HISTORIC RESOURCE REVIEW
AND ARCHAEOLOGICAL RESOURCES ASSESSMENT,
HANDS MILL DAM (VT STATE ID #225.01) REMOVAL PROJECT
WASHINGTON, ORANGE COUNTY, VERMONT

Detail of a postcard entitled "Washington Vt. from George Bohonon's." Courtesy of the Vermont Historical Society, Leahy Library, Barre, Vermont

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UVM Report No. 1303
December 8, 2020

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HANDS MILL DAM (VT STATE ID #225.01) REMOVAL PROJECT
WASHINGTON, ORANGE COUNTY, VERMONT

Submitted to:

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PROJECT DESCRIPTION

The Town of Washington, in partnership with the Winooski Natural Resources Conservation District, proposes the removal of the Hands Mill Dam (VT State ID #225.01), located in Washington, Orange County, Vermont, due to the structure's poor condition. The dam is classified as a significant hazard by the Vermont Department of Environmental Conservation, Facilities Engineering Division, Dam Safety and Hydrology Section (VDEC 2005 Inspection Report). Proposed project work includes the removal of the dam and restoration of the upstream channel. The dam is situated on Jail Branch of the Winooski River watershed, near the intersection of Woodchuck Hollow Road (formerly called Brown Road) and West Corinth Road (formerly known just as the 'Corinth Road') (Figures 1 – 3). The dam is located on a 3.5-acre property owned by the town of Washington (Town Parcel #7105.000). The town property abuts six other properties and the identified Area of Potential Effect (APE) includes portions of these properties (Figure 4).

The proposed project requires a U.S. Army Corps permit and may receive Federal Emergency Management Agency (FEMA) funding. 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 and Archaeological Resources Assessment (ARA) will assist with satisfying the Section 106 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 Historic Resources Review 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.

The goals of the ARA are to identify any portions of the project's APE that may contain pre-Contact 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. To assess the potential of the proposed project's APE for Pre-Contact 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 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 records were used in the preparation of this report including: historical maps, land records, newspapers, aerial imagery, town histories, probate records, census records, and vital records. Several public and commercial on-line databases were used to access historical and genealogical information and are cited in the reference section. Land records were accessed, at

the Town of Washington Town Clerk's Office in Washington, Vermont. Aerial photographs were accessed at the Vermont Center for Geographic Information's website at https://vcgi.vermont.gov/; the University of Vermont Map Room, Howe Memorial Library, Burlington, Vermont; at the Vermont State Archives & Records Administration (VSARA), Middlesex, Vermont; and from Google Earth. The early United States Geological Survey topographic maps were available at https://ngmdb.usgs.gov/topoview/. The files of the Vermont Division for Historic Preservation (VDHP) Montpelier, Vermont, were accessed through the Vermont Agency of Commerce and Community Development's Online Resources Center (VACCD ORC) at www.https://orc.vermont.gov. A number of primary and secondary source books were checked at the Vermont Historical Society's Leahy Library in Barre, Vermont, The University of Vermont's Silver Special Collections, Billings Library Annex, Burlington, Vermont, and at Google Books (https://books.google.com/). The technical and geographical information was derived primarily from the engineering report by Stone Environmental (2020); the VCGI; and documents at the Vermont Department of Environmental Conservation Facilities Engineering Division, Dam Safety Program, Montpelier, Vermont. Special thanks is given to the Vermette Family of Washington for sharing their knowledge and family photographs. Kenny and Quinn conducted a site visit to the project area on October 9, 2020; all current photographs were taken at that time.

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. An Historic Sites & Structures Survey and Determination of Effect form were also completed as part of this review and are submitted with this report.

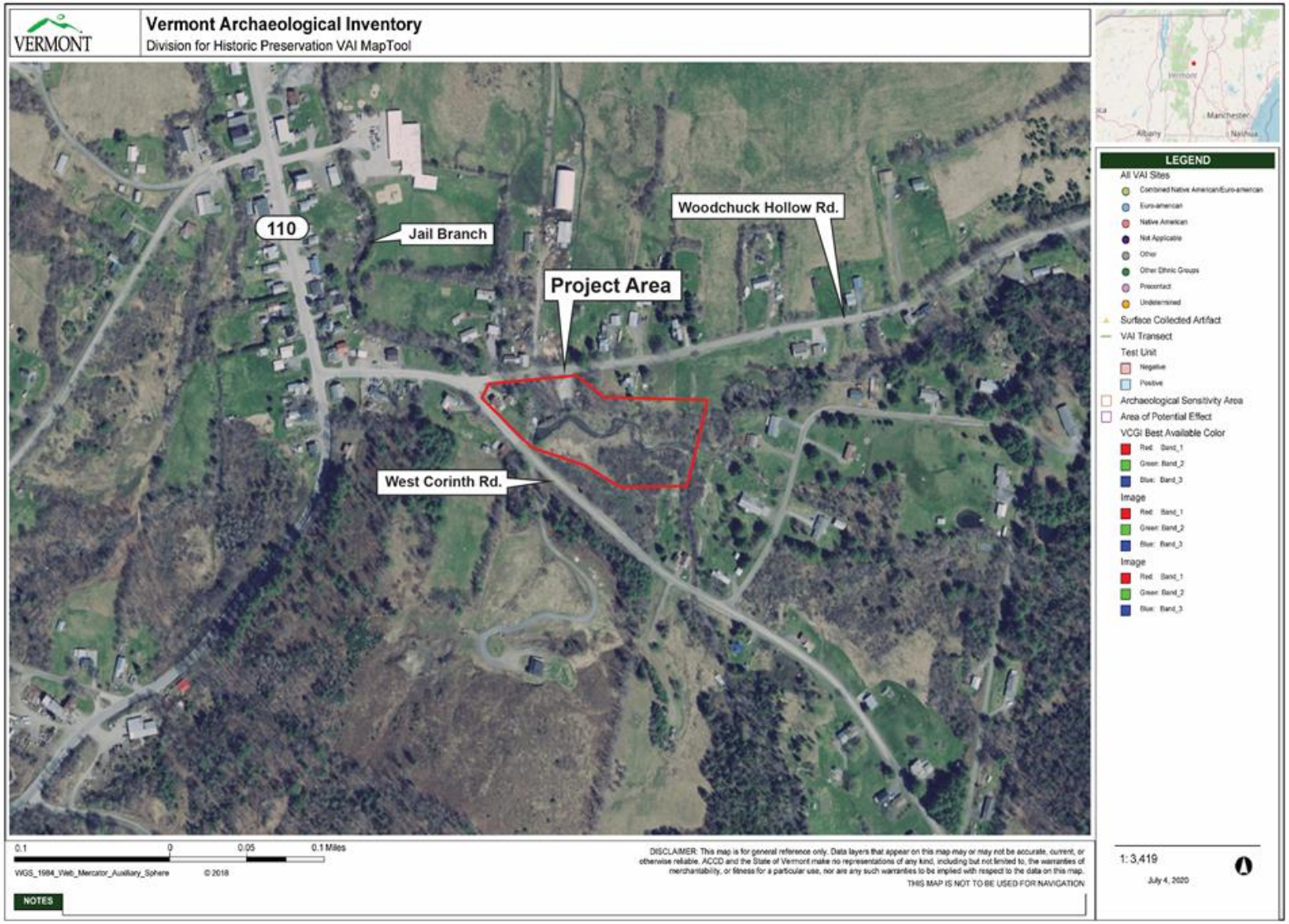

Figure 1. Map showing the location of the Hands Mill Dam Removal Project, Washington, Orange County, Vermont (VACCD ORC).

Figure 2. View of the Hands Mill Dam and associated mill structure, Washington, Orange County, Vermont, looking southwest.

Figure 3. View of the Hands Mill Dam and associated mill structure, Washington, Orange County, Vermont, looking southeast.

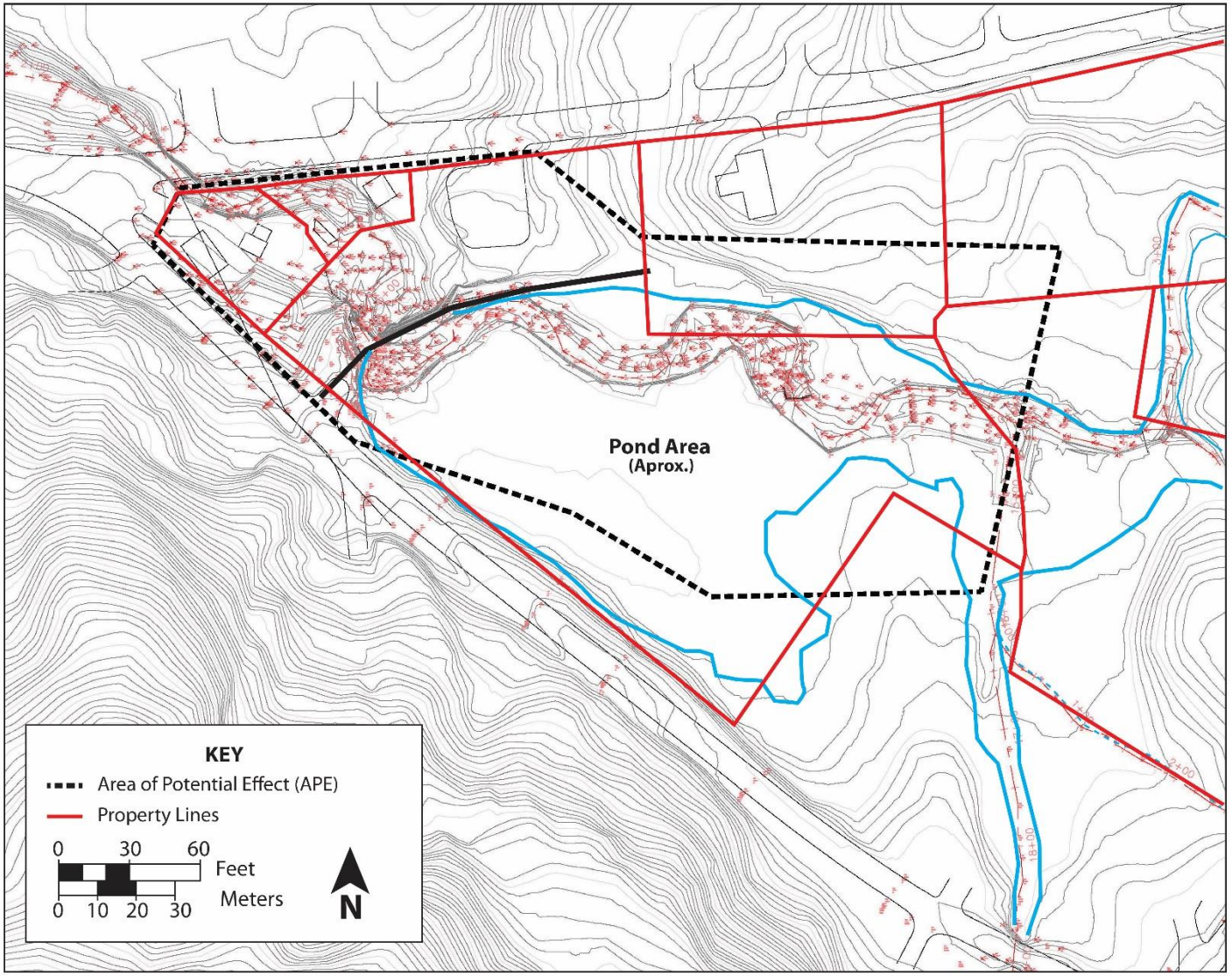

Figure 4. Map showing the Area of Potential Effect for the Hands Mill Dam Removal Project, Washington, Orange County, Vermont (Base Map: Stone Environmental 2020).

ENVIRONMENTAL SETTING

The Hands Mill Dam Removal project area is located within the Vermont Piedmont physiographic region lying east of the Green Mountains. The area is characterized by a hilly till covered terrain bisected by numerous rivers and streams that has rich soils and is covered primarily by a northern hardwood forest. The town of Washington is undulating, but with no true mountains, and is well watered, but with no natural ponds (Child 1888:501). In the late 1800s, the forest consisted largely of "beech, birch, ash" with sugar maples and other trees (Child 1888:501).

The project area is located on Jail Branch (also known as Jail Brook in some sources) of the Winooski River watershed. This stream rises just northeast of the center of Washington and runs in a northerly direction for about 11.3 mi (18.2 km) through the town, then across the southwest corner of Orange, and on into Barre, where it joins the Stevens Branch. The Stevens Branch, in turn, flows into the Winooski River, which eventually empties into Lake Champlain. Following the steep gradient of Jail Branch, it is about three miles from the head of the watercourse, at about 2,120 ft amsl, to the Hands Mill Dam, which is situated at about 1,280 ft amsl. A short, roughly 2.5 mi (4 km) long, tributary to Jail Branch, historically known as the East Branch of Jail Brook, enters the Hands Mill Pond on its eastern side. This stream "begins in the northeastern corner of the watershed and has a drop of about 1,075 ft (327.7 m) before reaching the pond" (Anonymous 1975a:2). In addition, two other small drainages, both rising at springs on the hillside to the east of the project area, also enter the pond on its eastern end.

The USDA Natural Resources Conservation Service's Web Soil Survey (www.http://websoilsurvey.nrcs.usda.gov) indicates that a few soil types are possible within proposed project's Area of Potential Effect (APE). On the north side of the pond, the soil is primarily Buckland loam. This is a well drained soil typical of glaciated uplands, which formed in lodgement till. The rock content of this soil ranges from 0-25%. To the south of the pond, the soil is primarily Ninigret fine sandy loam. This soil formed on a terrace feature of a sandy/gravelly glacial outwash plain (possibly related to Glacial Lake Winooski). Finally, the soil within the former pond area is generally classified as Saco mucky silt loam, a geologically recent alluvial deposit. However, there are places within this area that have an overburden of modern sandy to silty pond sediments and/or sandy to gravelly flood deposits. In the historic period, the soils of this region that were situated on the smooth hills were found to be "best suited to grass and most of it [was] utilized for mowing," but could also give good yields of barley, wheat, buckwheat, silage corn, and oats (Latimer et. al. 1930: 49-50, 53). This general region, however, was "too high . . . for best results with corn and fruit" (Latimer et. al. 1930: 49:50, 53).

HISTORIC BACKGROUND

Saw Mill

The waterpower at the Hands Mill Dam site was initially developed by 23-year-old Charles W. Huntington who built the first dam and saw mill at this location in 1865 (Figures 5 – 7) (WLR 15:9; *Herald and News* April 24, 1930). Charles Huntington (1842-1930) was the eldest child of Warren Huntington (1817-1904), a local farmer, and his wife, Lydia (Smith) Huntington (1820-1902) (*Barre Daily Times* July 2, 1904; Child 1888:502; Find-A-Grave, Gravestone/Memorial Maple Hill Cemetery, Washington, Vermont; *Herald and News* April 24, 1930; Huntington 1863:344). Charles Huntington's paternal grandparents, William (1777-1864) and Elizabeth (Derby) Huntington, were early settlers of Washington (Child 1888:503). They arrived from Hartford, Connecticut, ca. 1795, and settled on land where the village stands today (Child 1888:503). Charles Huntington had deep ties to the town and "was very public spirited" (*Barre Daily Times* April 15, 1930). In addition to operating the mill, he served as a town selectman, a school director, and as a town representative (*Barre Daily Times* April 15, 1930). Charles married Alice Dickey on March 11, 1868, and they had five children including: Fred (1869-1946); Lydia (1871-1907); Hettie (1872-1969); Forest (1879-1962); and Ethel (1883-1879) (*Burlington Daily News* July 25, 1946; *Vermont Death Records 1909-2008; Vermont Vital Records 1720-1908*). Charles W. Huntington remained "in the lumber business for over 60 years" and his mill became an integral part of local life (*Herald and News* April 24, 1930).

Charles Huntington's mill was located upstream and just on the outskirts of the Village of Washington on Lot #12 of the 10th Range of the original division of land in the town (*Vermont Watchman and State Journal* October 18, 1893). Charles Huntington bought his first part of Lot #12 of the 10th Range from Charles White on August 24, 1865[1] (WLR 14:739). On October 6, 1865, Charles Huntington bought another five acres of Lot #12 with residential buildings on it from his father, Warren Huntington[2] (WLR 15:9). This deed included the 'right of flowing' the part of the larger lot owned by Warren Huntington, but not conveyed in this deed, "by raising a dam where the said Charles Huntington is now building a dam 18 ft high" (WLR 15:9). On February 19, 1867, Charles Huntington bought a small piece of land near the "mill dam wall," which had been "flowed by the mill pond" from Luther and Polly Goss for $25 (WLR 15:163).[3]

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[1] Except what sold to Willard Clough in 1861, so Clough could build a mechanics shop (see WLR 14:363). Willard Clough (1840-1910) was a "natural genius and inventor" born Washington, served in the Civil War, married 1864 in Washington, moved in 1865 to Oshkosh invented self-acting force pump he returned to Washington 1890 (*Barre Daily Times* October 28, 1910).

[2] This history of this parcel, starting ca. 1850 is as follows: on January 25, 1850, Benjamin Thurber and J.L .Bowles sold five acres to Cook (WLR 12:227). On March 3, 1852, Norman Cook sold 15 acres, with building to B.W. Bartholomew (WLR 12:346). On May 18, 1854, B.W. Bartholomew sold 16 acres with buildings and garden on Lot #12 in the 10th Range to Francis Metcalf (WLR 13:860). On October 23, 1854, Francis Metcalf sold the 16 acres less five acres on Lot #12 on 10th Range with buildings to Mark Davis (WLR 13:137). Mark Davis sold 10 acres with buildings to Warren Huntington on September 25, 1865 (WLR 15:8). The five acre parcel bought by Charles Huntington was half of the land that Warren Huntington bought of Mark Davis (WLR 15:9). That means that some part already developed (with house and barn& etc), but no dam or mill mentioned in previous deeds. This is the house 'M. Davis' on the Walling map and 'C. Huntington' on the Beers map.

[3] On March 30, 1872, Charles Huntington also bought another five acres from his father, Warren Huntington, for $350 (WLR 16:21). This lot was south of the mill and dam lot. In this deed, Warren Huntington reserved a pot ashery that was located on the property (WLR 16:21).

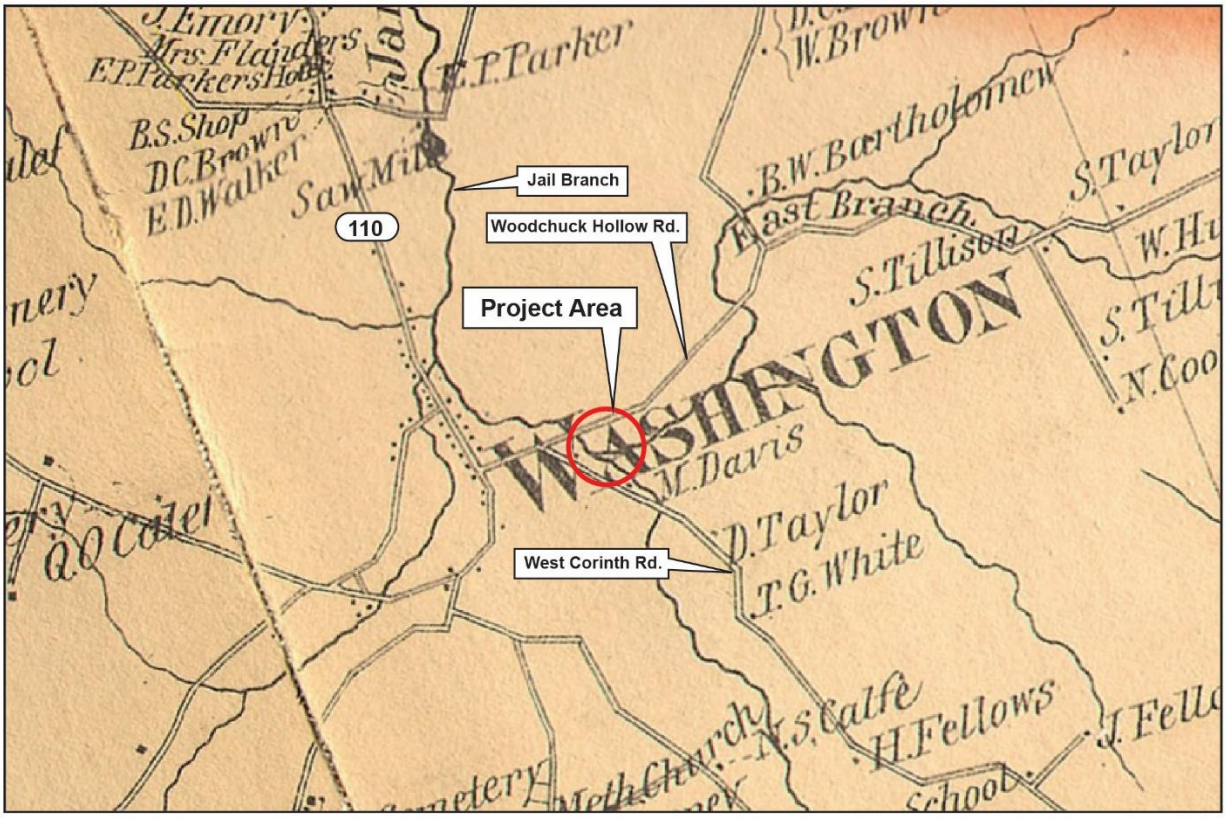

Figure 5. Detail of H.F. Walling's *Map of Orange County, Vermont* (1858) with the project area and road names added.

Figure 6. Charles W. Huntington (Photo credit: N.A. Forbes; https://www.findagrave.com/memorial/107942274).

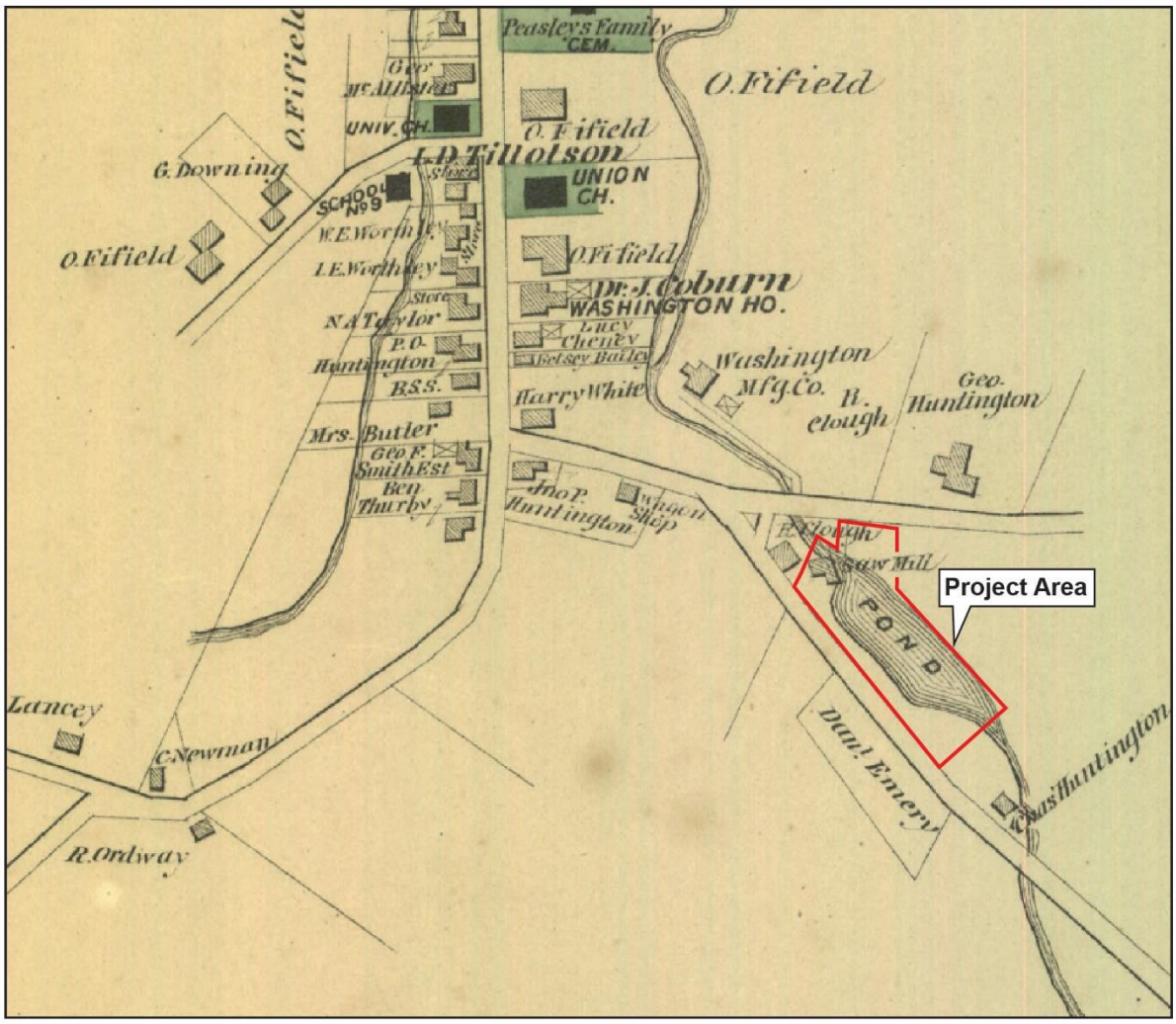

Figure 7. Detail of the 'Village of Washington' from F.W. Beers' *Atlas of Orange County, Vermont* (1877) with the project area added.

On July 13, 1868, Charles Huntington sold a half interest in the "mill recently built by me" to his brother, George E. Huntington, a local merchant (WLR 15:321). On December 5, 1870, George Huntington sold his half interest to their father, Warren Huntington, who remained Charles Huntington's business partner until 1892 (WLR 15:567). The 1870 federal census of manufactures, described Huntington's mill having invested capital amounting to $3,500. At the time, the mill operated with one 3 ft diameter turbine (operating off 18 ft head[4]), which developed 65 horsepower. The mill had a circular saw, a board saw, a shingle saw, a scroll saw, a slab saw, a jointing saw, and a lathe. It employed three men over 16 years of age running the equivalent of eight months on full time $150 wages. Annually, the mill processed 100,000 spruce logs (valued at $1,500) and 50,000 hemlock logs (valued at $500) and produced boards (valued at $2,000) and shingles (valued at $100). In 1872, it was noted that Huntington's mill "with its circular saws and much improved and enlarged business facilities is doing a [fine?] amount of profitable work" (*United Opinion* May 17, 1872).

The 1880 federal census of manufactures lists Huntington's mill on Jail Branch with an invested capital of $4,000. The mill had six employees, two of whom were 'youths.' The normal working hours were 12 hours a day May to November and 9 hours a day from November to May. The daily wage of a skilled worker was $2 and that of an unskilled laborer was $1 (the total wages paid in a year was $667). The mill usually operated 8 months at full time, two months half time, and was idle for two months. The 18 ft head operated two Jonval turbines: one 3.5 ft diameter (at 130 rpm) the other 1.5 ft diameter (at 290 rpm). The mill had no auxiliary steam power. The mill was equipped with (at least) one gang saw, five circular saws, and one hand saw. The value of the logs taken in was estimated at $20,000 and the cost of supplies at $200. The mill turned out 300,000 ft timber and 275,000 shingles each year at an estimated value of $3,775 (U.S. Census of Manufactures 1880). In 1888, it was reported that the mill was "operated by waterpower and cuts from 3000,000 to 400,000 feet of rough lumber per year, one-half custom work, cuts 150,000 shingles, does planing and turning, employing three to seven men"[5](Child 1888:502).

In the spring of 1892, "W & C.W. Huntington" put "a new water wheel into their mill" (*Vermont Watchman and State Journal* May 11, 1892). On October 11, 1892, Warren Huntington transferred his half interest in the mill to Charles Huntington for $500 and a lifetime supply of firewood (WLR 18:251). In 1893, "C.W. Huntington has a well-equipped saw-mill, which is fitted with a fine set of machinery for the manufacture of barrel hoops. Mr. Huntington also does a good business in sawing lumber, shingles, and in general mill work" (*Vermont Watchman and State Journal* October 18, 1893). In 1893, it was remarked that: "great activity is noticeable at the saw mill of C.W. Huntington & Co. Their new water-wheel, put in last season, proved all that it was claimed for it, and they have plenty of water power. Their machinery for the manufacture of hoops is now all in place. They have some five machines that were purchased in Chicago, consisting of a boit [sic] saw, a double splitting saw, a double planer and shaper and a clipper and coiling machine capable of coiling for shipment from eight to ten thousand pieces per day. The lumber used in this industry is elm and ash, a class of lumber that has never before

[4] The' head of a dam' is the vertical distance between the level of the water at intake and the level of the water at the tailwater.

[5] In 1888, it was noted that Washington village on Jail Creek "contains two general stores, two churches, two blacksmith shops, a good hotel, and about fifty dwellings, with a population of nearly 200" (Child 1888:502).

had any market value and is very abundant here. Birch and several other kinds of wood are also used, which are likewise plenty here. Messrs Huntington & Co. have banked at their mill some seventy thousand feet of logs for this purpose and have contracted for nearly one hundred fifty thousand more"[6] (*Vermont Watchman and State Journal* April 19, 1893).

On April 8-9, 1895, a rainstorm caused a freshet that "badly wrecked" the Huntington saw mill (*Vermont Watchman and State Journal* April 17, 1895; *Waterbury Record* April 23, 1895). In this event, "the pressure of water in the racecourse [sic] from the swollen pond was so great that the embankment was washed out to some extent. Land was inundated and a portion of the highway submerged" (*Waterbury Record* April 23, 1895). "As soon as possible," Charles Huntington "had a force of ten men repairing the embankment with spiles [sic] and planks" (*Vermont Watchman and State Journal April 17, 1895; Waterbury Record* April 23, 1895).

In 1899, it was reported that "C.W. Huntington is placing a new water wheel in his mill" (*Vermont Watchman and State Journal* August 23, 1899). In 1900, he was "running his saw mill day and night and employs about 20 men" (*Herald and News* April 26, 1900). In 1901, "C.W. Huntington is making extensive repairs on his mill" (*Barre Evening Telegram* October 24, 1901). In 1903, Charles Huntington mortgaged the saw mill, water wheels, pulleys, shafting, belting, machinery, the water privilege, and three acres to the Barre Savings Bank (WLR 20:397). In 1906, "the enterprising firm of Slocum Brothers has leased the mill property of C.W. Huntington, where they will do custom work . . . in addition to sawing a large amount of lumber for themselves" for the term of five years (*Barre Daily Times* January 26, 1906; *Bethel Courier* February 1, 1906). By the early part of 1914, Charles Huntington (or others) had installed new machinery[7] in the mill "for the manufacture of toys and woodenware" (*Brattleboro Reformer* November 16, 1914; *Enterprise and Vermonter* November 19, 1914) such as "some new novelty lathes had been installed recently for turning small wood work such as checker men and small toys" and even small toy rolling pins (*Barre Daily Times* November 14, 1914; *Herald and News* November 19, 1914) (Figure 8).

At about 12:30 in the morning of Saturday, November 14, 1914, Charles Huntington's saw mill in Washington was discovered to be entirely in flames (*Brattleboro Reformer* November 16, 1914; *Herald and News* November 19, 1914). Although, "the ringing of church bells soon called out most of the community" (*Herald and News* November 19, 1914), the village had "no modern fire apparatus" (*Brattleboro Reformer* November 16, 1914). That night "there was a strong wind and before many were on hand [the mill] and its contents, together with a considerable amount of lumber stacked in the millyard, was burned" (*Herald and News* November 19, 1914). The total loss to Huntington was estimated between $6,000 to $9,000 with only about $2,000 or $3,000 covered by insurance (*Barre Daily Times* November 14, 1914;

[6] In 1893, the village was thriving, with numerous shops including groceries, a feed store, a few general merchants, post office, meat market, three blacksmiths fine homes Washington House hotel, school with about 70 students even several private trout ponds (*Vermont Watchman and State Journal* October 18, 1893).

[7] In the early 20th century (ca. 1900s-1910s) saw mills were beginning to convert to electricity to operate at an increasing pace. Charles Huntington appears to have installed an electrical generation unit in this mill prior to 1914, which was most likely operated by his own waterpower (*Herald and News* March 5, 1914). As of the writing of this report, it is not clear when all of the machinery at this mill was run by electrical power or if that power eventually came from an outside source. However, by 1950 "the *mechanical* power feature of this development has been abandoned; its principal purpose is now for the storage of logs" (Haybrook 1950). (*Emphasis added*).

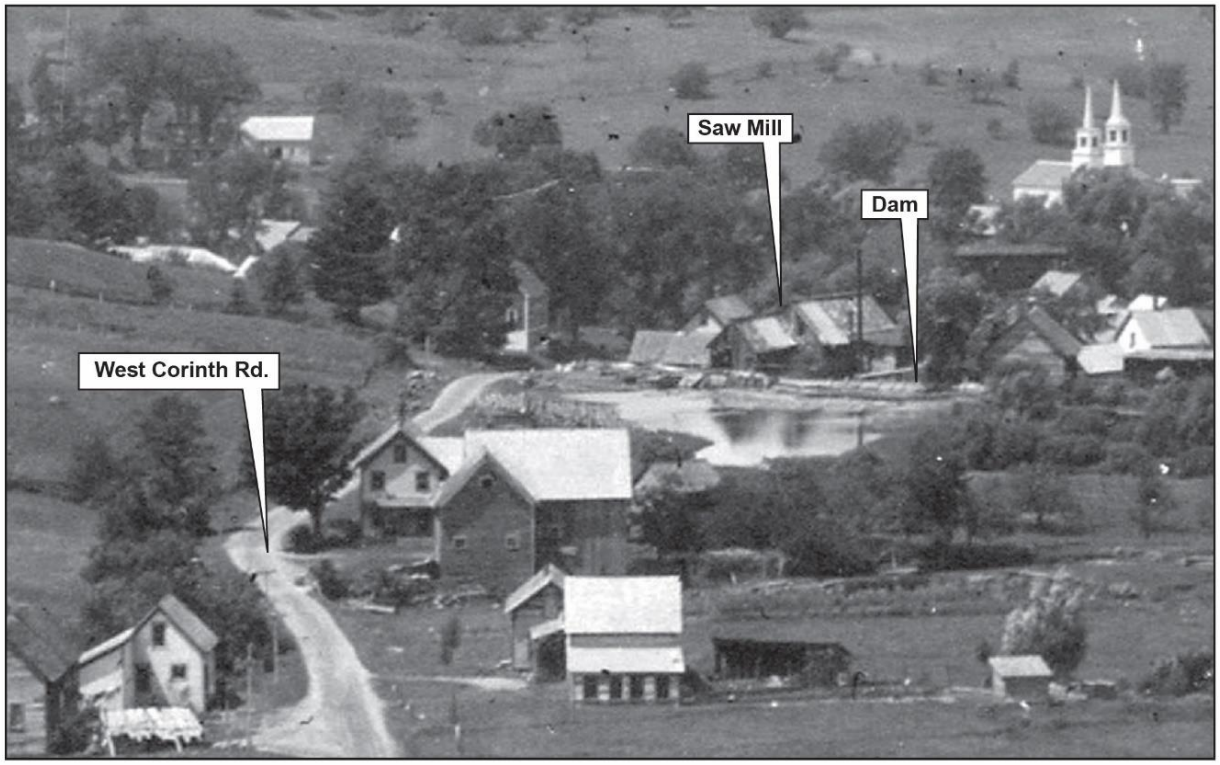

Figure 8. Detail of a postcard entitled: “Washington Vt. from George Bohonon’s” (Postcard Collection, Vermont Historical Society, Leahy Library, Barre, Vermont). View is looking west *possibly ca. 1900-1914*, and shows the earlier, pre-1927, crib-type dam.

Brattleboro Reformer November 16, 1914; *Vermont Tribune* November 26, 1914; *Herald and News* November 19, 1914; *Enterprise and Vermonter* November 19, 1914). At the time, it was also noted that: "the burring of the mill throws ten men out of employment, also many others who were chopping in the woods and others who were drawing lumber with their teams"[8] (*Herald and News* November 19, 1914). Only around noon the next day did the "fire engine from Chelsea arrive extinguish flames in the lumber piles" (*Barre Daily Times* November 14, 1914).

By April of 1915, C.W. Huntington had made "preparations to rebuild his saw mill" and by June of 1915, he was "at work" on it (Barre Daily Times April 26, 1915; June 18, 1915). In 1917, it was reported that: "teamsters from Washington brought to Barre yesterday another big consignment of wood products from the Huntington mill, where all sorts of odds and ends, each conforming to a prescribed pattern are being turned out by the millions. Such articles as checkers, toy whistles, wooden rings, ferrules, drawer buttons and knobs are found in the output of the mill and for several months the little industry has been booming. White birch is used largely in the manufacture of the knobs and other devices and before it is sawed into the necessary dimensions the material is cured by a special process. Naturally lathes form an important part of the mill equipment and the daily capacity is surprising. Orders for the Huntington mill are placed by a New York firm, which specializes in wooden novelties" (Barre Daily Times June 16, 1917).

On Wednesday, November 2, 1927, the village of Washington was "visited . . . by the hardest rain ever known" in town and very quickly, "the steams reached heights hardly imaginable" (*Herald and News* November 17, 1927). On Thursday, November 3, at "about 7 in the evening" about 60 ft of C.W. Huntington's mill dam went out, taking with it "the new part of the mill" (a 25 x 30-foot ell with machinery), "a garage, one or two hen houses, lumber and wood" as well as "the bridge just below it" (*Herald and News* November 17, 1927; Johnson 1928:8-9; *United Opinion* November 11, 1927). Remarkably, "the dwelling of Frank Clough just below was saved by the swept-out portion of the dam, with logs and standing willows, forming a barrier" (Johnson 1928:8-9). "Although in very poor health," but "with the welfare of the town foremost in his mind," Charles W. Huntington had the dam rebuilt "at once" "so that Washington might have a saw mill" (*Barre Daily Times* April 15, 1930; *Herald and News* April 24, 1930). The new "cement mill-dam" was completed in July of that year (*Barre Daily Times* April 15, 1930; *Bennington Evening Banner* August 4, 1928; *United Opinion* July 13, 1928).

Charles W. Huntington died on April 15, 1930 (*Herald and News* April 24, 1930). In 1935, all of his property was offered for sale in order to settle his estate (*Barre Daily Times* May 13, 1935). This included: his 20-acre "home place; the mill property and saw mill; a 70-acre wood lot; and one acre of land "with springs" (*Barre Daily Times* May 13, 1935). On October 14, 1938, the saw mill was sold to the Quarry Savings Bank and Trust Company (WLR 26:354),

[8] Fortunately, for the mill's near neighbors, "the wind blew towards the pond" and the "volunteer fire fighters," depending "largely on a bucket brigade," managed to prevent "the village from suffering a heavier loss" (*Brattleboro Reformer* November 16, 1914; *Herald and News* November 19, 1914; *Vermont Tribune* November 26, 1914). While Cheney McAllisters house "caught fire" and was only "barely saved after all its contents were removed" (*Herald and News* November 19, 1914), the houses of M.W. Chamberlain and Dr. William Hutchinson close by "were saved from burning by being kept wet down" (*Brattleboro Reformer* November 16, 1914). Throughout the night, Mrs. Orville Cheney provided doughnuts and water to the fire fighters (*Herald and News* November 19, 1914).

which sold the property on the same day to Antonio P. Lampron (WLR 26:75). In December of 1941, Antonio Lampron moved to New Hampshire and rented the C.W. Huntington house and saw mill to "Mr. Goyette of Graniteville" (*Barre Daily Times* December 16, 1941). On June 4, 1942, Antonio R. Lampron sold the property back to the Quarry Savings Bank and Trust Company (see reference in WLR 28:23). On June 11, 1942, the Quarry Savings Bank and Trust Company sold the mill and house to Paul and Olive Vermette (WLR 28:308). At the time, this was noted as being same land that Warren Huntington sold to Charles Huntington in two deeds; in 1865 (WLR 15:9) and 1872 (WLR 16:21). Paul Vermette operated the mill from ca. 1942 to 1947 (Figures 9 – 11). A few years later, Paul and Olive Vermette broke the property up. On April 17, 1947, they sold the part with the saw mill on it to Calvin and Dorothy Hand (Figures 12 and 13) (WLR 28:308). This transfer included the pond, water rights, and the "right to cross land of the said Paul and Olive Vermette for the purpose of cleaning the pond" (WLR 28:308). On July 3, 1947, Paul Vermette sold the part of the property north of the saw mill to Armond and Edith Vermette (WLR 28:345). This land was subject to raceway rights associated with Hand's mill (WLR 28:345). Paul Vermette kept the part to the south of the saw mill, with the house and barn on it, for himself (see reference in WLR 28:387).

Calvin Hutchinson Hand, a native of Virginia (U.S. Census 1940) married Dorothy Helen Wischerbrink, (1906-1973), daughter of George Wischebrink Sr. (1879-1955), a New York City police sergeant, in 1932 (*New York New York Marriage License Indexes 1907-2018; Virginia Death Records 1912-2014*; U.S. Census 1910; *Daily News* April 2, 1955; Find-a-Grave, Gravestone/Memorial, Irishtown New York). Calvin and Dorothy Hand's children included: David, Patricia, and Calvin Jr. (U.S. Census 1940; *Virginia Marriage Records 1936-2014*). The family moved to Brookfield, Vermont, from Bayonne, New Jersey, before 1940 (U.S. Census 1940). In 1947, the family moved to Washington, Vermont, to run the mill. In May of 1948, Donald J. Bliss, an employee at Calvin Hand's mill in Washington, died of injuries that he received on April 9th, "when a load of logs fell on him, crushing his leg and foot" (*Brattleboro Reformer* May 4, 1948; *Burlington Daily News* May 4, 1948). In July of 1948, Calvin Hand advertised for someone "experienced on double edger" to work at his mill (*Barre Daily Times* July 30, 1948). On March 4, 1949, the title for the two plus acres with the mill building was transferred entirely to Dorothy Hand (WLR 28:443). On November 22, 1949, the house that the family rented from Lena Dashner of Bristol was destroyed by fire, along with most of their possessions (*Barre Daily Times* November 22, 1949). Although, Calvin Hand moved his family back to Brookfield in November of 1949, he continued to operate the mill in Washington (*Barre Daily Times* November 30, 1949). For example, in April of 1950, Hand advertised for Spruce, Pine, Hemlock, and Fir" to process at the mill (Figure 14) (*Barre Daily Times* April 29, 1950). By this time, ca. 1950, "the mechanical power feature" of the dam at this site had "been abandoned" and the mill pond was primarily used "for the storage of logs for the saw mill at the site" (Haybrook 1950).

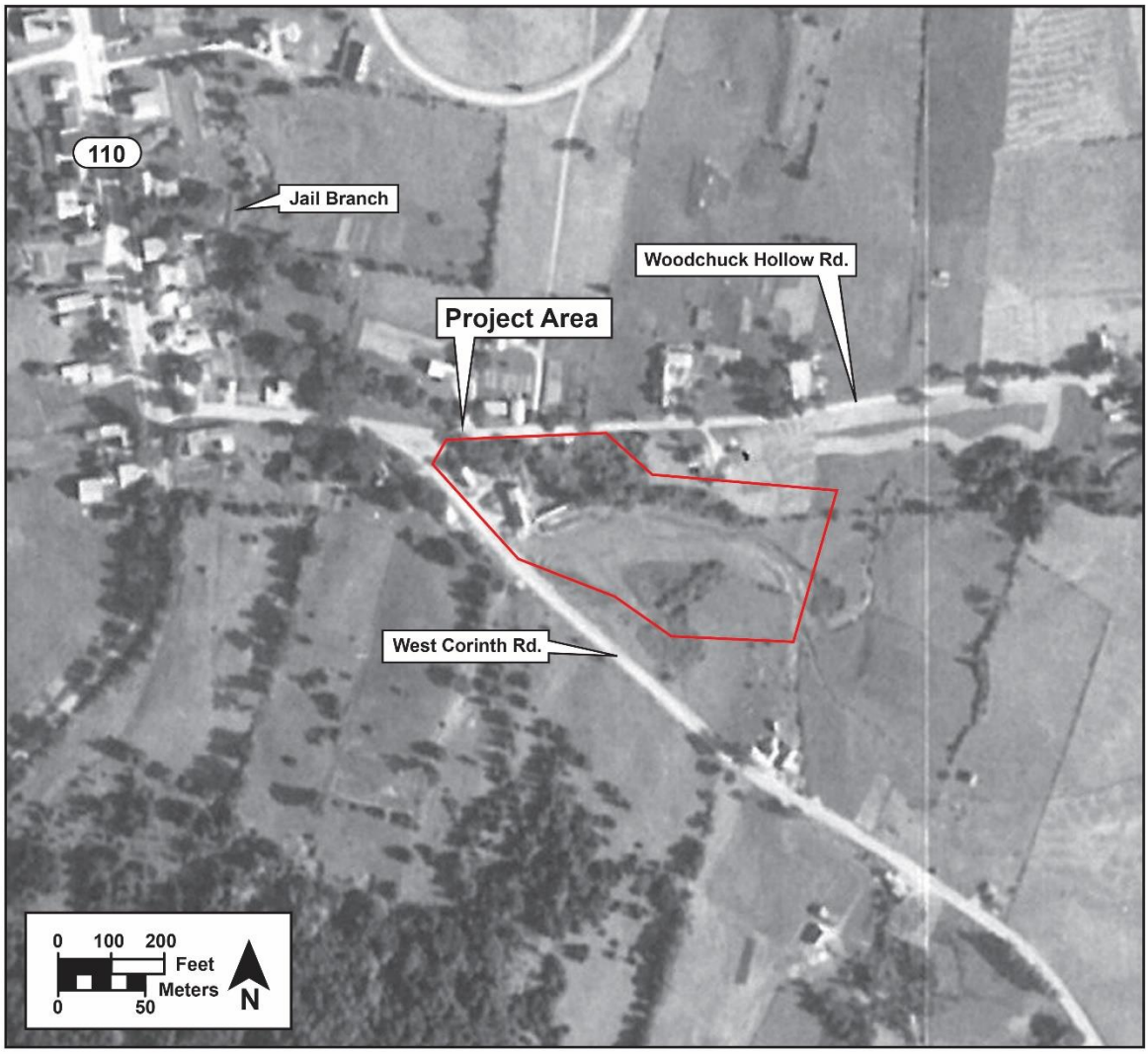

Figure 9. Detail of an aerial photograph from 1942 showing the project area (Air Mapping Corp., 1942).

Figure 10. View of the west side of the saw mill in 1942, while owned and operated by the Vermette family, looking northeast (Courtesy of Mary A. and James Driscoll).

Figure 11. View of the saw mill ca. 1942 (Courtesy of Mary A. and James Driscoll), looking north northeast, with the mill pond in the foreground (note log storage). Masonry dam elements are visible at right and a section of earthen embankment is visible at left foreground; by this time, the head gate's hoist had probably been removed.

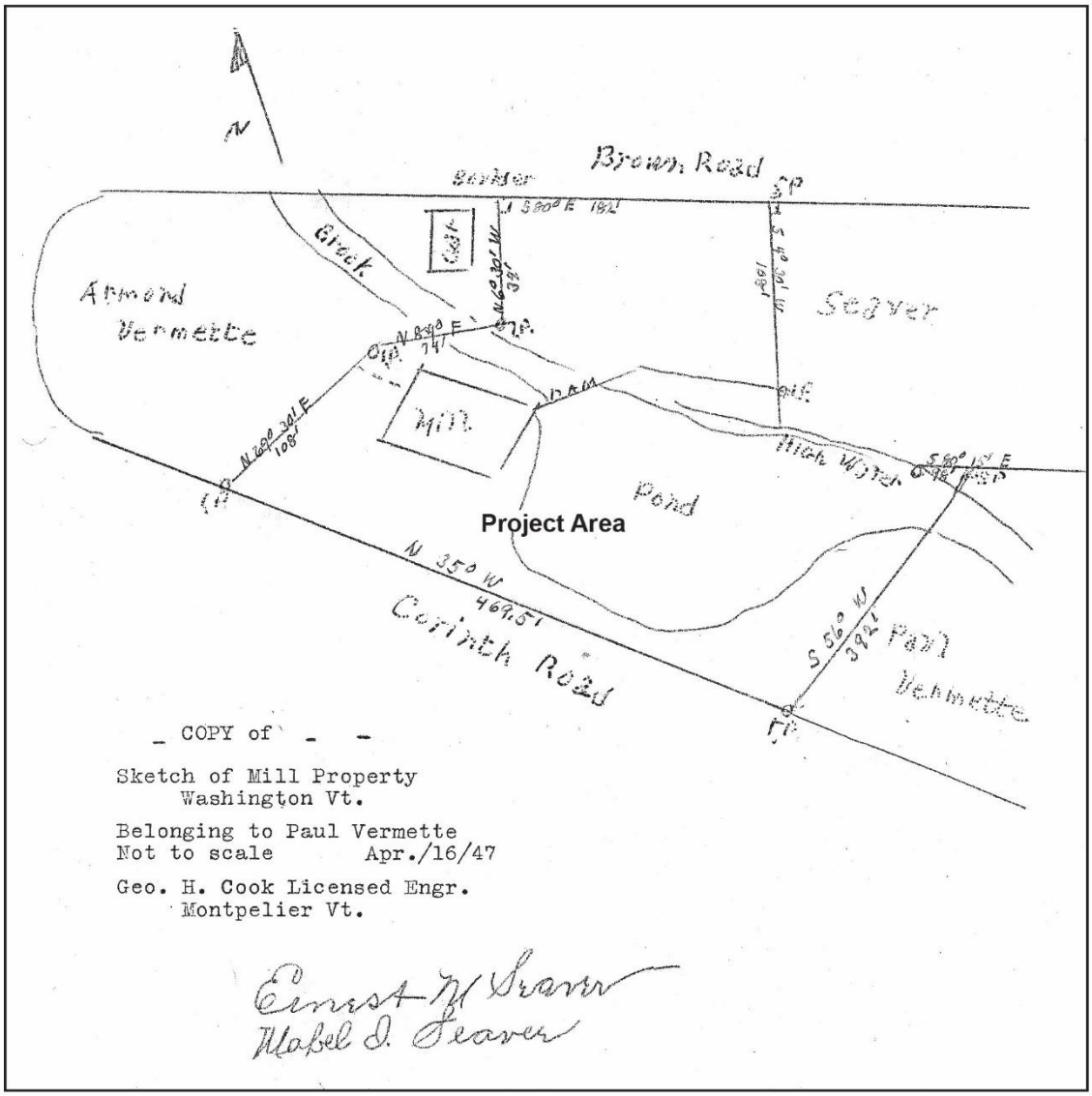

Figure 12. “Sketch of Mill Property, Washington, Vt.” (Cook 1947). Not to Scale.

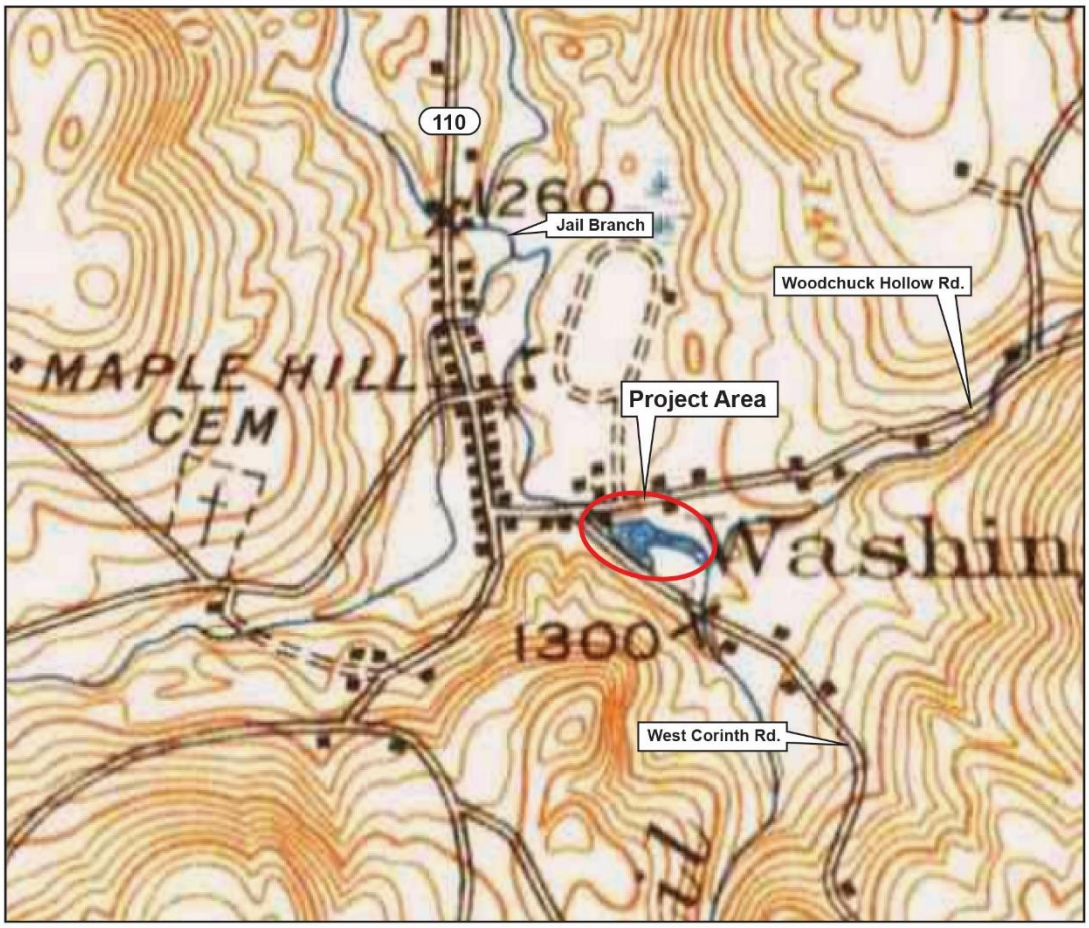

Figure 13. Detail of the 1947 15-minute topographic quadrangle Corinth V.T. showing the project area as it was ca. 1942-1944 (USGS 1947).

Figure 14. Advertisement by Calvin Hand (Barre Daily Times April 29, 1950).

Early in June of 1952, some parts of Vermont received up to 3.17 inches of rain on already saturated ground (*Caledonian Record* June 2, 1952). On Sunday afternoon, June 1, 1952, there was a "flash-flood" in the village of Washington (*White River Valley Herald* June 5, 1952). Only the "quick work of men in town kept the mill dam from going out and saved Mr. Sanford's house, where the brook was raging through" (*White River Valley Herald* June 5, 1952). On December 29, 1952, Dorothy Hand sold the mill property to her father, George Wischebrink Sr., then a resident of Minerva, New York (*Barre Daily Times* November 30, 1949; WLR 30:184). He, however, failed to pay the taxes on the property amounting to $149.60 for the years 1952 and 1953. As a result, in 1954, the mill property (including the land, saw mill buildings, pond, and water rights) was sold at auction for back taxes (*Barre Daily Times* August 14, 1954; WLR 30:420). On December 16, 1955, it was officially transferred to Richard Druge (1883-1961), "a farmer and sawyer," from Chelsea, Vermont (WLR; *White River Valley Herald* February 23, 1961). Around this time, the property was more fondly remembered for its ice skating (*Barre Daily Times* January 6, 1955). Druge also failed to make the tax payments on the property, this time amounting to $371.49. As a result, the property was again auctioned off. This time, it was acquired by the Town of Washington on November 18, 1958 (WLR 31:25). The saw mill [remains / ruins] appear to have been removed from the site prior to 1962 (Figure 15).

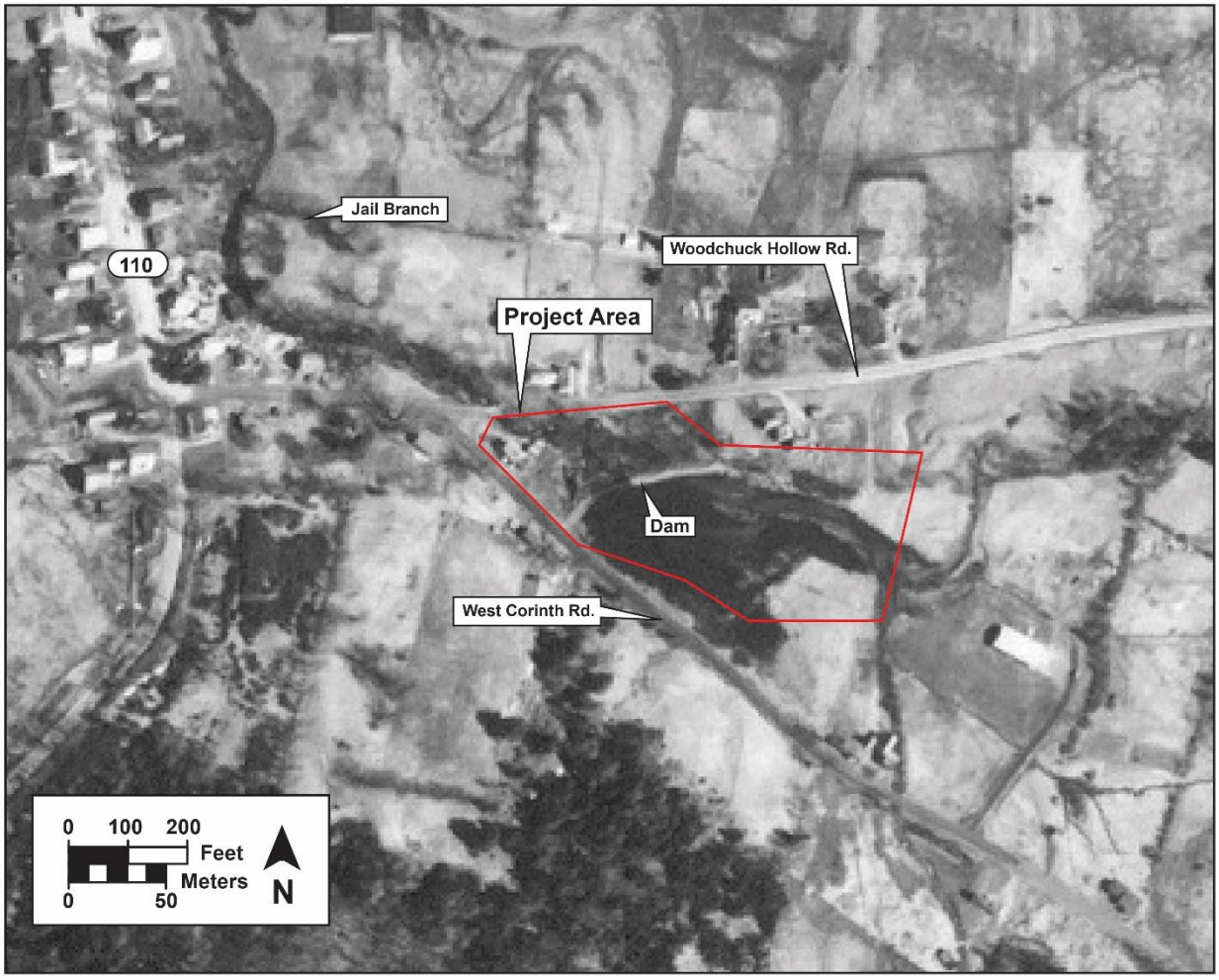

Figure 15. Detail of an aerial photograph from 1962 showing the project area (Geotechnics & Resources Inc., 1962).

Marble Finishing

In addition to the saw mill, the dam supported other enterprises. In 1893, Willard Clough and George E. Huntington opened a marble quarry near Washington Village, which produced a "beautiful steel gray" marble that could be easily worked and polished (*Vermont Watchman and State Journal* October 18, 1893; *Vermont Watchman and State Journal* March 22, 1893). This business was subsequently transferred to C.L. Slack. In 1897, it was reported that: "the Pioneer Marble Works, under the proprietorship of C.L. Slack, have a good outlook for the business and plenty of stock quarried to fill their numerous orders" (*Vermont Watchman and State Journal* December 8, 1897). In September of 1897, "a polishing machine has been set up in Huntington's mill to be run by water power" (*Vermont Watchman and State Journal* September 15, 1897). In 1898, "C.L. Slack is building new stone sheds in Huntington mill yard and has his polishing works in the adjoining mill" (*The United Opinion* April 29, 1898). In the spring of 1898, the Burlington Free Press reported, "the Pioneer marble works are employing 10 men, and are overrun with orders for their monumental work" *(Burlington Free Press* May 12, 1898). In June of 1898, "an immense boiler and engine have been set up in Huntington's saw mill for the use of the Pioneer Marble Works"[9] (*United Opinion* June 24, 1898). By 1899, Clinton L. Slack was bankrupt and C.W. Huntington, G.W. Downing, and L.D. Tillotson were "appointed trustees of the creditors" to carry on the business of the Pioneer Marble Works" (*Barre Evening Telegram* July 5, 1900; *United Opinion* June 23, 1899). In July of 1900, it was reported that "J.P. Lawlor and D.C. Coffin have formed a partnership and will soon commence cutting stone in what is now known as the lower stone shed, near C.W. Huntington's mill" (*Daily Journal* July 25, 1900). In 1900, "G.W. Downing has sold his engine and boiler at C.W. Huntington's mill and is removing it" (*Barre Evening Telegram* November 27, 1900). In 1900, "Coflin [sic] & Lawler have added a polishing machine to the equipment of their stone shed near Huntington's mill" (*Barre Evening Telegram* September 13, 1900). In the fire at the saw mill in November of 1914, Joseph Lawlor lost his "stone cutting plant" and "his tools and stock" including a "$250 monument he had just completed" (*Brattleboro Reformer* November 16, 1914; *Herald and News* November 19, 1914).

Ice Harvesting

The mill pond was also used for ice harvesting. In 1894, it was reported that "the creamery secured some splendid ice from the Huntington mill pond" (*Vermont Watchman and State Journal* March 21, 1894). In 1897, "Huntington & Eastman are building a mammoth storehouse for ice and sawdust in Huntington's mill yard" (*The United Opinion* December 24, 1897). Also in 1897, "C.W. Huntington is putting up a large building, which is to be used for an ice house and a saw dust house. The ice is to be used in the meat market, of which Mr. Huntington is a part owner" (*Argus and Patriot* December 29, 1897). In 1902, it was reported that: "C.W. Huntington has begun the annual harvest of ice from his mill pond" (*Vermont Watchman and State Journal* January 8, 1902). In 1942, the *Barre Daily Times* reported that the "Washington creamery is having the ice house filled, the ice coming from the pond known as the Huntington mill pond" (*Barre Daily Times* January 17, 1942).

[9] In April of 1899 it was reported that "$500 have been subscribed by the citizens of this place to build new sheds for the Pioneer Marble Works" (*United Opinion* April 7, 1899). This may have been in another location (the upper shed).

HISTORIC RESOURCES ASSESSMENT

Hands Mill Dam

Architectural Description
(Figures 16 – 31)

The Hands Mill Dam (VT State ID #225.01) is of composite construction. While much of the structure is concrete, it also has sections composed of earthen embankment, of which some portions have stone masonry retaining walls (Haybrook 1950:1). Prior to a variety of 20th century disturbances, the crest length of the dam was probably about 287 ft 10 in (87.75 m). The overall structural height of the dam is about 22 ft (6.7 m), with the top of the structure standing at about 1282 ft amsl.[10] At normal pond level, this dam backed up water along Jail Branch at least 670 ft (204 m) and created an approximately two-acre impoundment (Haybrook 1950:1).

At this site, a saw mill was located "on the dam," or "at the dam," meaning that the foundation of the mill, was integrated into the dam, serving, in part, as an artificial abutment. In 1950, the far left wing / abutment section was described as a "short embankment section which also serves as a part of the foundation for the saw mill it is topped by a masonry wall, partly extended into the embankment" (Haybrook 1950:2). In 1953, this section was further described as extending about 30 ft (9.1 m) from the mill (probably almost to the road) with a crest that only reached about 2 ft (0.61 m) above the level of the spillway[11] (see Figure 8[12]) (Ceretti 1953). The 1950 description, plus a 1942 photograph of the south end of the mill (see Figure 11), suggests that there may have been stone walls on both the upstream and downstream side of this embankment, with the upstream one being possibly related to the headworks, and the downstream one serving as a wall for the mill. Unfortunately, this could not be confirmed as the upper part of this section of the dam is now missing or buried by recent fill.

As early as 1950, the part of the left wing just left of the spillway and low gate section of the dam was in trouble. State dam inspector, Stephen Haybrook, noted that the top portion of the "older, original masonry" wall in this area was "badly broken up" and had "partly failed" (Haybrook 1950:2). In 1952, a storm forced the local residents into 'quick work' to keep the dam from going out. At this time, the dam was probably overtopped at its rather low left wing / abutment area near the mill and "the downstream slope" was eroded (Ceretti 1953). In 1953, state dam inspector John Ceretti noted that the section of the dam left of the spillway and low gate section appeared be in "worse condition" than it was previously and that the "old retaining wall is badly broken up and water [is] going through it. Water is leaking thru part of dam that forms foundation of mill" (Ceretti 1953). In 1975, not long after another high water event in 1973, a part of the left wing area had "collapsed allowing water to pass around the end of the spillway" (Anonymous 1975a:4). This partial breach started out as about 8 ft (2.4 m) wide and extended downward about 2.3 ft (0.70 m) below the level of the spillway (Anonymous 1975b). The breach "gradually increased in size" (probably horizontally) and in ca. 1975, the town

[10] The toe of the structure is at about 1260 ft amsl (Stone Environmental 2020b).
[11] It appears that this earthen embankment has been overtopped on several occasions. For example, in 1953, Ceretti noted that "this section has been overtopped and the downstream slope is eroded" (Ceretti 1953).
[12]The pre-1927 crib dam previously on this site was reportedly 18 ft high, and may have utilized flashboards to increase the size of the impoundment.

"dumped granite grout on the adjacent embankment to reduce erosion" (Anonymous 1975a:4). In June of 2001, "a sinkhole was reported on the crest to the left of the spillway" (Bushman, Terhhume and Nyebrink 2007). This was apparently filled by 2007 (Bushman, Terhhume and Nyebrink 2007). Between 2007 and 2013, "additional large stone [was] been added" to the left of spillway (Bushman and Hanna 2013). All of this fill is now part of a gravel parking area, which appears to have been first developed ca. 1996-2001 (Bushman and Hanna 2013; Bushman, Hanna, and Deeing 2016; Google Earth 2020). This parking area now essentially serves as an earthen dam.

Unfortunately, it appears that the partial breach in this area has removed much of the structural evidence of the intake gate and the headworks belonging to the dam. Historic period observations indicate that these features were located in the damaged area. For example in 1950, Haybrook indicated that the dam's "abandoned intake and a sluiceway" were located to the left of or at the left end of the spillway and low gate section of the dam (Haybrook 1950:2) and in 1979 it was noted that the partial breach had occurred near where there "may have been [an] old headwork" (Anonymous 1979). It seems possible that the intake gate (or 'head gate') was located in the south wall of the mill. If this was the case, then it appears that the water was then conveyed a short distance, possibly by a box flume or a penstock, to the mill's turbine(s).[13] Today, however, no evidence of a penstock, a forebay[14] or other headworks, such as a trash rack intended to stop floating debris from entering and damaging the water wheel/turbine, gate structures (e.g. gate guides) or gate operating mechanisms (e.g. gate lifts) are observable (Crowley 1940:626; Webb and Cox 2012:31).

Only a few parts of the saw mill building now remain. An aerial photograph from 1942 indicates that the last mill building, the one built in 1914[15] and enlarged in the 1920s, measured about 25 ft (7.6 m) east to west and about 70 ft (21.3 m) north to south (see Figure 9). Snapshots, from the early 1940s, show that much of the northern part of this mill rested on posts set on top of piers, rather than on a full foundation (see Figures 10 and 11). The southern wall of the mill is currently obscured by the partial breach through which the water now flows and most of the southwestern part of the structure is buried under the mass of granite grout fill placed to the left of the partial breach in the 1970s.

The remaining part of the eastern side of the mill abuts the face of the dam at a point just left of its low outlet and extends north about 21 ft 11 in (6.7 m), a little off the perpendicular from the face of the dam, until it meets the remains of a turbine pit. The eastern section of the mill structure could be a foundation wall and/or a structure related to a flume or penstock. This structure appears to include a stone masonry wall that was subsequently faced by a concrete wall. This concrete facing may have served, in part, as a training wall[16] directing the water flowing below the dam away from the mill structure. Where the concrete has failed, large quarried, but

[13] A very poor copy of a photograph in the state dam inspection records appears to suggest that there was a penstock in this area of the dam (Haybrook 1950).
[14] A forebay is a structure immediately upstream of the intake that "serves the purpose of confining water where it is free from turbulence so that sand and dirt may settle before the water goes through the penstock to the turbine" (Crowley 1940:626; Webb and Cox 2012:31).
[15] Note the different appearance of the footprints for the mill provided on Beers, the postcard view, and in the snapshots from the 1940s (see Figures 7, 8, 10 and 11).
[16] A training wall is a wall built to confine or guide the flow of water.

not dressed, granite blocks can be seen behind it[17] On top of this structure, there appears to be a level area of rough concrete.

The other enduring part of the mill is a turbine pit. In the 1940s, it appears that structure was located about midway along the east side of the mill (see Figure 9). Given the date of construction for this mill, it probably operated using turbines from the start. In 1870, the mill had one 3 ft (0.91 m) diameter 65 hp turbine and in 1880 it had two Jonval turbines;[18] one was 3.5 ft (1.1 m) in diameter and the other was 1.5 ft (0.46 m) in diameter. Other (not described) "new water wheels" (e.g. turbines) were installed in the mill in 1892 and in 1899. A 'turbine house,' which would have been located directly over a turbine pit, appears to be present in the early 20th century postcard view of the mill (see Figure 8). What remains of the turbine pit stands a little over 10 ft 5.5 in (3.19 m) above the modern ground surface next to the present water level. It measures 13 ft 1 in (4 m) north to south. The north wall extends westward about 11 ft 6.5 in (3.52 m) to where it meets a mass of earth in a disorganized manner. This area may have been altered by flooding, by the various 20th century fill episodes, and/or when the parking area was developed. Down low, the southern wall of the turbine pit runs about 3 ft 5 in (1.04 m) westward to the east wall of the mill. Higher up, the southern wall of the turbine pit extends further to the west, but it could not be measured safely. The bulk of this structure appears to be composed of dry laid stone, but there is an outer layer of a rough concrete containing coarse to plumb sized aggregates, possibly representing a late 19th or early 20th century repair and/or modification. This structure has a tailrace opening at its eastern base which measures 3 ft 7 in (1.10 m) side to side and is, presently, 1 ft 7.5 in (50 cm) top to bottom. However, the bottom of the turbine pit appears to have been partially filled with sediment and this opening may have once been significantly taller. At the mouth of the tailrace opening, a metal pipe has been added into the concrete as a lintel, but behind it is a set of cantilevered rocks that form the top of the original opening. From the tailrace opening, the turbine pit extends west about 5 ft 8.5 in (1.74 m) to what appears to be a wall (or possibly a gate?) fashioned of wood logs or planks. According to the old land records, a tailrace once extended from the mill onto the neighboring downstream property, however, no trace of it remains.

In addition to the above, there is a large concrete footer, possibly for another turbine pit, extending to the right of the southeast corner of the turbine pit described above. This footer is now submerged in the pool below the dam. The footer measured 10 ft 6 in (3.2 m) long (east to west) and 3 ft 3.37 (1 m) wide (north to south) and was estimated to be at least 4-6 in (10.2-15.2 cm) high. Very poor copies of two photographs included in the state's dam inspection records dating to 1984 indicate that a masonry (possibly stone) wall stood here. The Driscoll family indicates that part of an 8 ft (2.4 m) high wall collapsed in this area of the site during Tropical Storm Irene (Driscoll Family, Personal Communication, 10/9/20).

[17]Generally, this region of Vermont is rich with granite quarries, with several being opened in the early to mid-1800s. However, it is possible that some of the quarried stones seen in this structure date to after ca, 1893, when the local granite quarry was opened. If so, then these stone could be associated with the repairs made after the flood of 1895 or for the "extensive repairs" made in 1901 (*Barre Evening Telegram* October 24, 1901).

[18] In a Jonval turbine, the "water is admitted through a supply pipe, and enters the turbine parallel with the vertical driving shaft. After passing through the buckets or vanes on the wheel in passes away through the tail water pipe" tube or collar below enters the tail race" (Bale 1896:52). Although it can be, a Jonval turbine does not have to be submerged in the tailwater as long as it has a 'tailwater pipe' (also known as a draft tube or diffuser pipe).

To the right of the old mill site is the massive combination spillway and low gate part of the dam. Overall, this section is about 68 ft (20.7 m) in length and was built in 1928 to replace the earlier crib dam on this site, which was lost during the flood of 1927[19] (Haybrook 1950:2). This part of the dam is formed primarily of cyclopean concrete. This type of concrete includes a substantial number of large rounded cobbles and boulders randomly placed throughout the structure. In this case, the stones ranged up to about 1 by 3 ft (33 by 90 cm). The larger (rubble) aggregates (e.g. larger than 5-6 inches in diameter), often to referred as 'plums' or 'pudding stones' (the latter often 100 lbs or more), were commonly employed as a cost saving filler in massed concrete structures (Hool, Johnson, and Hollister 1918:20-21). Within this section of the dam, the primary spillway is a 63 ft long (19.2 m) sharp crested (direct or straight drop) uncontrolled (or fixed-crest) concrete weir. It is 16 ft (4.9 m) from the spillway crest to the top of the apron. In cross-section, the primary spillway has "a flat crest" 2 ft (0.61 cm) 2 ft (0.61 cm) wide and is slightly battered on both faces, specifically, "about 3 on 1 on downstream and 1 on 1 on the upstream side" (Haybrook 1950:2). The base width of the structure is probably more than 12 ft (3.66 m) (Bushman, Hanna, and Deeing 2016). The top 1.5 ft (0.46 m) of the spillway appears to be of a different type of concrete. While the upper part of the spillway still contains some large aggregates, it has no large boulders and it appears to be lighter in color and, possibly, denser in texture (e.g. not as crumbly). This visual difference could simply be the result of a different lift, but it could also be the result of the use of a stronger cement mix in this part of the structure (e.g. to resist erosion and/or impact damage). No flashboards were used on this dam and it appears that the structure was not designed to accommodate them (e.g. there are no slots or sockets on the crest).

Immediately to the left of the primary spillway's crest there is a 5 ft 5 in (1.68 m) area, which includes the low outlet gate (also known as a waste gate, drain gate, low level sluiceway, draw down gate, washout gate, or scouring gate) at its base (Bushman, Hanna, and Deeing 2016). The bottom of this outlet is located 2 ft (60 cm) above the top of the apron in this area, which is 5.9 in (15 cm) lower than the rest of the apron. This outlet has a downstream opening measuring 5 ft 5 in (1.68 m) wide by 2 ft 3.5 in (70 cm) high. This feature extends "about 12 feet [3.66 m] . . . through the dam" to where there is either a closed sluice gate or stop logs in place" (Bushman, Hanna, and Deeing 2016). It appears that the upper part of this section has been damaged by the progressing breach in this area. It is believed that the top of this section was originally higher than the spillway crest and probably has a different cross-section than the area directly below the spillway crest due to the fact it would have accommodated some kind of gate mechanism for the low outlet.

The spillway and low outlet section of this dam is not founded on bedrock (e.g. the site is "soft bottomed") (Craik 1877:161; Haybrook 1950). In consequence, this dam was built with a concrete apron that reportedly ran below the whole length of the spillway and projected out about 5 ft (1.52 m) downstream (Haybrook 1950:2). This apron is estimated to be at least 1 ft (30 cm) thick (top to bottom), if not a little more. This apron was installed to prevent the water falling over the spillway crest from undermining the structure. However, this apron may not have been completely adequate in its design. For example, in 1950 Haybrook noted that there was

[19] The spillway (also known as the overflow weir or the waste weir) is the portion of the dam over which the excess water from the impoundment flows (in excess of what the dam is designed to contain to the level of the primary spillway). A weir is essentially a wall built across a stream in order to raise the upstream water level.

some scour "underneath the apron" (Haybrook 1950:2), and in 1953, Ceretti noted that "although there may be a short apron at the bottom at the spillway the water appears to be quite deep and it is believed some erosion [has] taken place and may be working back under the apron" (Ceretti 1953).

The spillway and low outlet section of the dam is now in poor condition. In 1950, 22 years after construction, this part of the dam was only experiencing "minor surface scaling" (Haybrook 1950:2). Twenty-five years later, or 47 years after construction, the concrete on the downstream face of the spillway was "badly deteriorated" and "severely spalled" (Anonymous 1975a:3). Today, another 45 years on, or 92 years after construction, nearly all of the surface concrete is gone from the air (or downstream) face of the spillway and the concrete core of the structure is crumbling away in small fragments. Water is seeping through the dam and some sizable stones have fallen away (Bushman, Hanna, and Deeing 2016).

To the immediate right of the spillway and low outlet section is the left end of a reinforced rubble concrete wing wall, also called an "end-wall" and an "abutment wall" in the state records (Anonymous 1975a:3-4). Various dam inspection reports suggest that this wing wall may transition into a true cutoff wall[20] as it continues on further to the right.[21] According to the state records, this concrete wall extends about 100 ft (30.5 m) to the right of the spillway,[22] but has only been exposed by erosion in some sections (Bushman and Hanna 2013; Bushman, Terhhume and Nyebrink 2007). The top of the far left side of the right wing / cutoff wall is 2 ft 6 in (76 cm) above the spillway crest and is 3 ft 6 in (1.07 m) thick. There is a single large 1.5 in (3.8 cm) diameter iron pin embedded into the top of this section at a point 4 ft 3 in (130 cm) from its left end and 1 ft 2 in (36 cm) up from the upstream edge of the concrete wall. This pin had a rounded top and extended 9 in (22.9 cm) above the surface of the concrete. The part of this structure located at its junction with the spillway has been partially breached. As early as 1950, it was noted that the left end of the right wing wall "was made of a "poor quality concrete" and had "been eroded away" (Haybrook 1950:3). Haybrook noted at that time, "not only has the base of this wall been decomposed, but also some of the material behind it has been washed out" (Haybrook 1950:3). For Haybrook, this situation called into question the "stability of the wall" (Haybrook 1950:3). Only three years later, it was noted that part of the right "wing wall has fallen down and water has started to erode the earth embankment behind it" (Ceretti 1953). Going to the right from the spillway and low gate section, this concrete structure is exposed for about 11 ft 2 in (3.4 m) to the point where the top of the concrete structure becomes covered by earth fill. This earth fill varies in depth, but in places reaches up to 2 ft 3 in (70 cm) or more

[20] A cutoff wall in an earthen dam is built along the length of the center of the structure and is backed on either side by earthen fill. A cutoff wall, historically known as "core wall," was "not designed to resist the whole water pressure in the reservoir," just to "stop any water which may have percolated through the inner slope" (Wegmann 1899:15). Historically, these walls were generally constructed of either concrete or rubble masonry (with the latter "well plastered with cement mortar" on its upstream side) (Wegmann 1899:115). Typically, the top of the core wall was set even with the "high water level," and ranged from about 2.5 to 6 ft wide depending on the structure (Wegmann 1899:115). Often both faces were "battered uniformly from the top to the surface of the ground then vertical to the foundation, which must be laid on an impervious stratum" (Wegmann 1899:115).

[21] For example, in 2007, it was reported by state inspectors noted that "there was an exposed concrete cutoff wall near the right end of the dam in a deteriorated condition" (Bushman, Terhhume and Nyebrink 2007). Alternatively, it may simply serve to retain the earthen fill on the upstream side dam and provide a waterproof barrier to protect it.

[22] I traced 78. 8 ft (24 m) of this wall extending to the right of the spillway.

above the concrete. The substantial amount of earth fill on top of the concrete wall supports the idea that it was built as a core for an earthen embankment dam structure. Furthermore, sometimes the surface of an earthen embankment dam was 'armored' with planking, to prevent damage from floating debris. The old post card image appears to show either protective planking or the exposed concrete on this part of the dam (see Figure 8). A little further on to the right another 53 ft 10 in (16. 4 m) section of the concrete wall is visible with from 2 ft 7 in to 3 ft 3 in (0.8 to 1 m) of wall visible above the water and/or sediments.

Beginning just downstream of the left section of the right wing wall and extending well to the right of the concrete wing wall is the right earthen embankment section of the dam. The total crest length of the right earthen embankment is 164 ft 4 in (50.1 m). This section of the dam serves as an artificial river bank to increase the height of the natural bank in order to hold additional water within the impoundment. This section of the dam was not designed to be overtopped, although it has been. The first 55 ft 9 in (17 m) of the earthen embankment to the right of the spillway, is "retained on the downstream side by a stone wall" (Haybrook 1950:2). This rubble stone retaining wall ranges up to 6 ft 8.7 in (2.05 m) in height. The top of the stone retaining wall is generally level and its height varies with the undulations of the ground surface downstream of the dam. This wall was laid without mortar using locally sourced unmodified fieldstones. The stones used in its construction were mostly in the neighborhood of 19 x 15 ¾ x 15 in (50 x 40 x 38 cm) or 35 ½ x 12 x 19 in (90 x 30 x 50 cm) in size, but a few ranged up to about 51 by 18 in (130 by 45 cm). In a few places, smaller rocks were inserted into the spaces between the larger ones. This wall appears to be just a single row deep and it bows out notably about mid-way along its length. The earth fill retained by the wall reaches a crest of up to about 3.4 ft (1 m) higher than the top of the stone wall. Generally, the top of the earthen embankment section ranges from about 3 ft to 4 ft 7 in (0.91 to 1.4 m) above the level of the spillway (Ceretti 1953). Because the paralleling concrete wall and the stone retaining wall lie on slightly different alignments, there is at least 15 ft 5 inches (4.7 m) [23] of fill material between the left end of the stone faced earthen section and the downstream face of the concrete right wing / end wall. This interval narrows to about 10 ft 2 in (3.1 m) of fill at the right end of the stone faced embankment section. This difference in angles suggests either a desire for extra reinforcement at the point near the right side of the spillway or, possibly, it means that at least some of the earthen embankment section was initially associated with the earlier crib dam(s) on site.

To the right of the stone faced earthen embankment section, the earthen embankment continues for another 108 ft 7 in (33.1 m).[24] The higher section of this embankment runs to the right for about 90 ft 2½ in (27.5 m) before deflecting about 10 degrees towards the pond and continuing on, at a slightly lower elevation, for another 18 ft 4½ in (5.6 m) where it ends in the natural bank. It is not clear whether the concrete wing / cutoff wall discussed above extends into this portion of the structure and if, so how far. This part of earthen embankment is roughly

[23] It appears that part of the very left end of this stone retaining wall has been undermined and has fallen down in front of the left end of the right wing wall.

[24] If there is no core or cutoff wall in the structure, it could be "homogeneous earthen embankment" meaning it was constructed with the same type of material throughout. This type of dam was constructed by first removing the organic and soft materials down to a solid, consistent soil or bedrock and then dumping "good binding earth or loam" (e.g. a mix loam, sand and/or clay) and ramming it in layers to build up the berm. This type of dam is of simple in construction and maintenance.

trapezoidal in cross-section. The toe of the embankment begins about 5 ft 3 in (1.60 m) downstream from the face of the stone faced earthen embankment. This un-retrained embankment has a crest width of about 3 ft 7 in to 6 ft 3 in (1.1 to 1.9 m); a base width of at least 17 ft or 18 ft (5.2 or 5.5 m), a maximum front (downstream) elevation of 9 ft 10 in (3 m) (but it tapers lower as it continues to the right), and a rear (upstream) elevation of only 2 ft 3 in (70 cm) to the top of the pond sediments or eroded embankment. The last part of this earthen embankment structure is the technical right abutment of the dam, meaning the point where the structure ties into the natural bank. The top of this section has a crest width of 4 ft 7 in (1.4 m); a base width of about 14 ft 9 in (4.5 m); was 4 ft 3 in (1.3 m) high; and was 1 ft (30 cm) lower than the section to the left.

Although some sandy gravelly loam was noted in places at the surface of the various embankment sections and on top of the right wing / cutoff wall, at this time, "the nature of the material making up the embankment is not known" (Haybrook 1950:3). According to one source, to guard against burrowing animals (such as muskrats), "the liberal use of gravel or coarse sand for the surface of embankments has been found effective, since the animals will not burrow in soil that fills the hole as fast as they open it" (*Richford Journal and Gazette* December 28, 1917).

A stone slab wall along the south bank of the Jail Branch, downstream (west) of the dam, may be associated with the dam / mill. It appears to be constructed of quarried stone that is very similar to quarried slabs in the mill structure and is likely a retaining wall to prevent erosion along the river bank. It may also have been constructed to protect the property that the house located northwest of the dam sits upon.

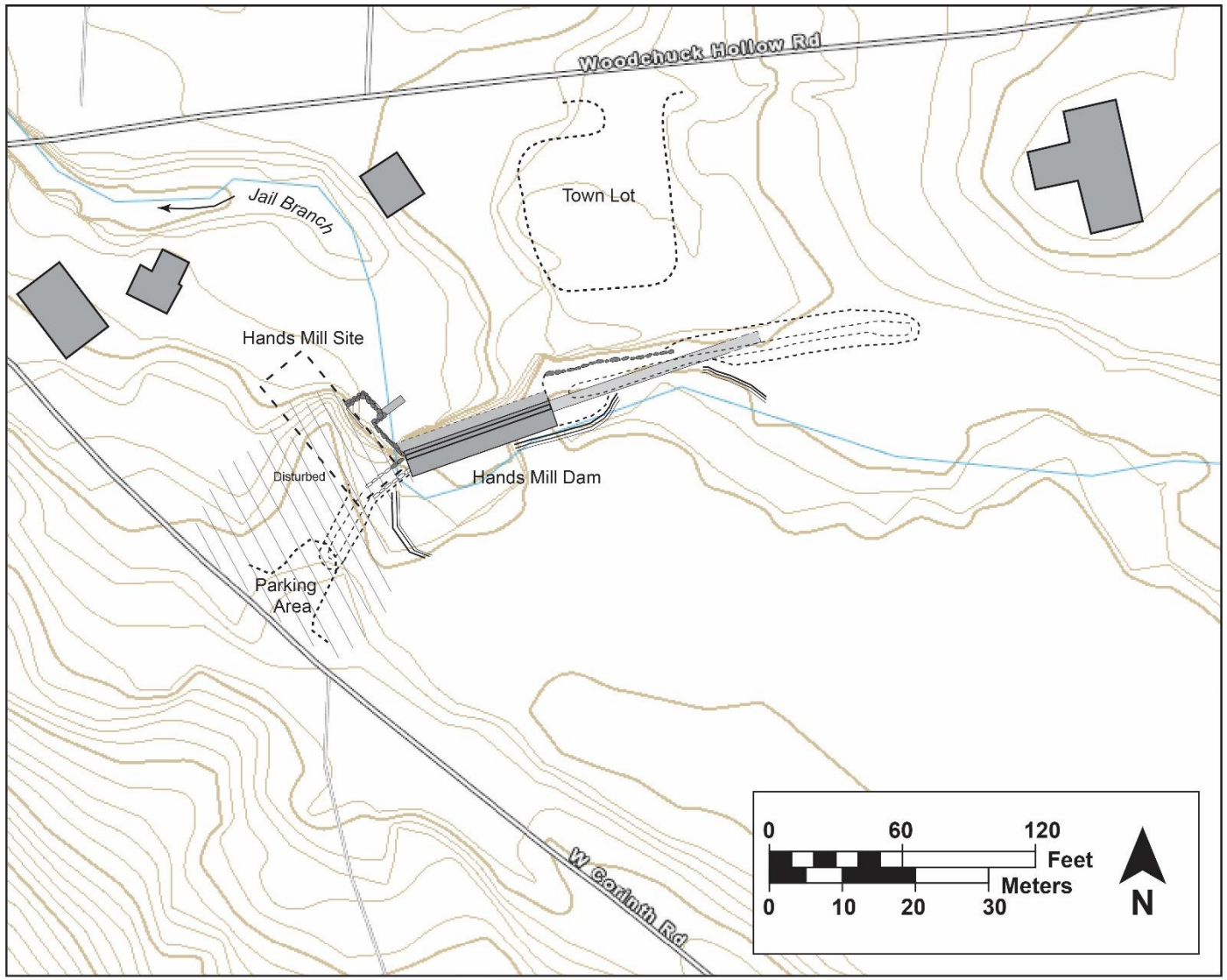

Figure 16. Schematic plan of the Hands Mill Dam site (VT State ID #225.01), Washington, Orange County, Vermont (additional data from https://vcgi.vermont.gov).

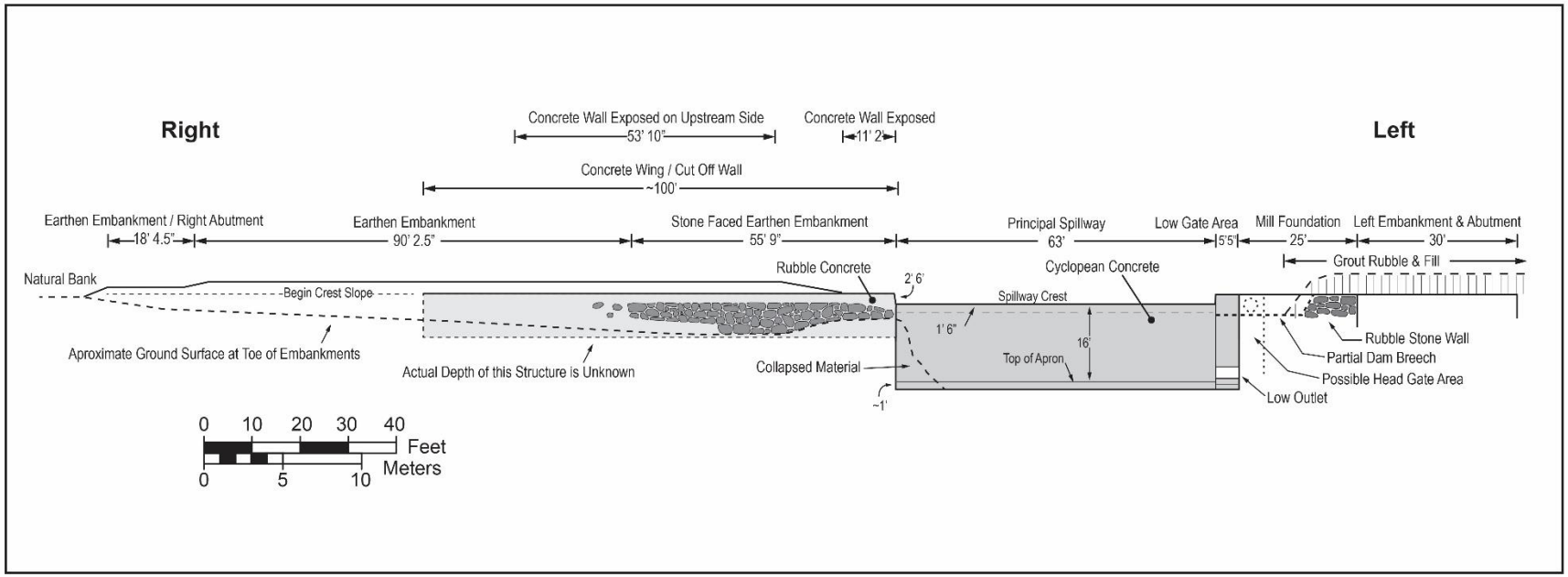

Figure 17. Elevation plan of the Hands Mill Dam (VT State ID #225.01), Washington, Orange County, Vermont (Base map from https://vcgi.vermont.gov).

Figure 18. View of the left part of the Hands Mill Dam spillway, looking southwest. Note: top section of the spillway appears to be either a different concrete or a different lift, minimal amount of original surface remaining on the downstream face of the structure, and the exposed interior of the rubble / cyclopean concrete.

Figure 19. View of the right part of the spillway section of the dam, looking southeast.

Figure 20. Looking east northeast along the water / downstream face of the spillway section towards the right wing section.

Figure 21. View looking eastwards along the downstream side of the stone faced earth fill section of the dam.

Figure 22. View of the compromised joint section between the spillway (closer) and the right wing sections of the dam, looking east southeast. The right wing structure is formed of rubble concrete and contains some metal reinforcement, possibly plain round bar and flat scrap metal pieces; this part of the structure also appears to have had another layer of concrete (a facing or a veneer) on its downstream side (two board formed surfaces appear to be visible).

Figure 23. View looking west along the upstream face of the right wing wall / cutoff wall looking towards the spillway section of the dam.

Figure 24. View along the downstream face of the spillway section of the dam (left) at the mill structure (where the water is now flowing), looking west southwest. Note location of the low outlet at the base of the spillway section of the dam, and granite grout fill and parking area visible in the background that covers part of the mill structure as well as the left wing and abutment area of the old dam.

Figure 25. View of quarried stone slabs in the mill structure, looking west southwest.

Figure 26. View of the concrete facing on the rough stone wall associated with the east side of the mill, looking west southwest.

Figure 27. View of a turbine pit structure (at right), looking west northwest.

Figure 28. View of the tailrace outlet built into the turbine pit structure, looking west.

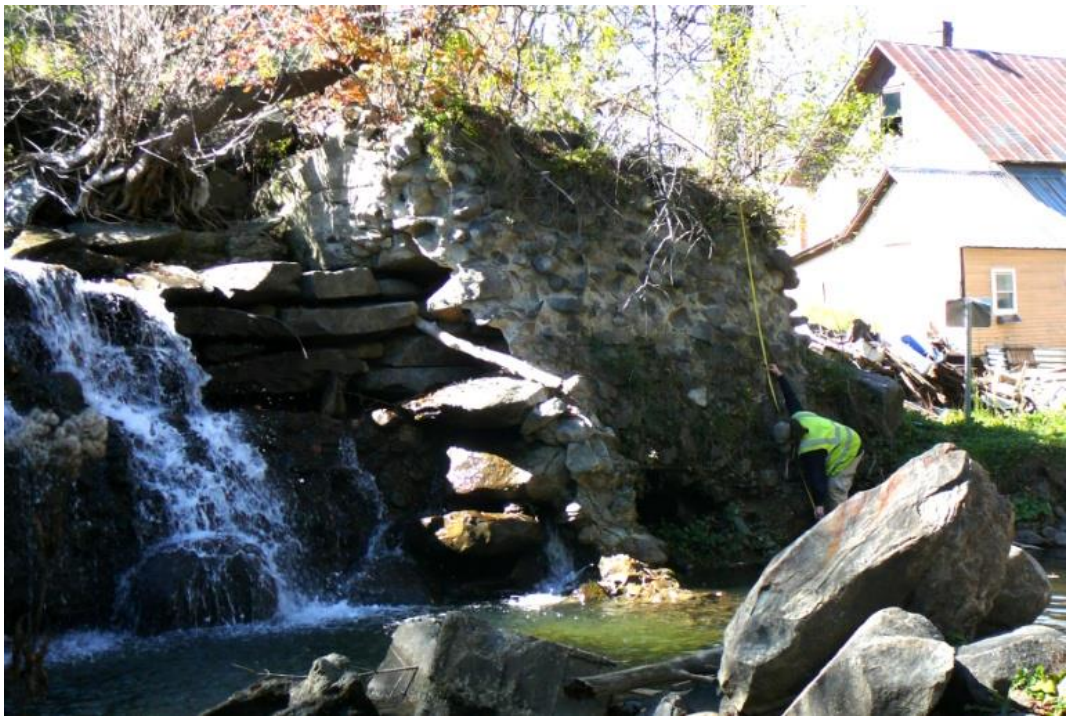

Figure 29. View of the turbine pit structure associated with the mill building, showing the rough stone and concrete ‘shell’ around and above the older structure, looking northwest.

Figure 30. View of quarried stone slab retaining wall along the south bank of the Jail Branch, downstream (west) of the dam, looking southeast.

Figure 31. An example of an installed Jonval turbine with a "tailwater pipe" (Lock 1890).

National Register Recommendations and Eligibility

A dam has been at this location on the Jail Branch for 155 years, since Charles Huntington built the first dam for his saw mill in 1865. The earlier structures were crib dams; the last timber crib dam was destroyed in 1927 and replaced by the current structure in 1928. The existing Hands Mill Dam is of composite construction. While much of the structure is concrete, it also has sections composed of earthen embankment, of which some portions have stone masonry retaining walls. A saw mill operated continuously at the site until c. 1952. The dam also supported a marble finishing shop and ice pond as well as providing a place of recreation for local residents. Although the dam was abandoned for mechanical power by the mid-20th century, it continued to be used for log storage.

The dam and its associated industries were therefore important to the village and its development from the mid-19th century through the mid-20th century. The Hands Mill Dam is important locally and to Vermont due to its harnessing of water power and development, and its association with the village that grew up around it. This review therefore recommends that the dam remains are significant historic resources eligible for inclusion on the National Register of Historic Places. The dam is recommended as eligible under Criterion A for its association with the broad pattern of historic development of 19th century villages and industry in Vermont, and also under Criterion C because the dam embodies the distinctive characteristics of type, period and a method of construction. The site retains its integrity of location, design, setting, materials, workmanship, feeling and association.

Based on the recommended significance and National Register eligibility, this assessment recommends that the removal of the dam will result in an Adverse Effect on historic resources. To assist in mitigating the adverse effect, this review therefore recommends the completion of a Division for Historic Preservation Historic Resources Documentation Package (HRDP) to fully

document the resource. This Historic Resources Assessment contains the majority of the components of the Documentation Package; additional photographs keyed to plans/maps along with a photograph index can be created to complete the documentation package. Additional photographs during the dewatering/deconstruction/sediment removal process, are recommended if any unknown details about the dam are exposed. Potential features may include gate structures, penstock or flume remains, and timbers left from the previous crib dam.

Buildings in Area of Potential Effect

Buildings associated with two separate properties were identified as within the Area of Potential Effect of the Hands Mill Dam Removal Project. These include a house, garage and shed that comprise 16 Woodchuck Hollow Road, located on the south side of Jail Branch, just northwest of the dam, and a shed located just north and downstream of the dam on the north side of Jail Branch, that is now part of 39 Woodchuck Hollow Road, but was not originally associated with that property (Figure 32).

Figure 32. Image showing the location of buildings identified as within the APE of the Hands Mill Dam Removal Project (source: VCGI).

16 Woodchuck Hollow Road: House, Garage & Shed
(Figures 33 – 38)

The Historic Sites & Structures Survey for the property notes that it was originally built as a wagon shop c. 1840, but rebuilt and substantially remodeled as a dwelling c. 1890 (VDHP 1979a). Research indicates that the property was occupied by Rodney Clough beginning in the 1850s. Rodney Clough (1810-1892) was a native of Washington, a son of Moses and Sarah Clough, and was the father of Willard Clough, inventor (Vermont Vital Records 1720-1908). It appears that Rodney Clough moved to this parcel between 1850 and 1860 (U.S. Census 1850, 1860). While at this site, Clough worked as a cooper (U.S. Census 1850, 1860, 1870). This was a trade that he practiced at least to 1878 (Walton's Vermont Register 1878:163). In 1880, while it appears that he still lived on this property, then 69 years of age and widowed, he considered himself to be a farmer (U.S. Census 1880). In 1889, Dr. Frank A. Warner [who was very involved in the granite industry] bought the Rodney Clough house "lately occupied by Mr. Rowell" [possibly Harvey A. Rowell] (Herald and News November 21, 1889). It may be Dr. Warner who renovated the house in the Queen Anne style. In 1895, it was noted that "Cyrus H. Smith is to have a wood-working shop in the basement of the Rodney Clough House" (Vermont Watchman and State Journal November 27, 1895). Cyrus Smith was a carpenter / builder who worked throughout the area (e.g. Vermont Watchman and State Journal March 21, 1894).

The house at 16 Woodchuck Hollow Road is a 2 ½ story, wood frame, gable roof building with an eaves front that faces West Corinth Road. The house has a granite slab foundation, metal roof and clapboard siding. Queen Anne style details include a bracketed bay window on its west end, and patterned wood shingles in its gable ends. A single story gable roof wing with shed roof extension is attached to its northeast corner. A detached c. 1950 one bay garage and later shed are constructed behind (north of) the house, and there are two trailers behind the house. Numerous windows on the house are broken or missing completely, and it appears to be used for the storage of various types of debris. Additional piles of debris are scattered outside of the buildings on the property.

The house at 16 Woodchuck Hollow Road was added to the State Register on September 14, 1989 (VDHP 1979a; SR #0195-26), however, due to its current condition, this review recommends that it is no longer eligible for inclusion on the State Register. Due to its condition, this Historic Resources Review also recommends that the resource does not meet criteria for significance and recommends that it is not eligible for inclusion on the National Register of Historic Places. It is therefore recommended that project work will have No Effect on the property. The Vermont State Historic Preservation Office (SHPO) will have the opportunity of review and comment prior to project work.

Figure 33. View northeast of the front of the house at 16 Woodchuck Hollow Road; West Corinth Road in foreground.

Figure 34. View northwest of the house and garage at 16 Woodchuck Hollow Road.

Figure 35. View east of the house at 16 Woodchuck Hollow Road; West Corinth Road in foreground.

Figure 36. View east of the house at 16 Woodchuck Hollow Road in 1979 (VDHP 1979a); West Corinth Road in foreground.

Figure 37. View southeast of the house, garage and shed at 16 Woodchuck Hollow Road from the intersection of Woodchuck Hollow Road and West Corinth Road.

Figure 38. View northwest of the house, garage and shed at 16 Woodchuck Hollow Road, form the Jail Branch.

39 Woodchuck Hollow Road: Shed
(Figures 39 – 43)

The single story shed located just north and downstream of the dam on the north side of Jail Branch, is now part of 39 Woodchuck Hollow Road, most of which is on the opposite (north) side of the road. In 1947, the shed was part of the 16 Woodchuck Hollow Road property, then owned by Armand Vermette (see Figure 12). A definitive date of construction was not determined for the structure; it appears to date to the late 1800s or first decades of the 1900s. The building is wood frame with a low gambrel roof with metal covering and it has wood shingle siding. It does not appear to have a foundation but seems to rest directly on the ground, possibly on rocks. The front (north) gable end that faces Woodchuck Hollow Road has two sets of plank, side hinged doors. There are two window openings on the south gable end, one is boarded and one is a fixed 6-pane window, and the east and west elevations have a single 6-pane window toward the back (south) end of the building. The structure is possibly an outbuilding for small machinery.

The c. 1900 house and attached barn at 39 Woodchuck Hollow Road was added to the state register on September 15, 1989; the shed is not mentioned as part of the property at that time (VDHP 1979b; SR #0195-63). Additional land records research would be needed to determine when the shed property was joined with the house property. Initial research did not determine if the shed was built by an owner of 16 Woodchuck Hollow Road property. This Historic Resources Review recommends that the shed does not meet criteria for significance and recommends that it is not eligible for inclusion on the National Register of Historic Places. It is therefore recommended that project work will have No Effect on the resource. The Vermont State Historic Preservation Office (SHPO) will have the opportunity of review and comment prior to project work.

Figure 39. View southwest of the shed at 39 Woodchuck Hollow Road.

Figure 40. View southeast of the shed at 39 Woodchuck Hollow Road.

Figure 41. View northwest of the rear of the shed at 39 Woodchuck Hollow Road.

Figure 42. View northeast of the house and attached barn at 39 Woodchuck Hollow Road.

Figure 43. View northwest of the house and attached barn at 39 Woodchuck Hollow Road in 1979 (VDHP 1979b).

ARCHAEOLOGICAL RESOURCES ASSESSMENT

Pre-Contact Native American

The Vermont Division for Historic Preservation's Vermont Archaeological Inventory (VAI) indicates that there are no previously reported pre-Contact Native American sites within a 1.5 km (0.93 mi) radius of the proposed project area. However, there are two known sites in the adjacent town of Chelsea that are located in similar upland contexts and in close proximity to perennial watercourses. Both of these sites are represented by isolated finds including one Late Archaic projectile point (VT-OR-0016) and one celt, possibly from the Early Woodland period (VT-OR-0116). An application of the GIS based version of the VDHP's "Environmental Predictive Model for Locating Archaeological Sites" indicates that portions of the proposed project area may include up to five key sensitivity factors for PreContact Native American archaeological sites including level ground, proximity to water, proximity to a natural fall, proximity to stream confluences, proximity to terrace feature and proximity to spring*s* (Figure 44).

Sensitivity and Recommendations

As a result of the field visit, three locations within the APE were identified as potentially sensitive for pre-Contact Native American sites. Two areas are located on the north bank of the Jail Branch, one immediately downstream of the dam, and the other upstream of the dam, and the third area is located on the south bank of the Jail Branch, upstream of the dam and at the river's confluence with a small tributary (Figures 45 – 48). Hand soil cores in the area immediately downstream of the dam indicated intact sediments consisting of an Ap overlying B sediments, and cores taken in the area of the south bank of the river, upstream of the dam, indicated intact sediments under a thick (approximately 80 cm), mostly probable recent flood deposits, but also including possible impoundment/pond deposits. The area on the north bank of the river, upstream of the dam, appears to have been used only for agriculture so is likely relatively undisturbed. If ground disturbance in any of these areas cannot be avoided during project work, an Archaeological Phase I survey is recommended. The Vermont State Historic Preservation Office (SHPO) will have the opportunity of review and comment prior to project work.

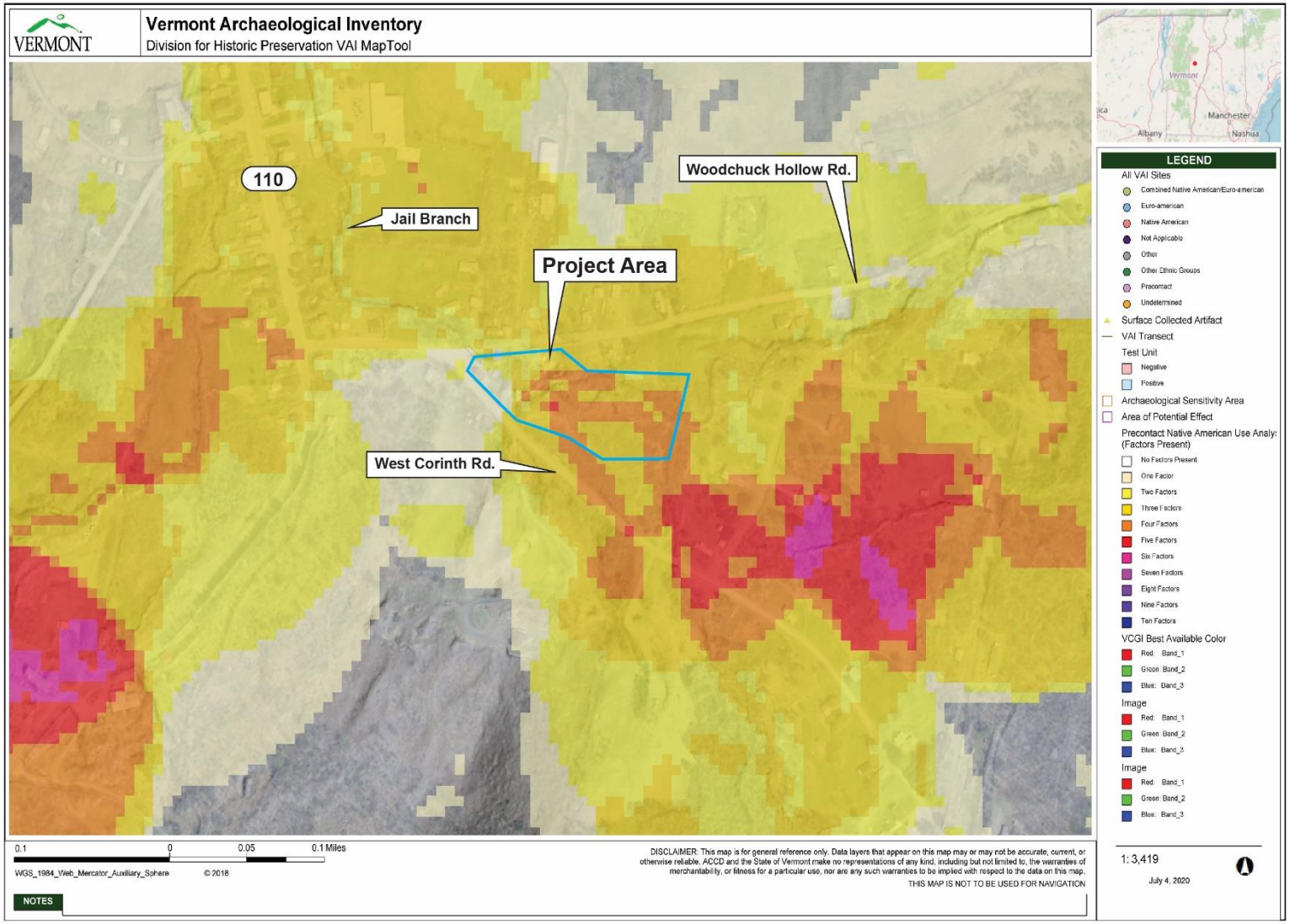

Figure 44. GIS based Archeological Sensitivity Map for the proposed Hands Mill Dam project, Washington, Orange County, Vermont (VACCD ORC).

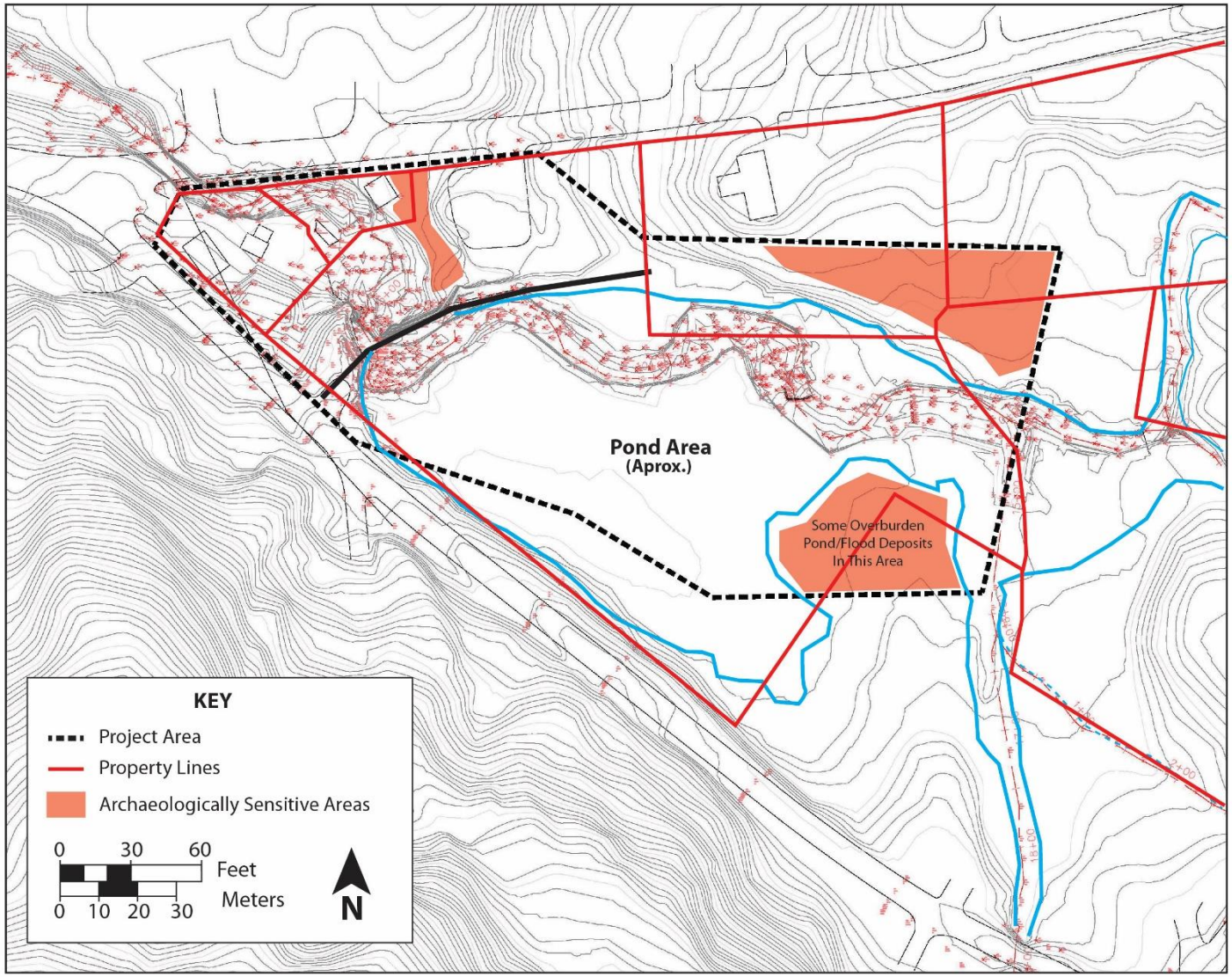

Figure 45. Locations within the proposed Hands Mill Dam project's APE identified as sensitive for pre-Contact Native American Archaeological sites (Base Map: Stone Environmental 2020a).

Figure 46. View of archaeologically sensitive area located on the right (north) bank of Jail Branch just downstream from the dam, looking northeast from the left side of the dam.

Figure 47. View of the archaeologically sensitive area located on the right (north) bank of the old mill pond, close to the thread of Jail Branch, upstream from the dam, looking south.

Figure 48. View of the archaeologically sensitive area located on the left (south) bank of the Jail Branch (at right), upstream from the dam, looking west. Note tributary in foreground.

Historic

The Vermont Division for Historic Preservation's VAI also indicates that there are no previously reported historic sites within the APE of the proposed project area and no potential significant historic archaeological sites, such as intact foundation remains, were identified during the field visit.

Sensitivity and Recommendations

Background research and observations made during the field visit indicate that the project APE is unlikely to contain significant historic archaeological sites. The APE of this project is recommended as not sensitive for historic period archaeological resources due to extensive disturbance from numerous flood episodes and subsequent filling and stabilization efforts. Historic mill foundation remains identified on the south bank of the Jail Branch have been significantly impacted by flooding and fill episodes, including most recently by Tropical Storm Irene, and what remains of them, have been recorded in this review. No evidence of the ice harvest operations once located at the site were identified within the project APE and evidence of the marble industry once present at the site was destroyed in the 1914 fire. Although some artifacts from the saw mills, marble industry or ice house operation may be present at the site, they would likely not yield any additional, significant information or add to the history of what has been recorded by research conducted for this review. Therefore, this Archaeological Resources Assessment recommends no further archaeological investigation for historic resources with the APE of the Hands Mill Dam Removal Project. The Vermont State Historic Preservation Office (SHPO) will have the opportunity of review and comment prior to project work.

Sediment Disposal Areas

Four proposed sediment disposal areas, for deposit of sediment removed from the former impoundment during project work for the Hands Mill Dam Removal Project, were also reviewed as part of this Historic Resources and Archaeological Resources Review. The proposed areas include an existing town sand pit at the intersection of Lowery Road and Vermont Route 110, an existing gravel/sediment storage area at the Town Clerks Office at 2895 Vermont Route 110, a town storage area immediately north of the dam, and a parcel owned by Vince Vermette across the road from 661 West Corinth Road (Figures 49 – 53). "Mucky" sediment can be disposed at the Vermette property, and sandy/gravelly sediment can be disposed at the remaining three parcels. All four sediment disposal areas are recommended as not sensitive for pre-Contact Native American or historic resources and no further archaeological review is recommended.

Intersection of Lowery Road and Vermont Route 110: This town-owned location is currently used for sand pit storage (Figure 50). It appears to be leveled. The location at the intersection of Lowery Road and Vermont Route 110 is recommended as not sensitive for pre-Contact Native American or historic resources and no further archaeological review is recommended.

Town Clerks Office, 2895 Vermont Route 110, existing gravel/sediment storage area: This town-owned location is currently used for town sand and sediment storage; it appears to have been leveled/modified and silt fencing is in place (Figure 51). The location at 2895 Vermont Route 110 is recommended as not sensitive for pre-Contact Native American or historic resources and no further archaeological review is recommended.

Town Storage Area Immediately North of the Dam: This town-owned location is currently used for town sediment and equipment storage (Figure 52). It has been extensively filled. The location immediately north of the dam along Woodchuck Hollow Road is recommended as not sensitive for pre-Contact Native American or historic resources and no further archaeological review is recommended.

661 West Corinth Road (across road): This privately owned parcel is excessively sloped and more level areas at its peak are currently being developed as a dwelling (Figure 53). The location across the road from 661 West Corinth Road is recommended as not sensitive for pre-Contact Native American or historic resources and no further archaeological review is recommended.

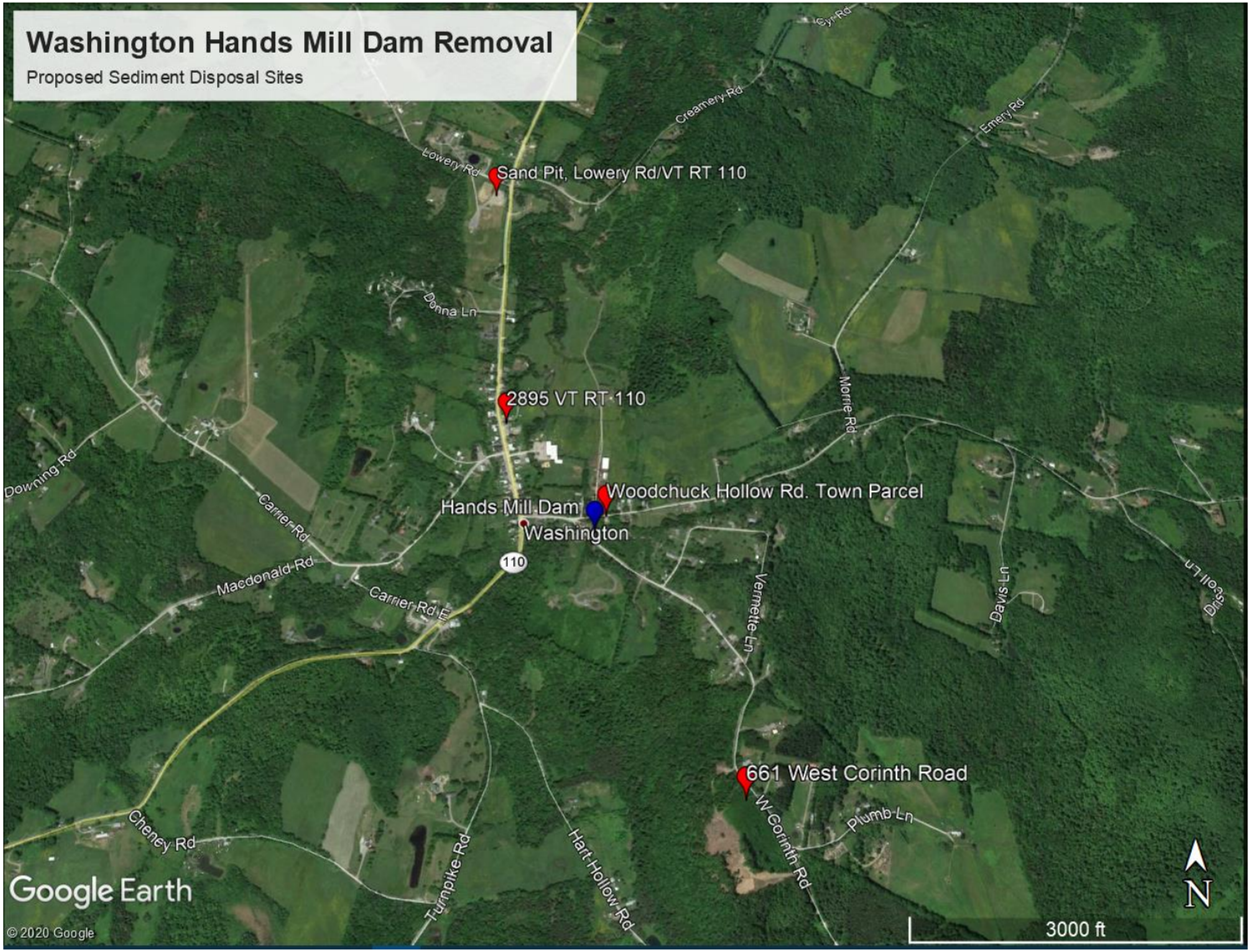

Figure 49. Map showing the location of four proposed sediment disposal sites for the Hands Mill Dam Removal project, Washington, Orange County, Vermont.

Figure 50. View southeast of proposed sediment disposal site at existing town sand pit at the intersection of Lowery Road and Vermont Route 110.

Figure 51. View northeast of proposed sediment disposal site at existing gravel/sediment storage area at the Town Clerks Office at 2895 Vermont Route 110.

Figure 52. View southwest of proposed sediment disposal site at town storage area immediately north of the dam.

Figure 53. View southwest of proposed sediment disposal site at privately owned parcel along south side of West Corinth Road.

SUMMARY AND CONCLUSIONS

The Town of Washington, in partnership with the Winooski Natural Resources Conservation District, proposes the removal of the Hands Mill Dam, located in Washington, Orange County, Vermont, due to the structure's poor condition. Proposed project work includes the removal of the dam and restoration of the upstream channel. The dam is situated on Jail Branch of the Winooski River watershed, near the intersection of Woodchuck Hollow Road and West Corinth Road. Kate Kenny and Catherine Quinn of the University of Vermont Consulting Archaeology Program conducted an Historic Resources Review and Archaeological Resources Assessment of the proposed project to assist with satisfying Section 106 permit requirements. Extensive background research was conducted and a field inspection of the project area was conducted by Kenny and Quinn on October 9, 2020. Based on the field visit, research and review, the following recommendations are made:

Historic Resources Assessment

1. The Hands Mill Dam and its associated industries were important to the Town of Washington and its development from the mid-19th century through the mid-20th century. The Hands Mill Dam is important locally and to Vermont due to its harnessing of water power and development, and its association with the village that grew up around it. This review therefore recommends that the dam remains are significant historic resources eligible for inclusion on the National Register of Historic Places. The dam is recommended as eligible under Criterion A for its association with the broad pattern of historic development of 19th century villages and industry in Vermont, and also under Criterion C because the dam embodies the distinctive characteristics of type, period and a method of construction. Based on the recommended significance and National Register eligibility, this assessment recommends that the removal of the dam will result in an Adverse Effect on historic resources. This review therefore recommends the completion of a Division for Historic Preservation Historic Resources Documentation Package (HRDP) to fully document the resources.

2. A recommendation is made to photograph any possible structural remains encountered during the project work. Additional photographs during the dewatering / deconstruction / sediment removal process are recommended if any unknown details about the dam are exposed. Potential features may include gate structures, penstock or flume remains, and timbers left from the previous crib dam.

3. Buildings associated with two separate properties were identified as within the APE of the Hands Mill Dam Removal Project. These include a house, garage and shed that comprise 16 Woodchuck Hollow Road, located on the south side of Jail Branch, just northwest of the dam, and a shed located just north and downstream of the dam on the north side of Jail Branch, that is now part of 39 Woodchuck Hollow Road, but was not originally associated with that property. This review recommends that these resources are not eligible for inclusion on the National Register of Historic Places and that project work will therefore have No Effect on any additional properties.

Archaeological Resources Assessment

1. Three locations within the APE were identified as potentially sensitive for pre-Contact Native American sites. Two areas are located on the north bank of the Jail Branch, one immediately downstream of the dam, and the other upstream of the dam, and the third area is located on the south bank of the Jail Branch, upstream of the dam and at the river's confluence with a small tributary. If ground disturbance in any of these areas cannot be avoided during project work, an archaeological phase I survey is recommended. Preliminary plans and discussions with Stone Environmental indicate that the area immediately downstream of the dam may not be able to be avoided during project work.

2. Background research and observations made during the field visit indicate that the project APE is unlikely to contain significant historic archaeological sites. The APE of this project is recommended as not sensitive for historic period archaeological resources due to extensive disturbance from numerous flood episodes and subsequent filling and stabilization efforts. Therefore, this Archaeological Resources Assessment recommends no further archaeological investigation for historic resources with the APE of the Hands Mill Dam Removal Project

3. Four proposed sediment disposal areas, for deposit of sediment removed from the former impoundment during project work were reviewed. The proposed areas include an existing town sand pit at the intersection of Lowery Road and Vermont Route 110, an existing gravel/sediment storage area at the Town Clerks Office at 2895 Vermont Route 110, a town storage area immediately north of the dam, and a parcel owned by Vince Vermette across the road from 661 West Corinth Road. All four sediment disposal areas are recommended as not sensitive for pre-Contact Native American or historic resources and no further archaeological review is recommended.

The Vermont State Historic Preservation Office (SHPO) will have the opportunity to review and comment on all recommendations prior to project work.

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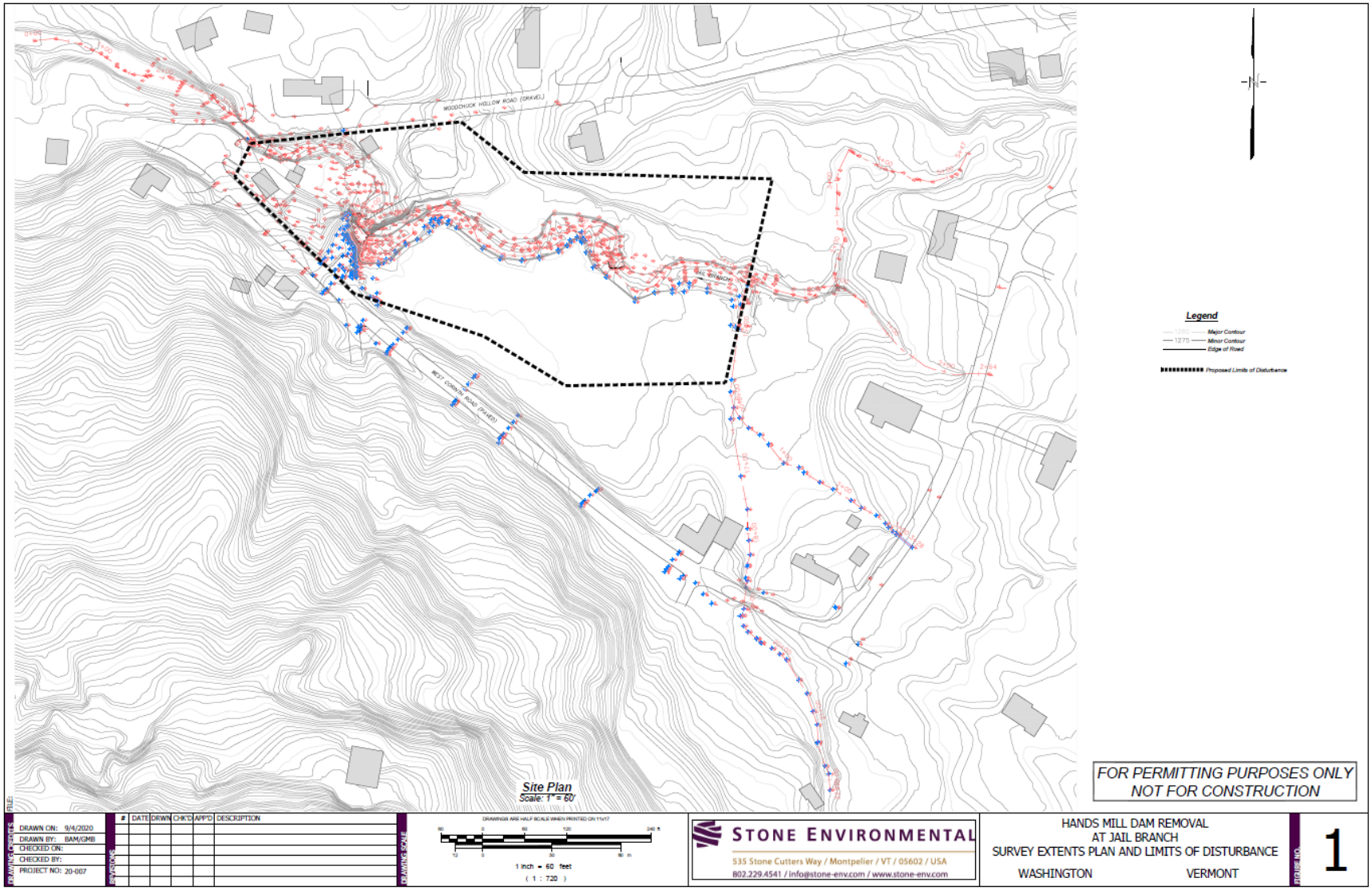
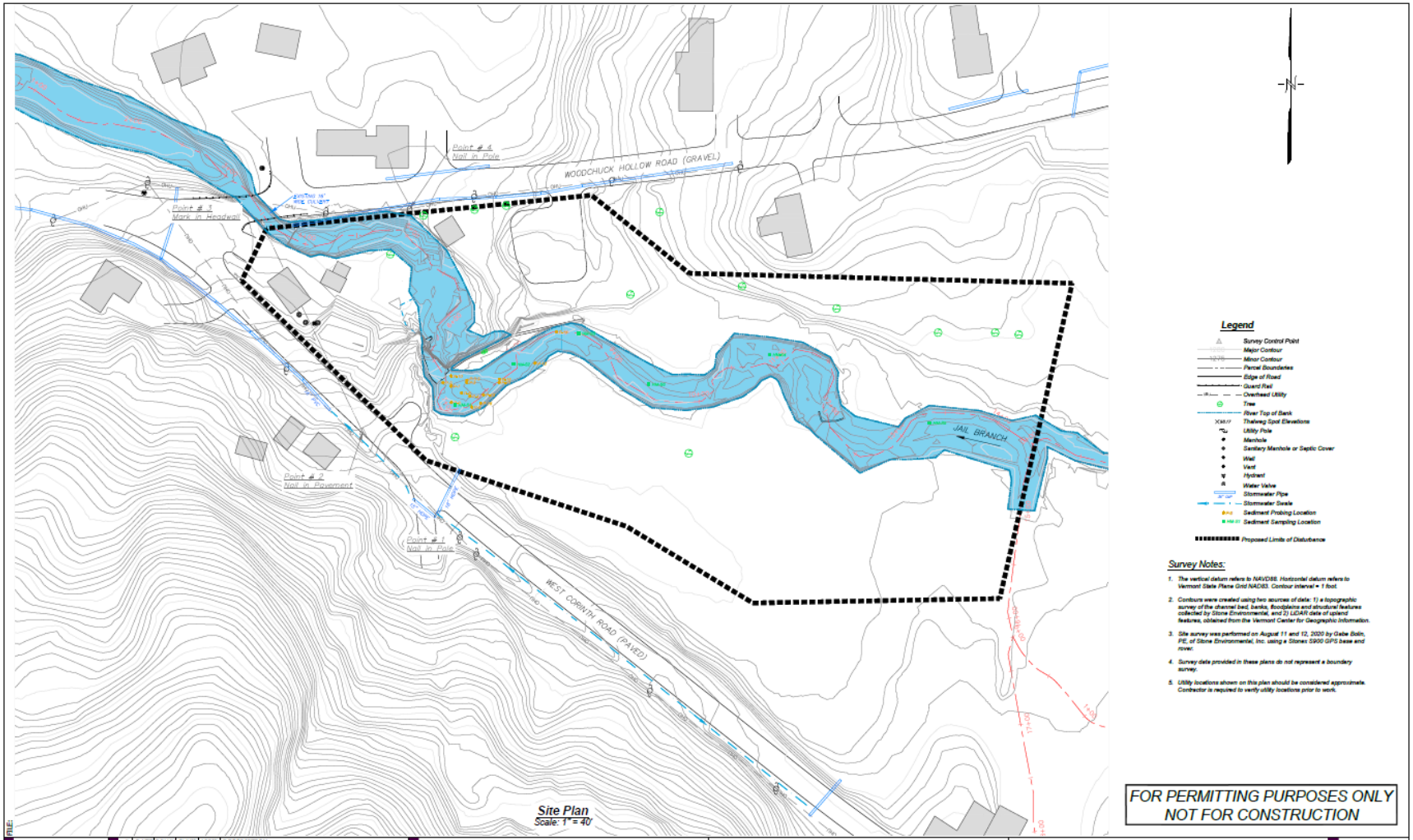
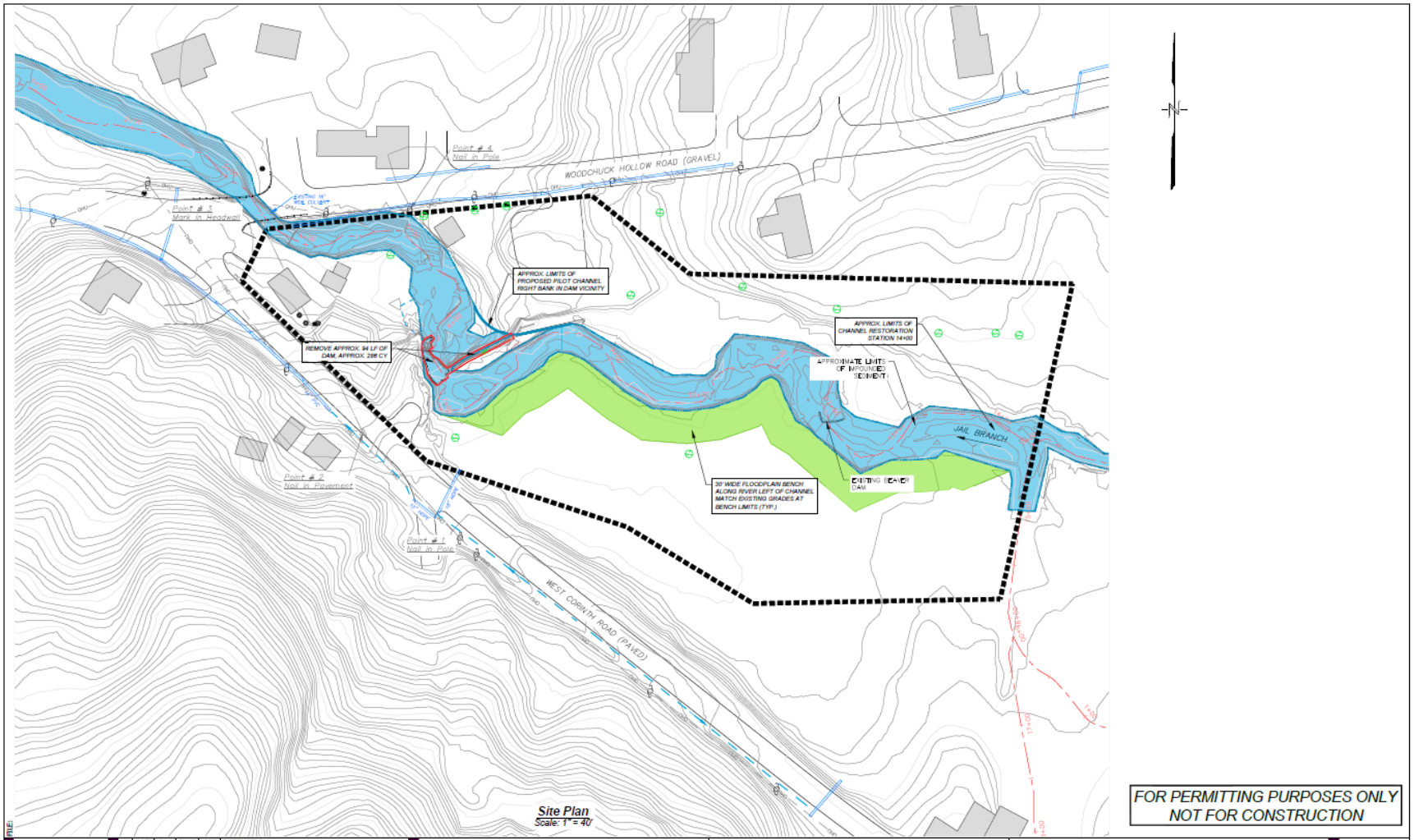
APPENDIX I: STONE ENVIRONMENTAL PRELIMINARY PLAN SHEETS


WOODCHUCK HOLLOW ROAD (GRAVEL)
Legend
Major Contour
Minor Contour
Edge of Road
Proposed Limits of Disturbance
FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION
Site Plan
Scale: 1" = 60'
DRAWING DATE
DRAWN ON: 9/4/2020
DRAWN BY: BAM/GMB
CHECKED ON:
CHECKED BY:
PROJECT NO: 20-007
DATE DRWN CHK'D APP'D DESCRIPTION
REVISIONS
DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17
1 inch = 60 feet
(1 : 720)
STONE ENVIRONMENTAL
535 Stone Cutters Way / Montpelier / VT / 05602 / USA
802.229.4541 / info@stone-env.com / www.stone-env.com
HANDS MILL DAM REMOVAL
AT JAIL BRANCH
SURVEY EXTENTS PLAN AND LIMITS OF DISTURBANCE
WASHINGTON VERMONT
DRAWING NO.
1


Point # 4
Nail in Pole
WOODCHUCK HOLLOW ROAD (GRAVEL)
Point # 3
Mark in Headwall
JAIL BRANCH
Point # 2
Nail in Pavement
Point # 1
Nail in Pole
WEST CORINTH ROAD (PAVED)
Legend
Survey Control Point
Major Contour
Minor Contour
Parcel Boundaries
Edge of Road
Guard Rail
Overhead Utility
Tree
River Top of Bank
Thalweg Spot Elevations
Utility Pole
Manhole
Sanitary Manhole or Septic Cover
Well
Vent
Hydrant
Water Valve
Stormwater Pipe
Stormwater Swale
Sediment Probing Location
Sediment Sampling Location
Proposed Limits of Disturbance
Survey Notes:
1. The vertical datum refers to NAVD88. Horizontal datum refers to Vermont State Plane Grid NAD83. Contour interval = 1 foot.
2. Contours were created using two sources of data: 1) a topographic survey of the channel bed, banks, floodplains and structural features collected by Stone Environmental, and 2) LiDAR data of upland features, obtained from the Vermont Center for Geographic Information.
3. Site survey was performed on August 11 and 12, 2020 by Gabe Bolin, PE, of Stone Environmental, Inc. using a Stonex S900 GPS base and rover.
4. Survey data provided in these plans do not represent a boundary survey.
5. Utility locations shown on this plan should be considered approximate. Contractor is required to verify utility locations prior to work.
FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION
Site Plan
Scale: 1" = 40'
DRAWING ON: 9/4/2020
DRAWN BY: BAM/GMB
CHECKED ON:
CHECKED BY:
PROJECT NO: 20-007
DATE DRWN CHK'D APP'D DESCRIPTION
DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17
1 inch = 40 feet
(1 : 480)
STONE ENVIRONMENTAL
535 Stone Cutters Way / Montpelier / VT / 05602 / USA
802.229.4541 / info@stone-env.com / www.stone-env.com
HANDS MILL DAM REMOVAL
AT JAIL BRANCH
EXISTING CONDITIONS
WASHINGTON VERMONT
2


WOODCHUCK HOLLOW ROAD (GRAVEL)
Point # 4
Nail in Pole
Point # 3
Mark in Headwall
APPROX. LIMITS OF PROPOSED PILOT CHANNEL, RIGHT BANK IN DAM VICINITY
REMOVE APPROX. 94 LF OF DAM, APPROX. 286 CY
APPROX. LIMITS OF CHANNEL RESTORATION STATION 14+00
APPROXIMATE LIMITS OF IMPOUNDED SEDIMENT
JAIL BRANCH
EXISTING BEAVER DAM
30' WIDE FLOODPLAIN BENCH ALONG RIVER LEFT OF CHANNEL, MATCH EXISTING GRADES AT BENCH LIMITS (TYP.)
Point # 2
Nail in Pavement
Point # 1
Nail in Pole
WEST CORINTH ROAD (PAVED)
Site Plan
Scale: 1" = 40'
FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION
DRAWING CREATED
DRAWN ON: 9/4/2020
DRAWN BY: GMB
CHECKED ON:
CHECKED BY:
PROJECT NO: 20-007
REVISIONS
DATE DRWN CHK'D APP'D DESCRIPTION
DRAWING SCALE
DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11x17
1 inch = 40 feet
(1 : 480)
STONE ENVIRONMENTAL
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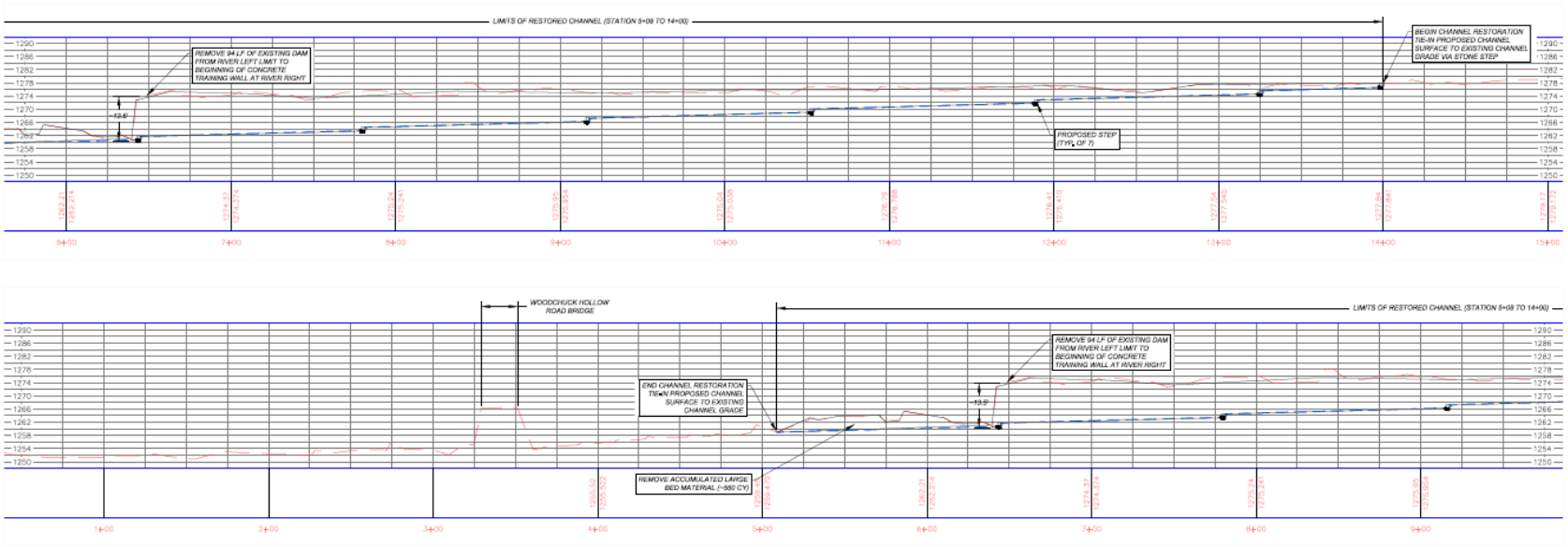
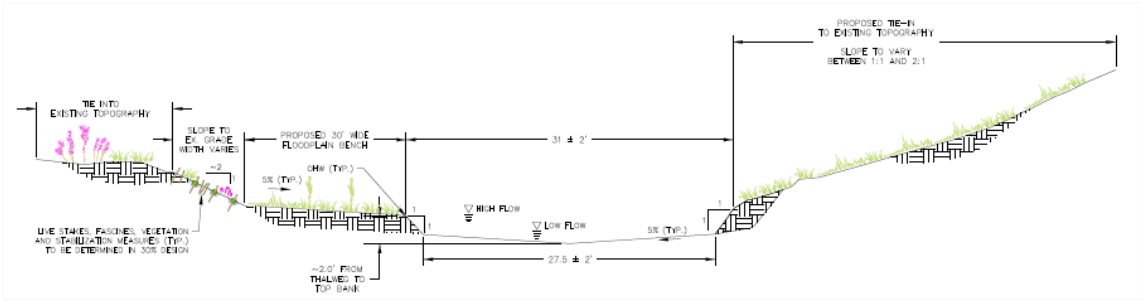
HANDS MILL DAM REMOVAL
AT JAIL BRANCH
CONCEPT PLAN
WASHINGTON VERMONT
SHEET NO.
3



Existing and Proposed Longitudinal Profile
Horizontal Scale: 1" = 30'
Vertical Scale: 1" = 15'

Legend
Existing Channel Thalweg
Proposed Pilot Channel Thalweg

Channel Restoration Profile Notes:
1. The profile has a vertical scale exaggeration of 2.



Typical Channel Cross Section
Scale: 1" = 5'

FOR PERMITTING PURPOSES ONLY
NOT FOR CONSTRUCTION

DRAWING CREATED: FILE:
DRAWN ON: 9/4/2020
DRAWN BY: GMB
CHECKED ON:
CHECKED BY:
PROJECT NO: 20-007

#	DATE	DRWN	CHK'D	APP'D	DESCRIPTION

DRAWINGS ARE HALF SCALE WHEN PRINTED ON 11X17

STONE ENVIRONMENTAL
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HANDS MILL DAM REMOVAL
AT JAIL BRANCH
LONGITUDINAL PROFILE AND DETAILS
WASHINGTON VERMONT

DRAWING NO. 4