAL

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NO.	DATE	DESCRIPTION	BY	CK'D

TOWN OF CALAIS
3120 PEKIN BROOK ROAD
EAST CALAIS, VERMONT, 05650

CURTIS POND DAM REHABILITATION PROJECT

SHEET TITLE

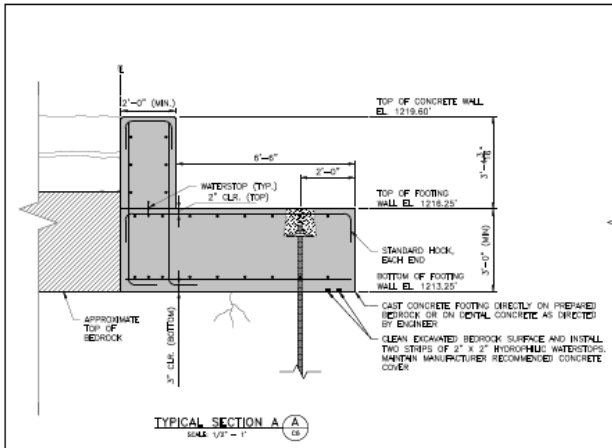
NEW CONCRETE CUTOFF WALL TYPICAL SECTION

DRAWN BY	DATE
HLP	MAY 16, 2023
CHECKED BY	D&K PROJECT #
CWJ	928190
PROJ. MGR.	D&K ARCHIVE #
JWT	

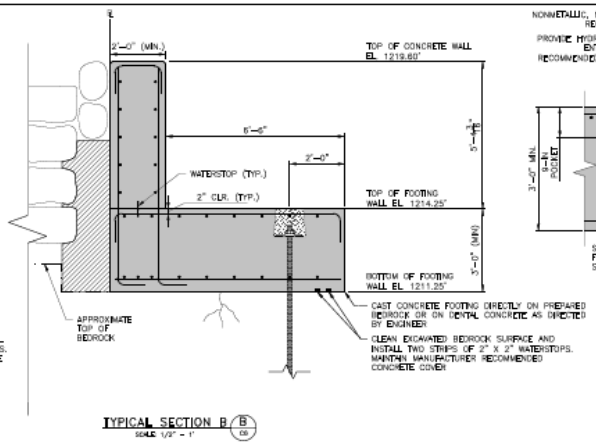
SHEET NUMBER

C8

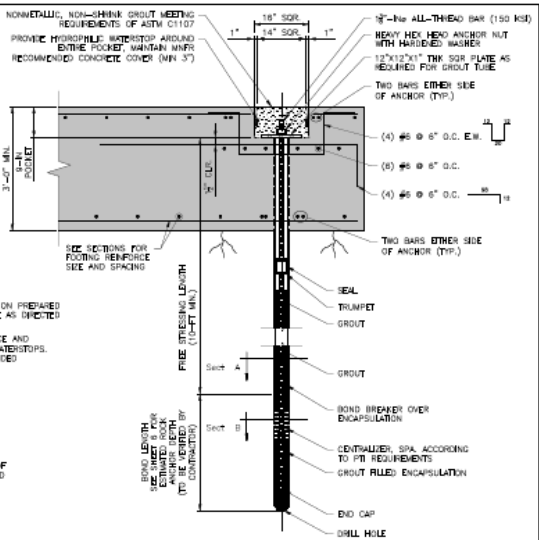
SHEET 8 OF 13

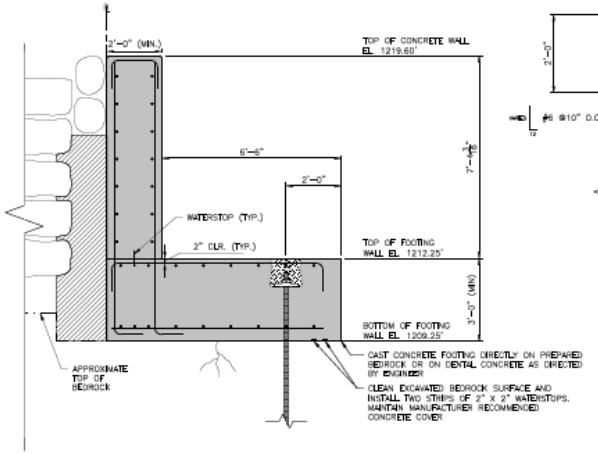


TYPICAL SECTION A (A / C6)
SCALE: 1/2" = 1'

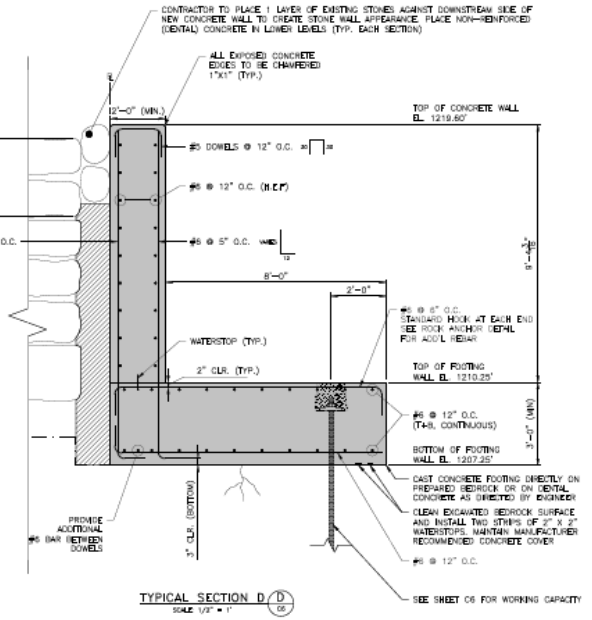


TYPICAL SECTION B (B / C6)
SCALE: 1/2" = 1'





TYPICAL SECTION C (C / C6)
SCALE: 1/2" = 1'



TYPICAL SECTION D (D / C6)
SCALE: 1/2" = 1'

ROCK ANCHOR NOTES:

1. ROCK ANCHOR WORK SHALL CONFORM TO THE LATEST VERSION OF "RECOMMENDATIONS FOR PRESTRESSED ROCK AND SOIL ANCHORS" FROM THE POST-TENSIONING INSTITUTE (PTI) AND APPLICABLE CODES, STANDARDS AND REGULATIONS.
2. CONTRACTOR SHALL BE RESPONSIBLE TO DESIGN ROCK ANCHORS TO RESIST LOADS INDICATED ON THE DRAWINGS. DESIGN OF ROCK ANCHORS SHALL BE SIGNED AND SEALED BY A LICENSED VERMONT PROFESSIONAL ENGINEER WHO HAS SPECIFIC EXPERIENCE IN THE DESIGN OF ROCK ANCHORS SIMILAR TO THOSE SHOWN HEREIN.
3. CONTRACTOR TO PERFORM SUBSURFACE INVESTIGATIONS OF ROCK REQUIRED TO DEFINE THE PARAMETERS FOR DESIGN OF ANCHORS. THIS SHALL INCLUDE, AS A MINIMUM, DRILLING AND OBTAINING A NX-SIZED 10-FT (MINIMUM DEPTH) CONTINUOUS ROCK CORE IN THE VICINITY OF THE PROPOSED FOOTING, NEAR THE HIGH POINT OF THE NEW CONCRETE WALL.
4. DESIGN CALCULATIONS, DRAWINGS AND SPECIFICATIONS, STAMPED BY THE PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VERMONT SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO PROCEEDING WITH THE WORK.
5. ROCK ANCHOR BOREHOLES SHALL BE PRESSURE TESTED FOR WATER TIGHTNESS AND CONSOLIDATION GROUTED, REDRILLED AND RETESTED WHEN WATER SEEPAGE EXCEEDS PTI RECOMMENDATIONS.
6. ROCK ANCHOR SYSTEM SHALL CONSIST OF STEEL BARS, PLASTIC SHEATHING/SLEEVES, PORTLAND CEMENT GROUT, STRESSING ANCHORAGES, TRUMPETS, CENTRALIZERS, BEARING PLATES, COUPLINGS, WASHERS AND OTHER ITEMS NECESSARY TO PROVIDE A COMPLETE SYSTEM WITH DOUBLE CORROSION PROTECTION.
7. ANCHOR BARS SHALL BE CONTINUOUSLY THREADED GRADE 150 STEEL CONFORMING TO ASTM A722.
8. STEEL OTHER THAN ANCHOR BARS SHALL BE ASTM A36, AND HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123.
9. THE FIRST THREE ROCK ANCHORS AND TWO SUBSEQUENT ANCHORS SHALL BE PERFORMANCE TESTED AND ALL REMAINING ANCHORS PROOF TESTED IN ACCORDANCE WITH PTI RECOMMENDATIONS.
10. INSTALLATION RECORDS AND TEST RESULTS SHALL BE SUBMITTED FOR REVIEW AND RECORD PURPOSES.
11. ROCK ANCHORS SHALL BE PRETENSIONED ONCE THE FOOTING CONCRETE HAS OBTAINED ITS 28 DAY STRENGTH.
12. COMPETENT, SOUND AND NON-FRACTURED BEDROCK SHALL EXTEND A MINIMUM HORIZONTAL LENGTH OF 2'-0" FROM THE DOWNSTREAM TOE OF EACH WEIR AND TRAINING WALL TO PROVIDE FOR REQUIRED SHEAR LOAD RESISTANCE. CONTRACTOR SHALL EXCAVATE AS NEEDED TO ACHIEVE THIS MINIMUM LENGTH AS APPROVED BY THE ENGINEER.

FOR APPROVAL
NOT FOR CONSTRUCTION

NOTES:

1. REINFORCING SIZE AND SPACING IS THE SAME THROUGHOUT THE DAM, AS SHOWN ON TYPICAL SECTION D.
2. SEE ROCK ANCHOR DETAIL FOR ADDITIONAL REINFORCING AT ROCK ANCHOR POCKET. NOT SHOWN ON SECTION D FOR CLARITY.

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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION	BY	CHK'D

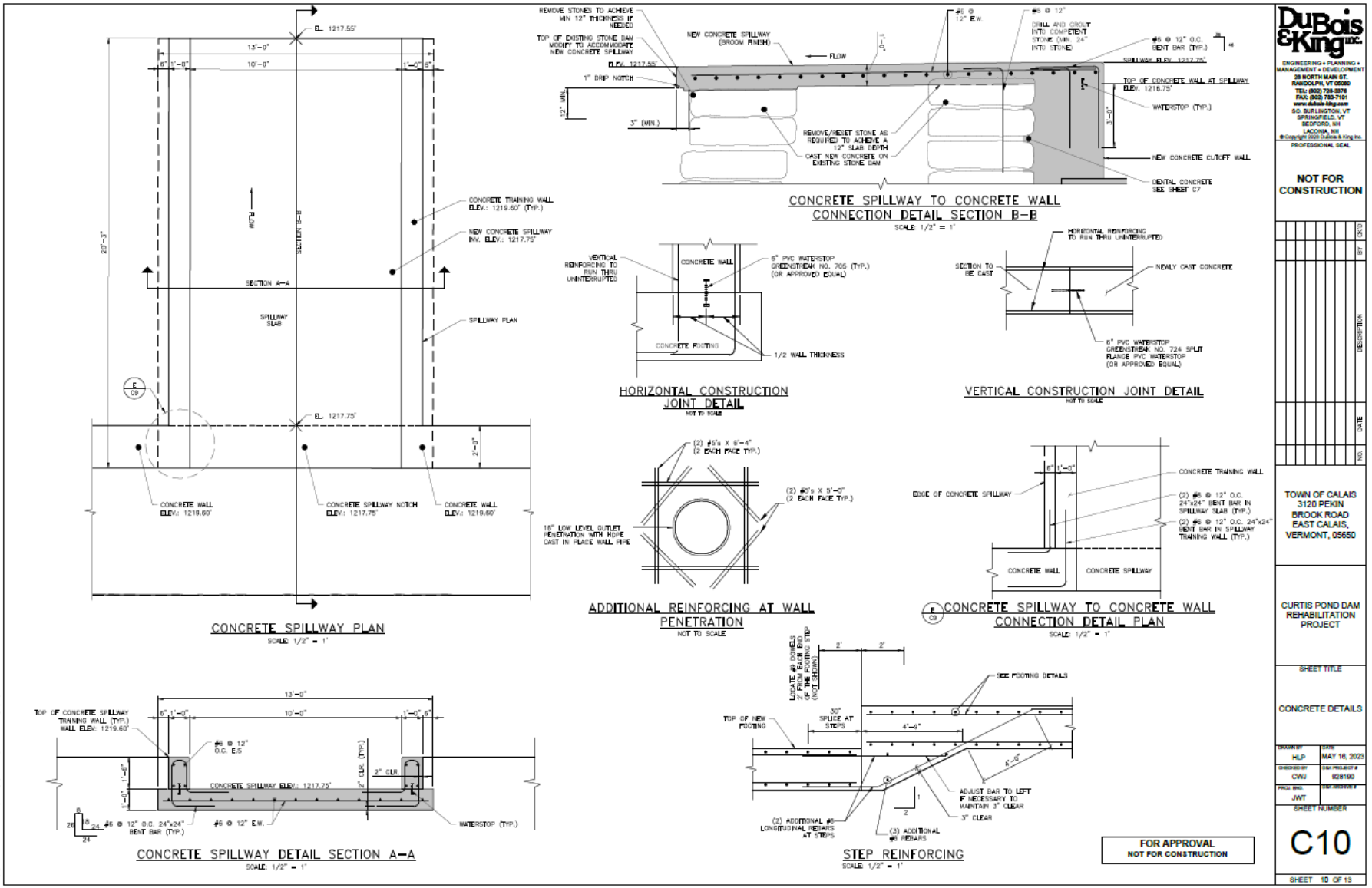
TOWN OF CALAIS
3120 PEKIN BROOK ROAD
EAST CALAIS, VERMONT, 05650

CURTIS POND DAM REHABILITATION PROJECT

SHEET TITLE
BASELINE TYPICAL SECTIONS

DRAWN BY	DATE
HLP	MAY 16, 2023
CHECKED BY	D&K PROJECT #
CWJ	028190
PROJ. MNG.	D&K ANCHOR #
JWT	

SHEET NUMBER
C9
SHEET 9 OF 13


EL. 1217.55'
15'-0"
6" 1'-0"
10'-0"
1'-0" 6"
CONCRETE TRAINING WALL ELEV.: 1219.60' (TYP.)
NEW CONCRETE SPILLWAY INV. ELEV.: 1217.75'
SECTION A-A
SECTION B-B
SPILLWAY SLAB
SPILLWAY PLAN
EL. 1217.75'
CONCRETE WALL ELEV.: 1219.60'
CONCRETE SPILLWAY NOTCH ELEV.: 1217.75'
CONCRETE WALL ELEV.: 1219.60'
CONCRETE SPILLWAY PLAN
SCALE: 1/2" = 1'
REMOVE STONES TO ACHIEVE MIN 12" THICKNESS IF NEEDED
TOP OF EXISTING STONE DAM MODIFY TO ACCOMMODATE NEW CONCRETE SPILLWAY
ELEV. 1217.55'
1" DRIP NOTCH
12" MIN.
3" (MIN.)
NEW CONCRETE SPILLWAY (BROOM FINISH)
FLOW
#6 @ 12" E.W.
DRILL AND GROUT INTO COMPETENT STONE (MIN. 24" INTO STONE)
#6 @ 12" O.C. BENT BAR (TYP.)
SPILLWAY ELEV. 1217.75'
TOP OF CONCRETE WALL AT SPILLWAY ELEV. 1218.75'
WATERSTOP (TYP.)
REMOVE/RESET STONE AS REQUIRED TO ACHIEVE A 12" SLAB DEPTH
CAST NEW CONCRETE ON EXISTING STONE DAM
NEW CONCRETE CUTOFF WALL
DENTAL CONCRETE SEE SHEET C7
CONCRETE SPILLWAY TO CONCRETE WALL CONNECTION DETAIL SECTION B-B
SCALE: 1/2" = 1'
VERTICAL REINFORCING TO RUN THRU UNINTERRUPTED
CONCRETE WALL
6" PVC WATERSTOP GREENSTREAK NO. 705 (TYP.) (OR APPROVED EQUAL)
CONCRETE FOOTING
1/2 WALL THICKNESS
HORIZONTAL CONSTRUCTION JOINT DETAIL
NOT TO SCALE
HORIZONTAL REINFORCING TO RUN THRU UNINTERRUPTED
SECTION TO BE CAST
NEWLY CAST CONCRETE
6" PVC WATERSTOP GREENSTREAK NO. 724 SPLIT FLANGE PVC WATERSTOP (OR APPROVED EQUAL)
VERTICAL CONSTRUCTION JOINT DETAIL
NOT TO SCALE
(2) #5's X 5'-4" (2 EACH FACE TYP.)
(2) #5's X 5'-0" (2 EACH FACE TYP.)
16" LOW LEVEL OUTLET PENETRATION WITH HOPE CAST IN PLACE WALL PIPE
ADDITIONAL REINFORCING AT WALL PENETRATION
NOT TO SCALE
6" 1'-0"
CONCRETE TRAINING WALL
EDGE OF CONCRETE SPILLWAY
(2) #6 @ 12" O.C. 24"x24" BENT BAR IN SPILLWAY SLAB (TYP.)
(2) #6 @ 12" O.C. 24"x24" BENT BAR IN SPILLWAY TRAINING WALL (TYP.)
CONCRETE WALL
CONCRETE SPILLWAY
E C9
CONCRETE SPILLWAY TO CONCRETE WALL CONNECTION DETAIL PLAN
SCALE: 1/2" = 1'
13'-0"
6" 1'-0"
10'-0"
1'-0" 6"
TOP OF CONCRETE SPILLWAY TRAINING WALL (TYP.) WALL ELEV. 1219.60'
#6 @ 12" O.C. E.S
CONCRETE SPILLWAY ELEV.: 1217.75'
2" CLR.
CLR. (TYP.)
#6 @ 12" E.W.
#6 @ 12" O.C. 24"x24" BENT BAR (TYP.)
WATERSTOP (TYP.)
CONCRETE SPILLWAY DETAIL SECTION A-A
SCALE: 1/2" = 1'
LOCATE #5 DOWELS 2" FROM EDGE OF THE FOOTING STEP (NOT SHOWN)
2'
2'
SEE FOOTING DETAILS
TOP OF NEW FOOTING
30" SPLICE AT STEPS
4'-6"
4'-0"
ADJUST BAR TO LEFT IF NECESSARY TO MAINTAIN 3" CLEAR
3" CLEAR
(2) ADDITIONAL #6 LONGITUDINAL REBARS AT STEPS
(3) ADDITIONAL #6 REBARS
STEP REINFORCING
SCALE: 1/2" = 1'
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LACONIA, NH
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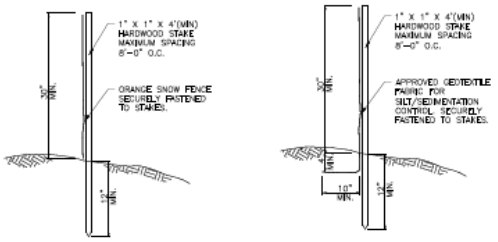
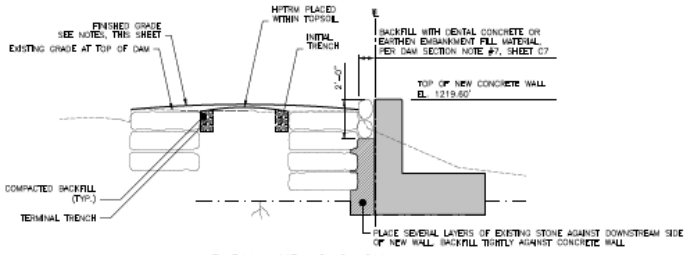
PROFESSIONAL SEAL
NOT FOR CONSTRUCTION
NO.
DATE
DESCRIPTION
TOWN OF CALAIS
3120 PEKIN BROOK ROAD
EAST CALAIS, VERMONT, 05650
CURTIS POND DAM REHABILITATION PROJECT
SHEET TITLE
CONCRETE DETAILS
DRAWN BY HLP
DATE MAY 16, 2023
CHECKED BY CWJ
D&K PROJECT # 928190
PROJ. ENG. JWT
D&K ARCHIVE #
SHEET NUMBER
C10
SHEET 10 OF 13

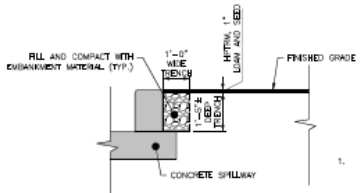


PROJECT DEMARCATION FENCE
NOT TO SCALE

SILT FENCE
NOT TO SCALE

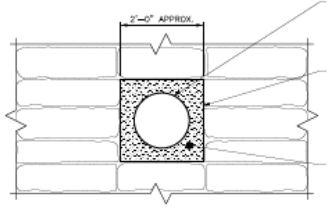


HPTRM, TYP. SECTION
SCALE: 1" = 4'

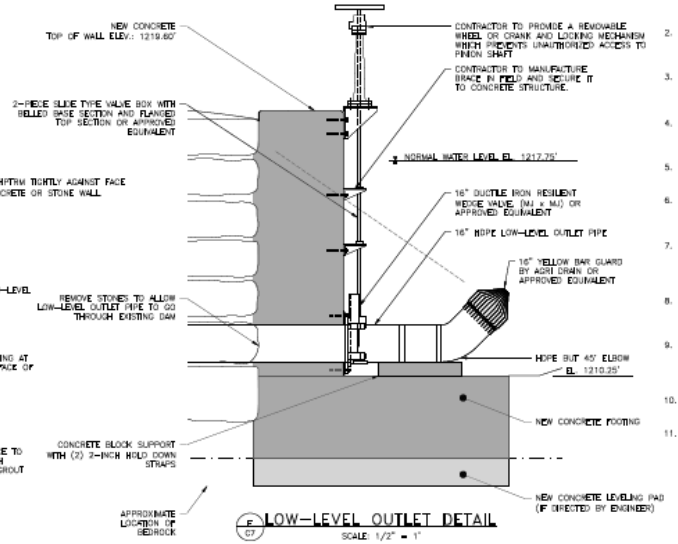


1. PLACE HPTRM TIGHTLY AGAINST FACE OF CONCRETE OR STONE WALL

HPTRM DETAIL AGAINST CONCRETE/STONE
SCALE: 1/2" = 1'



LOW-LEVEL OUTLET
SCALE: 3/4" = 1'



LOW-LEVEL OUTLET DETAIL
SCALE: 1/2" = 1'

EROSION CONTROL NOTES

1. TEMPORARY EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) MEASURES ARE REQUIRED THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD.
2. ALL EPSC ACTIVITIES SHALL CONFORM TO THE VT DEC LOW RISK SITE HANDBOOK FOR EROSION PREVENTION AND SEDIMENT CONTROL, CURRENT EDITION.
3. ALL EARTHWORK AND GRADING PERFORMED BETWEEN OCTOBER 15 AND APRIL 15 SHALL CONFORM TO APPROVED WINTER CONSTRUCTION PRACTICES, AS PRESENTED IN THE VT DEC LOW RISK SITE HANDBOOK FOR EROSION PREVENTION AND SEDIMENT CONTROL 2006.
4. THE CONTRACTOR SHALL BE AWARE OF ALL DISCHARGE INTO THE OUTLET CHANNEL. SHOULD THERE BE VISUALLY DISCOLORED DISCHARGE ENTERING THE OUTLET CHANNEL THE CONTRACTOR SHALL DETERMINE THE SOURCE. IF THE CAUSE IS FROM CONSTRUCTION ACTIVITIES ALL OPERATIONS MUST CEASE UNTIL THE DISCHARGE IS NO LONGER DISCOLORED. ALTERNATIVE MEANS OF CONSTRUCTION SHALL BE ADMINISTERED AS TO AVOID ADDITIONAL RELEASE OF DISCOLORED DISCHARGE INTO THE OUTLET CHANNEL.
5. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL INSTALL SILT FENCING AND EROSION CONTROL DEVICES AS SHOWN ON THESE PLANS. EROSION CONTROLS SHALL BE LOGICALLY PHASED WITH CONSTRUCTION ACTIVITIES AND AS DIRECTED BY THE ENGINEER OR OWNERS REPRESENTATIVE.
6. WATER REMOVED FROM WORK AREAS SHALL BE DISCHARGED TO A FILTER BAG LOCATED GREATER THAN 100 FEET FROM ANY FLOWING NON-TURBID WATER.
7. SHOULD A FILTER BAG BE USED TO CONTROL SEDIMENT, A REPLACEMENT FILTER BAG SHALL BE ON SITE AT ALL TIMES. THE FILTER BAGS SHALL BE REMOVED FROM THE SITE ONCE USED.
8. THE EROSION CONTROLS SHALL BE INSPECTED DAILY PRIOR TO INITIATION OF THE DAY'S ACTIVITIES. MAINTENANCE SHALL TAKE PLACE AT THAT TIME.
9. THE CONTRACTOR SHALL TOPSOIL, SEED AND MULCH THE DISTURBED AREAS WITHIN 7 DAYS OF INITIAL DISTURBANCE. AFTER THIS TIME, ANY DISTURBANCE IN THE AREA MUST BE STABILIZED AT THE END OF EACH WORKDAY. ALL AREAS OF DISTURBANCE MUST HAVE PERMANENT STABILIZATION WITHIN 48 HOURS OF REACHING FINAL GRADE. THE FOLLOWING EXCEPTIONS MAY APPLY:
   A) STABILIZATION IS NOT REQUIRED IF THE EARTHWORK IS TO CONTINUE IN THE AREA WITHIN THE NEXT 24 HOURS AND THERE IS NO PRECIPITATION FORECAST FOR THAT SAME PERIOD OF TIME.
   B) STABILIZATION IS NOT REQUIRED IF THE EARTHWORK IS OCCURRING WITHIN A SELF-CONTAINED EXCAVATION, WITH A DEPTH OF 2 FEET OR GREATER AND NO OUTLET.
10. ALL SLOPES AND DISTURBED AREAS SHALL BE GRADED SMOOTH AND FREE OF POCKETS WITH SUFFICIENT SLOPE TO ENSURE DRAINAGE.
11. ALL SLOPES GREATER THAN 1V:3H SHALL BE TREATED WITH BIODEGRADABLE EROSION CONTROL BLANKET, TYPE S150BN AS MANUFACTURED BY NORTH AMERICAN GREEN OR APPROVED EQUAL. THE BLANKET SHALL BE STAPLED WITH BIODEGRADABLE STAPLES, OVERLAPPED, AND TRENCHED CORRECTLY RELATIVE TO WATER FLOW, AND INSTALLED IN GENERAL ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND SPECIFICATIONS. ALL EROSION CONTROL PRODUCTS SHALL CONFORM TO SPECIFICATIONS SECTION 01575.
12. PERMANENT STABILIZATION SHALL BE CONDUCTED ACCORDING TO THE TECHNICAL SPECIFICATIONS SECTION 02483.
13. REMOVAL OF EPSC MEASURES SHALL ONLY BE DONE FOLLOWING THE APPROVAL OF THE ENGINEER. ALL DISTURBANCES CAUSED BY THE REMOVAL SHALL BE REPAIRED IMMEDIATELY.

TOP OF EMBANKMENT FINISHED GRADING NOTES

1. THE TOP OF THE EXISTING DAM SHALL BE FINISHED/REGRADED TO CREATE A UNIFORM FINISH SUITABLE FOR SUSTAINING A HEALTHY GRASS COVER, POSITIVE DRAINAGE, AND COVER FOR THE HPTRM.
2. FINISHED GRADING SHALL BE TO THE GRADES SHOWN ON THE DRAWINGS, AND ADJUSTED AS NEEDED TO CREATE A ROUNDED HIGH POINT/CROWN ALONG THE CENTERLINE OF THE EXISTING DAM.
3. CONTRACTOR SHALL ENSURE A MINIMUM OF 4-INCHES OF QUALITY TOPSOIL IS PLACED AS FINISHED GRADING. EXISTING TOPSOIL ALONG WITH NEW TOPSOIL CAN BE USED PROVIDED THE EXISTING TOPSOIL IS FREE OF INORGANICS AND IS OF SCREENED QUALITY.

LOW-LEVEL OUTLET NOTES:

1. A NEW LOW-LEVEL DRAIN SHALL BE INSTALLED THROUGH THE EXISTING STONE SLUICEWAY LOCATED TO THE LEFT (LOOKING DOWNSTREAM) OF THE EXISTING SPILLWAY. THE EFFECTIVE OPENING DIMENSION, UPSTREAM LIMITS AND CONDITION OF THE SLUICEWAY ARE UNKNOWN.
2. FOLLOWING DEWATERING, THE CONTRACTOR SHALL INSPECT THE SLUICEWAY AND CONFIRM THE CONTROLLING CLEAR DIMENSIONS AND REVIEW WITH THE ENGINEER PRIOR TO ORDERING THE NEW LOW-LEVEL DRAIN PIPE.
3. THE EXPECTED SIZE OF THE NEW LOW-LEVEL DRAIN PIPE IS 16-INCHES, INSIDE DIAMETER. THE NEW PIPE SHALL BE A HDPE, SDR 17 (OR BETTER) PIPE. THE NUMBER OF PIPE JOINTS SHALL BE LIMITED TO THE SMALLEST NUMBER POSSIBLE.
4. IT IS ANTICIPATED THERE MAY BE SOME TYPE OF BLOCKAGE / GATE AT THE UPSTREAM END OF THE EXISTING SLUICEWAY. THIS BLOCKAGE SHALL BE REMOVED TO ALLOW FOR THE COMPLETE INSTALLATION OF THE PIPE.
5. THE SLUICEWAY SHALL BE CLEARED OF DEBRIS AND CLEANED TO PROPERLY RECEIVE THE NEW PIPE AND ANNULUS GROUT.
6. ONCE THE PIPE IS INSTALLED THROUGH THE SLUICEWAY, IT SHALL BE SUPPORTED ALONG ITS LENGTH AS NEEDED TO HOLD ITS SHAPE AND PREVENT FLOTATION AND OTHER MOVEMENT DURING THE PLACEMENT OF THE GROUT.
7. NON-SHRINK GROUT OR (FLOWABLE FILL MATERIAL) SHALL BE PLACED UNDER LOW PRESSURE TO FULLY SEAL THE ANNULAR SPACE AND SECURE THE NEW PIPE INTO THE EXISTING SLUICEWAY. THE CONTRACTOR SHALL PROPOSE THE METHOD AND MEANS TO SUPPORT AND INSTALL THE NON-SHRINK GROUT.
8. THE NEW PIPE SHALL BE FULLY SUPPORTED ON LAID STONE OR CONCRETE FOR ITS ENTIRE LENGTH. ANY LENGTH UPSTREAM OF THE STONE DAM AND PRIOR TO THE NEW CONCRETE WALL SHALL HAVE A SUITABLE, 6-INCH-THICK CONCRETE SUPPORT CRADLE.
9. THE NEW, MANUAL LOW-LEVEL GATE AND OPERATOR SHALL BE AS SHOWN ON THE PLANS AND AS SPECIFIED. THE OPERATOR CRANK SHALL BE REMOVEABLE AND A STAINLESS-STEEL COVER AND LOCK TO PREVENT UNAUTHORIZED ACCESS TO THE PINION SHAFT SHALL BE PROVIDED TO THE OWNER.
10. BRACES AND GUIDES FOR THE GATE STEM SHALL BE PER MANUFACTURER RECOMMENDATIONS. ALL MATERIAL FINISHES SHALL BE STAINLESS STEEL.
11. THE LOW-LEVEL PIPE INVERT AND THE INVERT OF THE CONTROL VALVE SHALL BE DETERMINED IN THE FIELD ONCE THE EXISTING, UPSTREAM OPENING IS EXPOSED AND MEASURED. THE INVERT SHALL BE INSTALLED AS LOW AS POSSIBLE.

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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION	BY

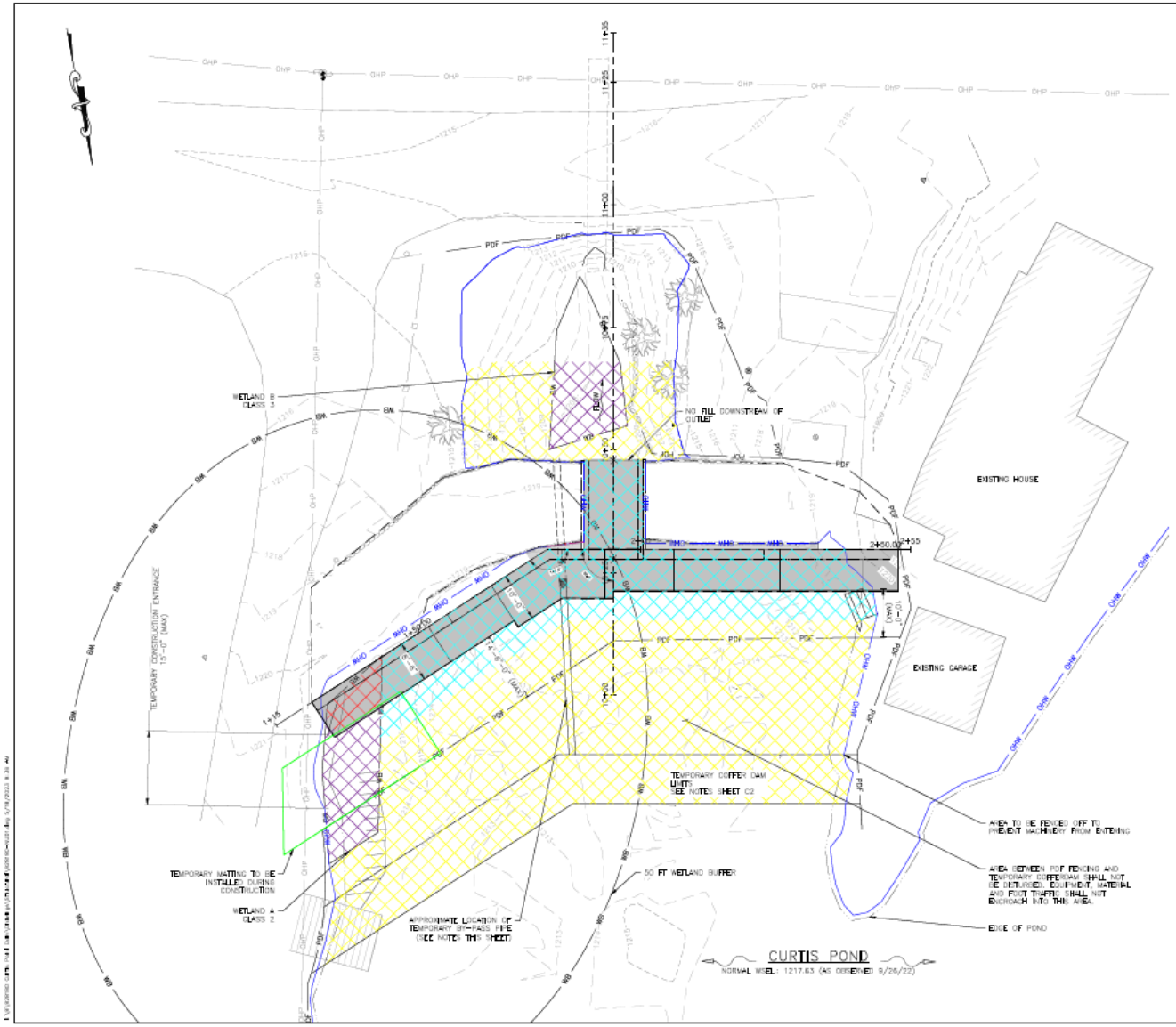
TOWN OF CALAIS
3120 PEKIN BROOK ROAD
EAST CALAIS, VERMONT, 05650

CURTIS POND DAM REHABILITATION PROJECT

SHEET TITLE
CIVIL DETAILS AND EPSC DETAILS

DRAWN BY	DATE
HLP	MAY 16, 2023
CHECKED BY	D&K PROJECT #
CWJ	028190
PROJ. ENG.	D&K ARCHIVE #
JWT	

SHEET NUMBER
C11
SHEET 11 OF 13



WETLAND AND BUFFER ZONE IMPACTS			
CATEGORIES	PERMANENT	TEMPORARY	TOTAL
WETLAND	89.25 SF	517.07 SF	606.32 SF
WATERBODY	1742.27 SF	4528.42 SF	6270.69 SF
IMPACT BELOW OHW			6876.92 SF
			1146.15 CY

LEGEND:

- PERMANENT WETLAND FILL
- TEMPORARY WETLAND IMPACT
- PERMANENT IMPACTS BELOW OHW
- TEMPORARY IMPACTS TO BELOW OHW

NOTES:

1. THE CONTRACTOR IS ADVISED OF THE REGULATORY REQUIREMENT TO AVOID DISTURBANCE TO EXISTING LESSER BUR-REED (THREATENED SPECIES PROTECTED UNDER VT STATE LAW) PLANT COLONIES IN AREAS SHOWN ON SHEET C13 AND HERON.
2. THE CONTRACTOR IS ALSO ADVISED OF THE REGULATORY REQUIREMENT TO REMOVE AND TRANSPLANT CERTAIN AREAS OF LESSER BUR-REED PLANTS WITHIN SEVERAL DAYS FOLLOWING INSTALLATION OF THE COFFERDAM AS NOTED ON SHEET 13 AND DESCRIBED IN D&K'S MARCH 2023 TRANSPLANTING PLAN.
3. THE CONTRACTOR SHALL PARTICIPATE IN PRE-CONSTRUCTION SITE WALKOVER WITH THE OWNER'S BIOLOGIST AND WILL FENCE OFF AND NOT DISTURB LESSER BUR-REED AREAS IN THE GENERAL AREA SHOWN ON SHEET C13.
4. THE CONTRACTOR SHALL MARK OUT THE ANTICIPATED LOCATION OF THE TEMPORARY COFFERDAM AND TEMPORARY BY-PASS PIPE IN ADVANCE OF THE PRE-CONSTRUCTION WALKOVER AND REVIEW THE AREA WITH THE OWNER'S BIOLOGIST.
5. THE OWNER'S BIOLOGIST SHALL BE ONSITE AND PROVIDE DIRECTION TO THE CONTRACTOR REGARDING ASSISTANCE. THE CONTRACTOR SHALL NOT EXCAVATE OR OTHERWISE DISTURB THE PLANTS UNTIL THE OWNER'S BIOLOGIST IS ON SITE AND ABLE TO PROVIDE SPECIFIC DIRECTION TO THE CONTRACTOR.
6. IF DEEMED NECESSARY BY THE BIOLOGIST, THE CONTRACTOR SHALL ASSIST THE OWNER'S BIOLOGIST IN THE REMOVAL AND TRANSPLANT OF IDENTIFIED BURR REED PLANTS. ASSISTANCE MAY INCLUDE: 1) OVER-EXCAVATION OF LESSER BUR-REED AREAS, 2) TRANSPORT OF THE EXCAVATED BURR REEDS TO THE TRANSPLANT SITE.
7. LESSER BUR-REED PLANT ROOTS, STEMS, AND RELATED PLANT ELEMENTS ARE NOT TO BE DISTURBED DURING THE EXCAVATION AND TRANSPORT. EXCAVATED LESSER BUR-REED PLANTS SHALL BE KEPT FULLY WET AND COVERED/PROTECTED FROM THE TIME OF EXCAVATION TO THE DELIVERY TO THE TRANSPLANT SITE.
8. EXCAVATION AND DELIVERY SHALL OCCUR ON THE SAME DAY.
9. THE OWNER'S BIOLOGIST AND SUPPORT FIELD PERSONNEL SHALL BE RESPONSIBLE FOR THE TRANSPLANTING OF THE LESSER BUR-REED AT THE TRANSPLANT SITE.
10. THE CONTRACTOR IS ADVISED A PLOT OF PHRAGMITES IS LOCATED IMMEDIATELY ADJACENT TO THE PROJECT AREA. THE OWNER'S BIOLOGIST SHALL REVIEW THIS AREA WITH THE CONTRACTOR AT THE PRE-CONSTRUCTION WALKOVER.
11. THE CONTRACTOR SHALL AVOID DISTURBANCE TO THE PHRAGMITES AREA AND SHALL PREVENT THE SPREAD OF PHRAGMITES AS A RESULT OF CONSTRUCTION ACTIVITIES.

10 0 5 10 20 40
SCALE IN FEET

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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION	BY

TOWN OF CALAIS
3120 PEKIN BROOK ROAD
EAST CALAIS, VERMONT, 05650

CURTIS POND DAM REHABILITATION PROJECT

SHEET TITLE

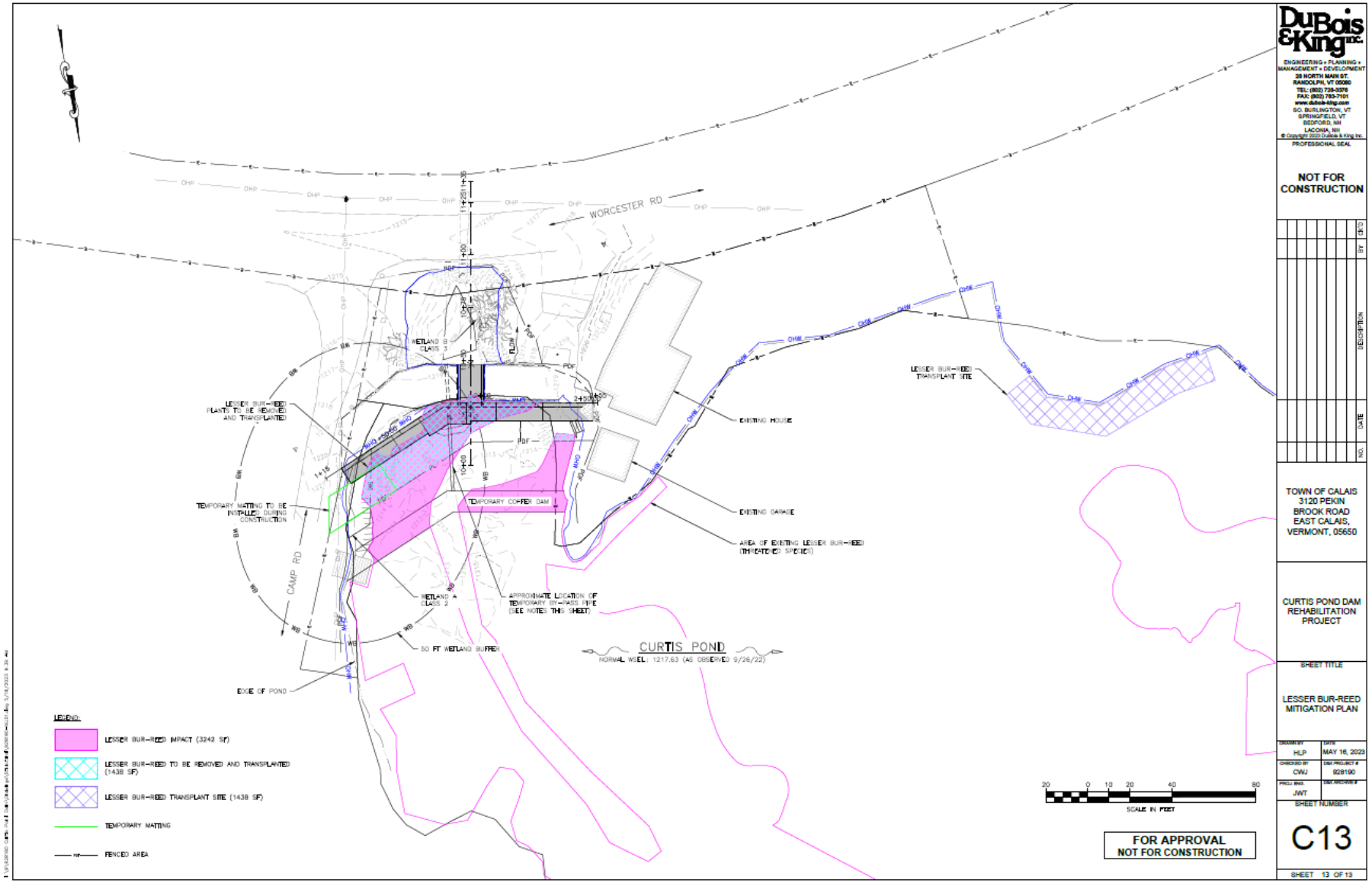
WETLAND IMPACT PLAN

DRAWN BY	DATE
HLP	MAY 16, 2023
CHECKED BY	D&K PROJECT #
CWJ	928190
PROJ. ENG.	D&K ARCHIVE #
JWT	

SHEET NUMBER

C12

SHEET 12 OF 13



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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION	BY

TOWN OF CALAIS
3120 PEKIN BROOK ROAD
EAST CALAIS, VERMONT, 05650

CURTIS POND DAM REHABILITATION PROJECT

SHEET TITLE
LESSER BUR-REED MITIGATION PLAN

DRAWN BY	DATE
HLP	MAY 16, 2023
CHECKED BY	D&K PROJECT #
CWJ	928190
PROJ. ENG.	D&K ARCHIVE #
JWT	

SHEET NUMBER
C13

SHEET 13 OF 13

APPENDIX II: ADDITIONAL PRE-1837 LOT INFORMATION

On November 1, 1819, Marshal Mower sold the south half (about 50 acres) of the 100 acres that he bought from William and Samuel Robinson in 1813 to his son-in-law, Gaius Allen (CLR 3:496). The north line of the subdivision was to be parallel with the line of the original lots (CLR 3:496). On June 28, 1822, Gaius Allen sold part of the land that he bought from Marshal Mower in 1819 to Henry Prentis Green of Chatham, New Jersey (CLR 4:195). This lot was described as beginning on the West County Road at a point 45 rods (742 ft) north of the south line of Lot #48; then running northwards on the road to the middle of the lot; then N54W to Curtis Pond; then by the pond southeasterly until getting within 45 rods (742 ft) of the south line of the lot; then running on a direct line to the beginning, meaning to convey 14 acres but "with reference of the mill seat deeded by Marshal Mower to Caleb Curtis reference to that deed on record for its contents and boundaries" (CLR 4:195). The language used in this deed suggests that the 14-acre lot surrounded the early mill privilege and that the early mill might not have been active at the time.[39] On May 4, 1831, Jared L. Green, acting as attorney for Henry Green, sold 1¾ acres from the 14-acre parcel to Abdial Kent (CLR 5:312 see also CLR 5:310). This subdivision began on the south line of the road leading from Mason Wheeler's to the West County Road [the Worcester Road] at a point 12 rods and 2 links (199.32 ft / 60.75 m) west of the intersection with the West County Road, then running east 12 rods and 2 links (199.32 ft / 60.75 m) to the intersection; then going south on the west side of the West County Road 23.5 rods (387.75 ft / 118.19 m) to the center of the brook (division fence to be built on north side); then up the center of brook to the foot of the falls near the first bend in the brook; then westerly and northerly "in such a direction as to convey the entire privilege of erecting a dam and necessary buildings at or near the above mentioned falls" together with land south of the brook "sufficient for the erection of said dam and to flow for a pond about 14 rods [231 ft / 70.41 m] west of said road;" then northerly to the beginning (CLR 5:312).

On May 22, 1841, Jared Green, still acting as attorney on behalf of Henry Green, sold 46 acres of land on Lots #48 and #49,[40] being all that land that Gaius Allen had to Henry Green in two deeds dated June 21, 1822, and June 28, 1822, excepting the 1¾-acre parcel that was sold to Abdial Kent on May 4, 1822, and a strip of land lying on the north side of the road leading from the West County Road west to Gaius Allen's [Worcester Road] "meaning to reserve what lays east of the old grist mill dam [probably meaning the Curtis Pond Dam, which was associated with the grist mill] to the West County Road" (CLR 7:375).[41]

On November 16, 1834, Abdial Kent sold his 1¾-acre parcel on Lot #48 to Ezekiel Kent 2nd and Lewis Bancroft for $150 (CLR 6:179). On May 2, 1837, Ezekiel Kent and Lewis

[39] Previously, on June 21, 1822, Gaius Allen had sold about 22-23 acres to Henry Green immediately south of the 14 acres described above. This land started on the west side of the West County Road at a point 45 rods (742.5 ft / 226.31 m) north from south line of Lot #48; then running N54W 79 rods (1,303.5 ft / 397.31 m); then S36W 45 rods (742.5 ft / 226.31 m); then on the lot line to the beginning (CLR 4:193). This was part of the 50 acres that Allen bought from Marshal Mower in 1819 (CLR 3:496).

[40] This appears to have included about 8 acres on Lot #49, lying between the West County Road and the east line of the lot, and the rest on Lot #48.

[41] In a subsequent deed, dated March 21, 1842, from Jared Green to George Kent, this was described as being on the north side of the highway leading from the West County Road to Mason Wheeler's between the stone dam at the outlet of the Pond & sd West County Road" (CLR 8:387).

Bancroft sold the 1¾ acres with its water rights (being the same land that Abdial Kent deeded us on November 16, 1834, and that Jared L. Green previously deeded to Abdial Kent on May 4, 1831), “together with the sawmill thereon” to John Morgan of Montpelier for $400 (CLR 6:452). Based on these records, the sawmill was probably built by Kent and Bancroft ca. 1834-1837.

APPENDIX III: VDHP ENVIRONMENTAL PREDICTIVE MODEL FOR LOCATING ARCHAEOLOGICAL SITES

VERMONT DIVISION FOR HISTORIC PRESERVATION

Environmental Predictive Model for Locating Precontact Archeological Sites

Project Name Curtis Pond Dam County WA Town Calais
DHP No. _____ Map No. _____ Staff Init. _____ Date _____
Additional Information _____

Environmental Variable	Proximity	Value	Assigned Score
A. RIVERS and STREAMS (EXISTING or RELICT):			
1) Distance to River or Permanent Stream (measured from top of bank)	0- 90 m 90- 180 m	12 6	12
2) Distance to Intermittent Stream	0- 90 m 90-180 m	8 4	0
3) Confluence of River/River or River/Stream	0-90 m 90 –180 m	12 6	0
4) Confluence of Intermittent Streams	0 – 90 m 90 – 180 m	8 4	0
5) Falls or Rapids	0 – 90 m 90 – 180 m	8 4	8
6) Head of Draw	0 – 90 m 90 – 180 m	8 4	0
7) Major Floodplain/Alluvial Terrace		32	0
8) Knoll or swamp island		32	0
9) Stable Riverine Island		32	0
B. LAKES and PONDS (EXISTING or RELICT):			
10) Distance to Pond or Lake	0- 90 m 90 -180 m	12 6	12
11) Confluence of River or Stream	0-90 m 90 –180 m	12 6	12
12) Lake Cove/Peninsula/Head of Bay		12	0
C. WETLANDS:			
13) Distance to Wetland (wetland > one acre in size)	0- 90 m 90 -180 m	12 6	
14) Knoll or swamp island		32	0
D. VALLEY EDGE and GLACIAL LAND FORMS:			
15) High elevated landform such as Knoll Top/Ridge Crest/ Promontory		12	0
16) Valley edge features such as Kame/Outwash Terrace**		12	0

-over-

May 23 ,2002

17) Marine/Lake Delta Complex**		12	0
18) Champlain Sea or Glacial Lake Shore Line**		32	0
E. OTHER ENVIRONMENTAL FACTORS:			
19) Caves /Rockshelters		32	0
20) [ ] Natural Travel Corridor [ ] Sole or important access to another drainage [ ] Drainage divide		12	0
21) Existing or Relict Spring	0 – 90 m 90 – 180 m	8 4	0
22) Potential or Apparent Prehistoric Quarry for stone procurement	0 – 180 m	32	0
23)) Special Environmental or Natural Area, such as Milton acquifer, mountain top, etc. (these may be historic or prehistoric sacred or traditional site locations and prehistoric site types as well)		32	0
F. OTHER HIGH SENSITIVITY FACTORS:			
24) High Likelihood of Burials		32	0
25) High Recorded Site Density		32	0
26) High likelihood of containing significant site based on recorded or archival data or oral tradition		32	0
G. NEGATIVE FACTORS:			
27) Excessive Slope (>15%) or Steep Erosional Slope (>20)		- 32	0
28) Previously disturbed land as evaluated by a qualified archeological professional or engineer *based on coring, earlier as-built plans, or* obvious surface evidence (such as a gravel pit)		- 32	0

** **refer to 1970 Surficial Geological Map of Vermont**

Total Score: 44

Other Comments :

0- 31 = Archeologically Non- Sensitive
32+ = Archeologically Sensitive