

Determination of Eligibility (DOE)

Inventory #: NOR0406

DOE Review Date: 6/12/2024

Date Received: 6/5/2024

Final DOE Approved: Yes

Property Name: Upper Deerfield Road causeway/culvert

Area:

Address: Between 44 and 141 Upper Deerfield Rd

Town: Northwood

County: Rockingham

Reviewed For: SR

DOE Program(s):

State Register

Determination of Eligibility:

National Register eligible, individually	Integrity: Yes		Level: Local		
State Register eligible, individually					
Criteria:	A: Yes	B: No	C: Yes	D:	E:

Areas of Significance(s):

Engineering

Exploration, Settlement

Transportation

Period of Significance: 1777 to 1970

Boundary:

Includes the culvert and causeway structures

Statement of Significance:

This culvert/causeway is part of a 1777 range road. The form provides a good compilation of the historical reasoning for the construction of the road and its infrastructure, town development, need for the road, and character and use of the road over 200+ years. It also describes the resource thoroughly, and compares it to others which are generally altered or later construction. While this section of the road has functioned primarily as a recreational path since the 1970s, its infrastructure is still intact.

The DOE committee concurs that the resource is eligible for listing in the State Register in association with its function in/to the community and for its engineering, as well as eligible for listing in the National Register under Criterion C, engineering. The committee also determined it was eligible for listing in the National Register under Criterion A, for its association to the settlement/development of the Town.

Comments:

Follow Up:

Notify appropriate parties

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Name, Location, Ownership

Historic name Upper Deerfield Road causeway/culvert

Street and number undeveloped land between 44 and 141 Upper Deerfield Rd.

City or Town Northwood

County Rockingham

Current owner Town of Northwood, NH

Function or Use

Current use(s) recreation-hiking

Historic use(s) transportation, road-related for 200 years

Snowmobile trail

Architectural Information

Style uncoursed rubble

Architect/builder unknown

Source N/A

Construction date 1777

Source research

Alterations, with dates none

Moved? no yes date:

Exterior Features

Foundation fieldstone

Cladding N/A

Roof material N/A

Chimney material N/A

Type of roof N/A

Chimney location N/A

Number of stories N/A

Entry location openings on north and south ends

Windows N/A

Replacement? no yes date:

Site Features

Setting stream and mature trees oak, hemlock, beech forest, wetland, unmaintained road, brook

Outbuildings none



Photo #1 east wall of culvert and causeway. 5/6/24

Landscape features forest, wetland, brook

Tax Map between Map 235 Lot1 and Map 235 Lot 40

Acreage less than one acre

State Plane Feet (NAD83) Northing 253,222.804ft, Easting 1,117,966.337ft. Zone NH-28

Form prepared by

Name Wini Scovill Young

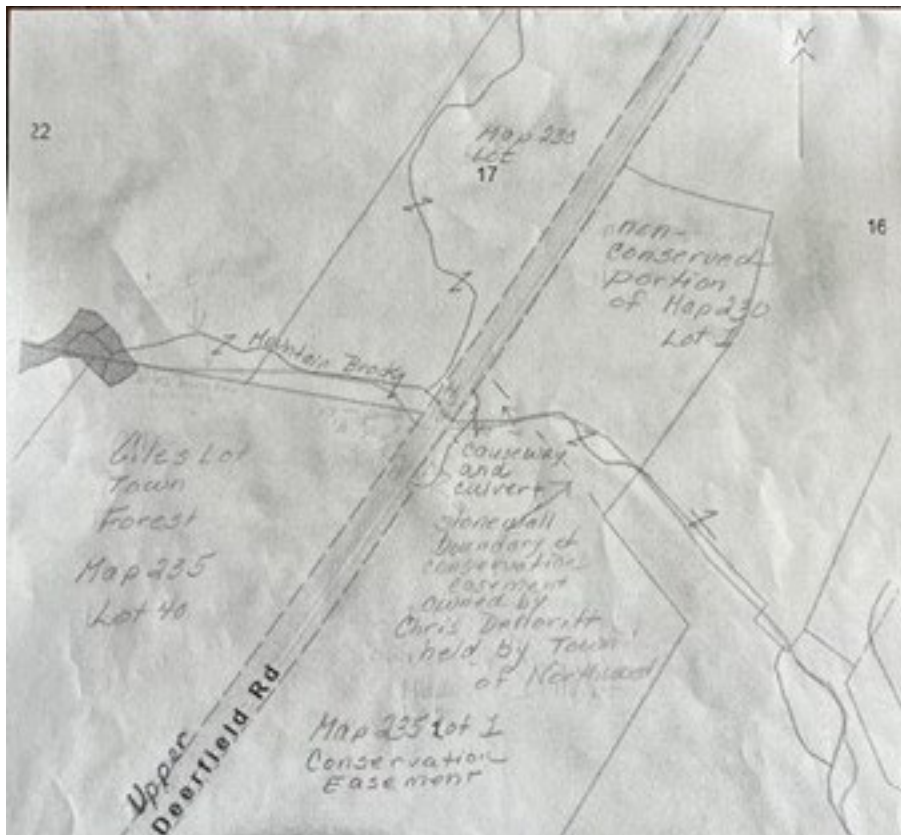
Organization private citizen, town of Northwood

Date of Survey May 6, 2024

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Location Map and Site Plan:



Historical Background and Role in the Town or City's Development:

The culvert and the causeway leading over and to the north and south of the culvert will be separately described in the Architectural Description and Comparative Evaluation section, as they are in different structural categories. In this narrative the term "causeway" includes both structures.

In 1773 the town of Northwood was established by a grant from Governor John Wentworth (Cogswell, 1878, p.519). It was previously part of Nottingham for which a charter was granted in 1722 (Cogswell, 1878, p.83). People settled in East Northwood and Northwood Ridge moving in from the east on what was then called the road to Canterbury (most of that is now the First NH Turnpike). Some settlers came through Nottingham and opened a road between the 7th and 8th range (photo #7, Clarke Map 1800) by Lucas Pond and up onto Saddleback Mountain. In her book *A Guide to the History and Old Dwelling Places of Northwood, New Hampshire*, former town historian, now deceased, Joann Bailey, organized her information by 8 districts based roughly on old school districts; they are Mountain, East Northwood, Ridge, Center, Narrows, Blake's Hill, Knowles and Jenness Pond Districts (Bailey, 1992, p.2). The settlers of the Mountain District were separated from East Northwood's Baptist Church and amenities in other town districts, such as, the blacksmith shop on Northwood Ridge and the meetinghouse in Northwood Center. It was a long way around through Nottingham. Consequently, the settlers on Saddleback Mountain petitioned the town to fund the building of a road to connect them to East Northwood through a warrant article at the April 9, 1777 town meeting (Northwood Town Report 1777, and Bailey, 1992, p.60). This road also gave the town a route to neighboring Deerfield to the south which was established in 1765 (Cogswell, 1878, p.261). Daniel Hoitt, who lived at the East Northwood end of his lot 6 in the 8th range traded the east edge of that lot, the route of the new road, for other town land (Northwood Town Report 1777).

This route traversed two steep hills and a valley with a wetland with Mountain Brook flowing through it. In her stories in the book titled *The Chanticleer Weathervane* about living on Saddleback Mountain as a child (1892 to roughly 1910) Ruth Montgomery Hill describes

"a long mile over the Great Hills Road to the Turnpike corner" being a "slow journey with one farm horse and a loaded two-seat wagon and those hills. Most of the children would get out and walk up that longest, steep Great Hill, where you climbed from Great Brook Valley to the slope of Northwood Ridge. We travelled it so often, it didn't seem far" (Hill, 1991, p.135).

She noted that her father travelled that way to get to work at the Pillsbury Shoe Factory (Moses, 1900, p.190) in East Northwood (Hill, 1991, p.135). Home shoe shops and farms would take their products to market by way of the road and causeway (Hill 1991:33). Wool was shipped to markets from the mountain. Sheep overgrazing causes erosion leaving bare outcrops. Evidence of overgrazing by sheep are the bare outcrops and common juniper on Saddleback Mountain (Wessels, 1997, p.45-46).

In his 1878 *History of Nottingham, Deerfield, And Northwood* Elliot Cogswell wrote:

"Over this tract, passes the road leading to Deerfield from Hoitt's Corner, descending near that location precipitously, into a deep ravine, much like that of the Gulf, where many casualties made many a man feel that there was but a step between him and death. Horse and rider involuntarily shrink from the perilous descent, and look with alarm at the opposite acclivity" (Cogswell, 1878, p.580).

He describes the travel over this expanse as part of everyday life:

"Yet over this parties of pleasure, men of business and beasts of burden have most daily passed and braved the danger and toil for a hundred years." and he described those early residents shaped by the challenges of everyday life as "tall, robust men and vigorous women, able to cope with obstacles anywhere" (Cogswell, 1878, p.580).

Ruth Hill observed that the temperaments of people were different depending on what end of the causeway people lived, being either mountain-minded" or "village-minded" (Hill, 1991, p.86).

In 1816 the Mountain District had the second highest taxable property of all the town districts and there are over 20 cellar holes and old house locations dating from before 1857 (Bailey, 1992, p.59) attesting to a sizable population on the

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mountain that regularly travelled over the causeway. Many early maps including the 1892 Atlas (photo #8) map document its prolonged use.

J.M. (John Mark) Moses's article entitled "Northwood: A Town of Lakes" was published in the September, 1900 edition of *The Granite Monthly*. In that article he takes the reader on a tour of Northwood and suggests "an excursion to Saddleback may be best taken by way of the Mountain Schoolhouse. With a strong wagon it is possible to get within a half a mile of the top" (Moses, 1900, p.199). The only access to Saddleback Mountain was through East Northwood then by Upper Deerfield Road over the causeway. At the end of that article a poem entitled "At the Village Smithy" by Clara Augusta Trask describes travelling "down the road steep and stoney" to get to the blacksmith shop on the Ridge (Moses, 1900, p.205). Summer boarders who sought lodging on the mountain would have made the trek over the causeway (Hill, 1991, p.145).

In 1893 Mountain Avenue (later improved to become state route 43), a road further east and less hilly, was opened (Bailey, 1992, p.61) and in the 1970's the middle section of that end of Upper Deerfield Road including the causeway was closed. That section was in use for over 200 years and has been in existence for nearly 250 years. However, it is still in town ownership, designated as a Class VI unmaintained road. Sections of the north end intersecting with route 4 /First NH Turnpike and the south end intersecting with Old Mountain Road have been re-opened and extended through votes at various town meetings beginning in 1978 to allow development of land parcels bordering the ends of the road (Northwood Town Report 1978). The class VI section has been used as a snowmobile trail and now is used only by hikers. There are plans to open a trail that would take hikers down that Class VI section of road, a picturesque road lined by large oaks and hemlocks, to the causeway and then through the Giles Town Forest that borders the causeway on the west side. The conservation easement on the east side prevents development and has limited development potential along the road.

Applicable NHDHR Historic Contexts:

700. Pre-automobile land travel 1630-1920
709. Culverts

Architectural Description and Comparative Evaluation:

Causeway Description:

The road on which the causeway and culvert are located is currently Upper Deerfield Road but Ruth Hill referred to it by the more descriptive name of Great Hills Road (Hill, 1991, p.135).

The causeway is located on the class VI section of Upper Deerfield Road along the original rangeway between Lots 5 and 6 of the 8th range (Photo #7, 1800 Clarke map). The north and south ends of this road are still maintained but the causeway and culvert section was designated as a Class VI unmaintained road in 1970s. From the stone culvert it is a distance of approximately 500 feet to the closest house to the north and approximately 2000 feet to the closest house to the south. There is only one house in view up on the steeper north hill but the road section up this hill is impassable due to plant overgrowth. The area includes a hemlock, oak and beech forest as well as Mountain Brook flowing through a wet meadow wetland. It is fortunate that the land to either side of the causeway is undevelopable. The west side is bounded by Northwood's Giles Town Forest upon which by a vote of the town in March 2024 a conservation easement will be placed in 2025. The east side is bounded by the privately-owned DeMeritt conservation easement. (photo #10, survey plan D-36991). The stone culvert near it's north end spans Mountain Brook, a tributary to the North River in the Lamprey River Watershed. The causeway is 248 feet long which is documented in D-36991.

Stone walls that make up the edges of the causeway extend along the sides of the entire road bed and are the height of 1 to 2 feet above the road bed, being one large stone high. The old photo of Mountain Brook taken in the early 1900s (photo # 9) shows railings behind the children sitting on the stones of the east edge of the culvert. Such construction would serve as a safety measure for vehicles (wagons and horses and possibly motorized vehicles up until the 1970s) and to keep livestock from falling into the brook as some may have been herded across.

The stone "bridge" near it's north end spans Mountain Brook and has a 3.5 foot span/opening. In Richard M. Casella's 2009 report for NHDOT entitled *Stone Highway Culverts in New Hampshire_1750-1930* he states

"Stone highway culverts are among the earliest and potentially most enduring of highway structures, being built from the era of first settlement down to the late nineteenth and early twentieth centuries, when vitrified clay, concrete, and corrugated metal culverts became available to supplant them. Constructed to prevent the erosion of

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early roads during times of high water and to avoid the need to ford small streams, stone culverts introduced several of the methods and materials of early bridge building on a small scale. Although often overlooked in the history of transportation, stone culverts represent some of the earliest examples of vernacular engineering in the New England landscape.”

That document was included in Mr. Casella’s multiple property NHDHR documentation form for stone culverts in 2009. The decision to use stone rather than wood for the brook crossing would most likely have been due to the abundance of fieldstone in the area and the need for a great amount of material to build the stone walls of the causeway and the road bed, as well as, the culvert.

According to the NH Department of Transportation the Upper Deerfield Road causeway’s “bridge” is now categorized as a culvert by NH standards because it has a span of less than 10 feet. Describing the Upper Deerfield Road culvert by descriptors used in the DOT manual, it is an uncoursed, dry laid rubble, box stone culvert. It has slabs, not lintels, as the main weight-bearing stones above the brook. It may have been reinforced on the inlet (west) side by stones tapering out along that side (photo # 4). “A stone box culvert consists of a stone slab, or series of slabs in parallel, spanning between two stone channel walls. Structurally, the slab functions as a simple beam, one of the oldest forms of human building. In architecture, a beam supported at each end to create a roof or opening in a wall for a door or window is known as post and lintel (beam) construction, or column and beam construction” (Casella, 2009, p.7).

The span of the culvert’s east side opening is 42-45 inches and the height is 54 inches. The slab on the east side is 12 inches thick. The causeway to the outside edge of the walls is 23 to 25 feet wide and the dirt road between the walls is 20-21 feet wide. This expanse was filled with stones between the two walls (photo #6). The outside of the stone sides of the causeway range between 3 to 6 feet high making the “elevated” roadbed up to 5 feet above the wetland (photo #2). Although the builders are not known, this would be hard work probably requiring livestock, such as oxen, and stone boats to move some of the larger stones (Sanford, 2015, p.141).

The stones themselves were probably found nearby rather than brought in from a quarry. There are no drill holes which concurs with the construction date because pin and feather method was not used until 1830 (Casella, 2009, p.14). Some stones have very straight edges and may have been spit by chisels. The scouring on some stones may be natural or man-made. The coloration of the stones best fits the description of basalt (Thorson, 2002, p.32). There is one hole in one stone by the edge of culvert. Perhaps it was drilled to hold a support of a railing (photo #9).

The causeway and culvert’s structure has not degraded. There is no evidence of changes over its 200 years in use or since it was designated class VI. No mortar has been added nor has there been any need to bypass it with modern piping. There is no evidence of crumbling or stones dislodged. The area of the culvert has some outlying stones but this looks to be the continuation of the stone wall boundary that runs perpendicular to the causeway to the west from the culvert (photo # 4).

Eric Sloane so aptly stated, “The plain farmer of two hundred years ago was weaving the fabric of a new nation and although there are no marble statues to his patriotism, there are still his stone walls” (Sloane 1982:23). This recognition can be extended to the builders of the historic causeway and culvert.

Comparable dry laid culverts:

C1: A multiple property documentation form for the National Register of Historic Places was published on July 13, 2009 for the NH Department of Transportation which included the *Historic Stone Highway Culverts in New Hampshire Asset Management Manual*, both prepared by Richard M. Casella of Historic Documentation Co. Inc., Portsmouth, RI. In that application a stone box culvert in Northwood, NOR0002 (photo #11) was recommended eligible for the National Register. It is on Old Turnpike Road crossing Flat Meadow Brook and is described as a fieldstone box culvert with 3.3 foot span and a width between outside walls edges of 35 feet. It is noted as being altered with “two plastic pipe culverts 100 feet to the northwest” (Casella, 2009, p.73). However, the site was visited on May 17, 2024 and it was noted that the plastic culverts are 30 to 35 feet northwest of the culvert, but the functional stonework has not been altered. It has a fieldstone slab and rubble uncoursed construction. Construction of this road was begun in 1801 and was the main connecting road to towns to the west and north of Northwood.

C2. In the above mentioned NHDOT document culvert CNT0007 in Canterbury is described as a double box culvert with a 3 to 6 foot span and not altered. It has a stone fieldstone slab. It is not part of a causeway. It was recommended eligible for the National Register.

Comparable causeway:

C3. London Bridge Road Causeway, WND0001, in Windham is a comparable causeway but does not have a culvert. It was constructed in 1799. It is 90 -100 feet long, 20 feet wide and 9-10 feet high. In the application the prevalence and sturdiness of dry laid stone structures is described by the Preservation Company of Appledore Engineering. According to Terry Nelson in the *Hidden History of the New Hampshire Seacoast* on February 8, 2006, the New Hampshire Division of Historic Places determined that the London Bridge Road Causeway was eligible to be listed in the National Register of explaining that "The causeway is eligible for its significance in history, engineering, and for its potential to yield important information about the construction of these types of structures."

National or State Register Criteria Statement of Significance:

The Upper Deerfield Road Causeway with culvert is a rare and structurally unchanged example of 1777 road and culvert construction. It is significant historically as it was one of the first range roads in town and was the solution for two separate districts of the town to connect and share goods and services. It is noted in several early town records. The combination of both box culvert and elevated roadway makes it even more rare than a culvert or causeway alone. It is dry laid fieldstone with a slab and uncoursed rubble structure.

The culvert through which Mountain Brook flows is an example of an early well-preserved box culvert. It is dry laid fieldstone with a slab and uncoursed rubble structure. Town records and histories document that it was constructed in 1777. Most examples of this type of culvert in New England have been replaced with more modern materials but due to the road being designated class VI in the 1970s, there has been no modification to it. It is bounded by a 248 foot causeway extending from both sides making this a very unique. The causeway is significant as an example of the hard work, ingenuity of the early settlers of the town.

Period of Significance:

1777-1970s

Statement of Integrity: The Upper Deerfield Road causeway and culvert maintain a high level of integrity of location, design, setting, materials, workmanship feeling and association. It's location and design were out of necessity to allow settlers to get from one area of town to the other in association with very beginning of the town's development. The materials used were those at hand and chosen because a great amount was needed to build the 248 foot long causeway, elevated road bed and the culvert. Though not the most artistic structure of its kind, it was built to last and it was used for 200 years without any structural failures.

Boundary Description and Justification:

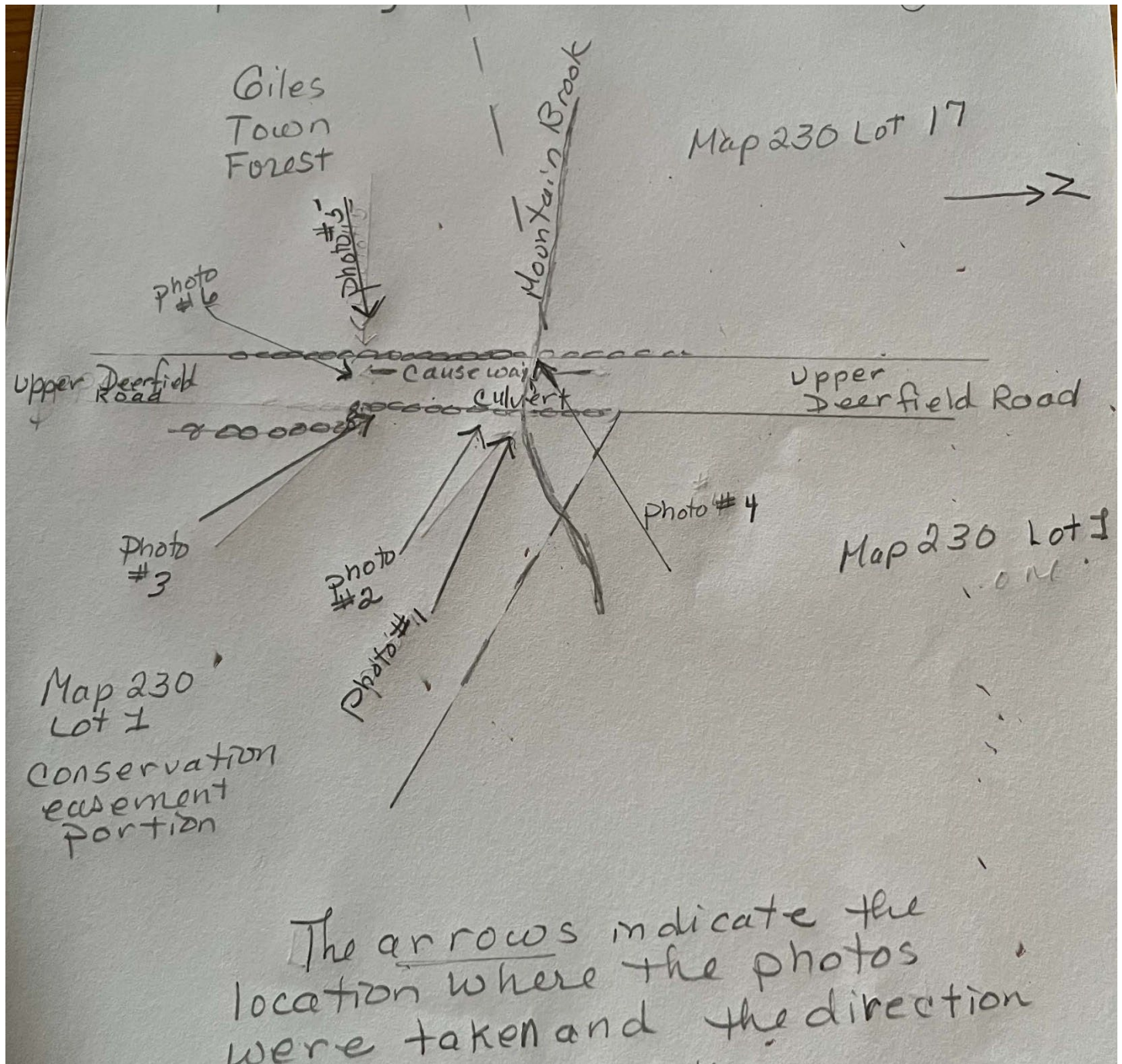
The Upper Deerfield Road Causeway is a section of unmaintained Class VI, Upper Deerfield Road bounded by the Giles Town Forest Tax Map 235 Lot 40 on the west side and the Demeritt conservation easement Tax Map 235 Lot 1 on the east side. The north and south ends are bordered by remainder of that road. The footprint of the causeway is 248 feet by 23 feet.



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Photo Key:



Bibliography and/or References:

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- Casella, Richard M. (2009). National Register of Historic Places Multiple Property Documentation Form, “*Stone Highway Culverts in New Hampshire 1750to 1930*”, Historic Documentation Company Inc. Portsmouth, ,RI ,July 13, 2009
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- Cogswell, Elliot Colby. (1878). *History of Nottingham, Deerfield, And Northwood*, John B. Clarke publisher: Manchester, NH
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- NH Registry of Deeds, survey plan D-36991, William T. Wormell, November 15, 2010
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Photo #2 East side of east wall taken facing west. 5/6/24



Photo #3 South end of east wall facing north. 5/6/24



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Photo #4 West side edge of culvert looking down on the slab, facing southwest over wetland. Mountain Brook flows in from the west.

5/6/24



Photo #5 South side of west wall of causeway taken facing eastward. 5/6/24



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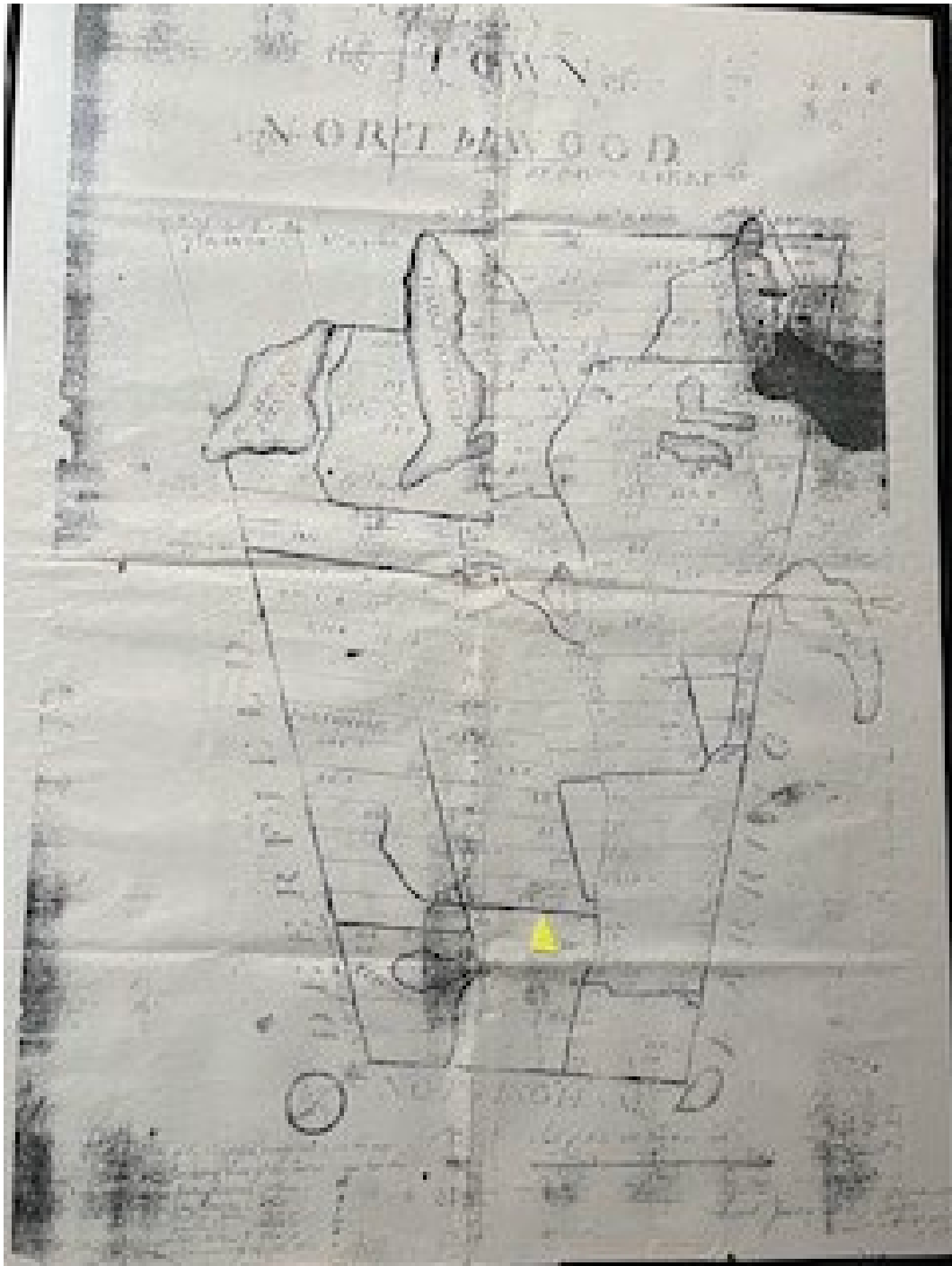
Photo #6 Stones in the roadbed taken facing northeast standing on the roadbed. 5/6/24



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Photo #7 Clarke map 1800



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Photo # 8 1892 Atlas map

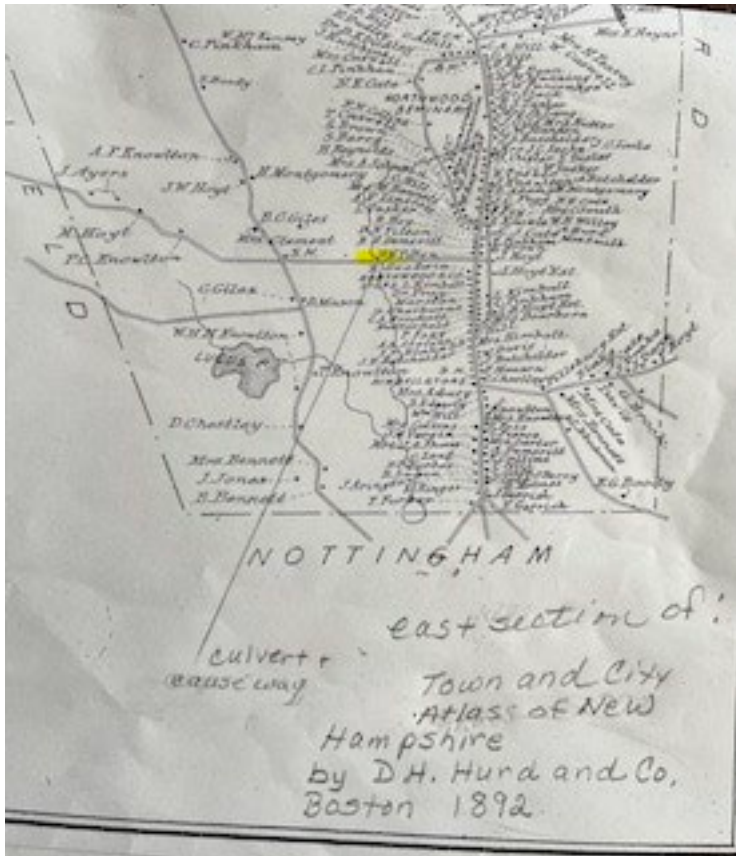


Photo #9 Early 1900's photo of east side of the culvert



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Photo #10 survey and photo key

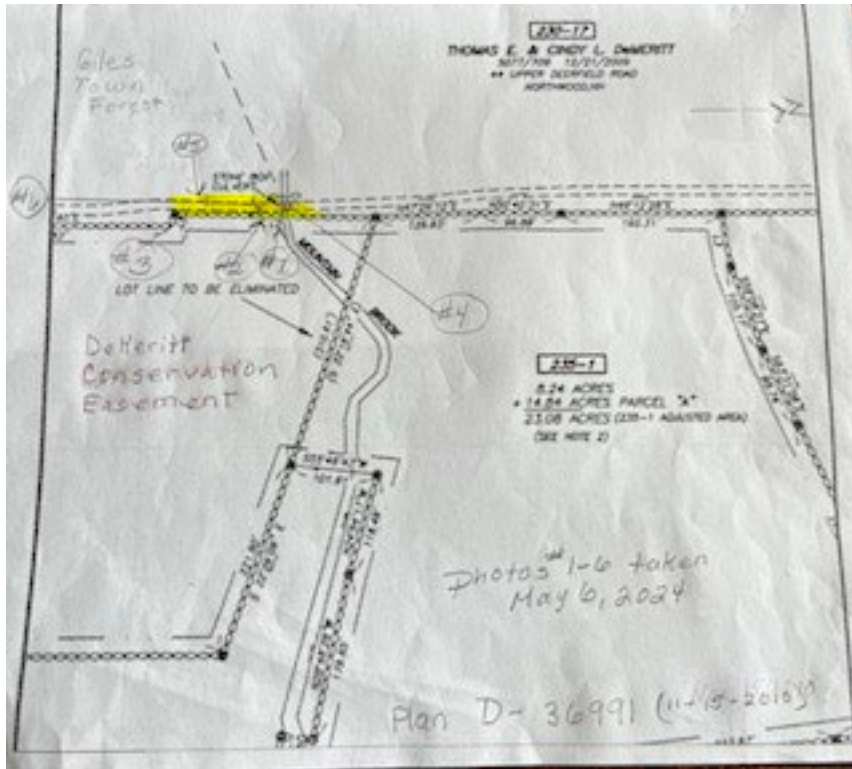


Photo #11 Culvert NOR0002, Old Turnpike Road, Northwood, NH 5/17/24

