

Addendum

7.1 Description

Introduction

This addendum to the Maryland Inventory of Historic Properties Form for the Union Dam (HO-534) was prepared to document the results of the archeological monitoring undertaken at the site between June 1 and July 3, 2010 to address the unexpected discovery of the partial remains of three timber structures within the channel of the Patapsco River. These structural remains were encountered during the removal of the 1912 reinforced concrete Union Dam.

The demolition of the Union Dam by the Maryland Department of Natural Resources (DNR) was required as part of the restoration of the Patapsco River, a project permitted by the U.S. Army Corps of Engineers, Baltimore District (Corps) under the Clean Water Act. The federally permitted undertaking was the subject of a June 2006 Memorandum of Agreement (MOA) among the Corps, DNR, and Maryland State Historic Preservation Officer to take into account the effect of the project upon historic properties.

The objectives of the Treatment Plan developed pursuant to Stipulation II. C. of the MOA were to document the three timber structures then exposed within the project area, and to monitor and document the systematic removal of the exposed structure located upstream of the crib dam (Structure 1) during the ongoing construction of the cross vane. Additional measures identified as appropriate to mitigate adverse effects to the remains of the timber crib dam (Structure 2) and downstream structure (Structure 3) included archeological monitoring during the removal of portions of the structures, exploratory testing, and agency consultation. Data generated during the investigation were used to augment the Maryland Inventory of Historic Properties (MIHP) form for the Union Dam (HO-534) and to support the exhibit under development by (DNR) in accordance with Stipulation I.C. of the MOA regarding public interpretation.

Water Features

The three timber structures and the concrete Union Dam were part of a series of water features constructed between 1808 and 1912 along the Patapsco River to provide power to the Union Mill, a textile milling complex formerly located southeast of the dam site near Ellicott City. These water features included at least two generations of the wooden dams (1808, 1867) and a later concrete dam (1912) as well as the head race and raceway that connected to the mills.

Previous documentation prepared by Paula S. Reed & Assoc., Inc. in 2008 provides descriptions of the sequential 1808, 1867, and 1912 dams derived from period accounts. The 1808 dam was characterized by Union Manufacturing Company president, Robert McKim in his 1809 report to stockholders as "constructed across the falls, of the most substantial materials, and completed in a manner which promises great duration" (American and Commercial Daily Advertiser 1809 as quoted in Paula S. Reed & Associates, Inc. 2008:

8.3). The 1867 dam, thought to have been constructed to replace the 1808 structure destroyed in an 1866 flood, was described in detail in the 1885 *Report on the Water-Power of the United States*: “The dam is of wood, 185 feet long and 10 feet high, and was built in 1867 as a cost of about \$15,000. It ponds the water over about 17 acres, and from it a race 2 miles in length leads to the mill, where the fall is 30 feet.” (U.S. Census Office 1885:574 as quoted in Paula S. Reed & Associates, Inc. 2008: 8.5).

The 1912 concrete dam was a buttressed type dam built of reinforced concrete by the Abuse Hydraulic Construction Company of Boston, Massachusetts. The dam had a wooden lift gate on the east and possibly one on the west; the eastern gate fed water to the mill race, portions of which survive. The design of the 1912 reused the extant 1808 raceway with modifications.

The remnants of the 1867 wooden dam are located slightly upstream of the concrete structure between the concrete dam and the US 40 bridge (Figure 1). The wooden dam stretches across the river between two stone abutments. The stone work in these abutments shows evidence of having been built in the early nineteenth century and rebuilt or modified in the later nineteenth century. A substantial section of the nineteenth century wooden dam, identified as Structure 2, remains in the stream channel and the wooden structure appears to extend beyond the stream channel to the abutments located on the northern and southern banks of the river. Additional wooden structures were located upstream (east) (Structure 1) and downstream (west) (Structure 3) of the wooden dam.

The Upstream Feature (Structure 1)

The wooden feature consisted of a line of upright boards that extended 29 ft from the former bank of the river in a south-southwesterly direction (2130). Figure 3 is the preliminary field sketch that shows the general configuration of the visible portions of the structure. Approximately six to eight inches of the boards were visible above the standing water in the former stream channel (Photograph 1); at the shoreline, these upright boards were fastened to a beam that originally may have extended across the stream channel. Approximately six feet downstream from the upright “face” of the feature were a series of peeled logs that were oriented along the channel (east-west) that appeared to have served as support for the wooden face of the dam (Photograph 2). These logs were randomly spaced along a support timber that extended into the former channel at approximately the same angle as the upright dam face. This feature partially was destroyed; the intact portion was documented and removed under supervision of the archeological monitor (June 2-6, 2010).

The 1867 Timber Dam (Structure 2)

The wooden dam was located approximately 45 feet downstream from Structure 1 and consisted of five levels of 1 x 1 ft square timbers that extended across the former stream channel. Four vertical timber crib walls, extending approximately 45 feet and spaced approximately four feet apart, were visible at the surface. The central reach of exposed timbers was joined at the upper level by partial cross-timbers (Photograph 3). The easternmost crib wall included the face of the dam, constructed of upright boards fastened to the timbers (Photograph 4).

The exposed timber structure was documented on June 2-6, 2010 (Figure 3), and a 45 foot section of the structure was removed to a depth of six feet on June 7 – 30, 2010 under the supervision of an archeological monitor. The removal process entailed the documentation of each course of timbers through measured drawing and photography. After the removal of first two courses of timbers, it was necessary to employ pumps to remove water from the excavation. A total of six levels of timbers were removed to a depth of six feet below grade.

Consistent aspects of materials and construction were documented. Most of the timbers were squared and measured 1 x 1 ft. The “crib” between the timbers were infilled with stones, gravel, and clay, and the timbers were pinned with 16-18” steel pins.

However, each level of differed slightly in construction. Level 1 included the long top plate that was visible at the water surface at the beginning of excavation (Photograph 5). This plate was constructed from sections of timbers joined with lap joints held together with steel pins (Photograph 6). Levels 2 and 3 consisted of diagonally cross members (Photograph 7) that were notched and pinned at the center (Photograph 8). The cribbing was pinned to a single long timber at the face of the dam. The horizontal timbers were not level; all courses of timbers sloped approximately 100 downstream. Level 4 comprised a wooden “deck” constructed of peeled logs (Photograph 9) that were laid horizontally across the timbers that comprised Level 5 (Photograph 10). The timbers in Level 5 were the lowest level of construction and probably served as mud-sills. The Level 5 timbers were widely spaced may have been disturbed. Gravel and clay below Level 5; no additional timbers were present.

The Downstream Feature (Structure 3)

Structure 3 was located approximately 25 feet downstream from Structure 2 and also was referred to as the “downstream feature”. This wooden feature, removed July 1-3, 2010, was barely visible at the water line at the offset of excavation (Photograph 11). A 40 foot section of the feature was removed to a depth of four feet. Removal of silt, water and gravel revealed a series of wooden cribs constructed of crossed timbers and logs; Figure 4 shows the configuration of the structure at the time of excavation. Although substantial, this structure was not as well constructed as Structure 2 and had been substantially disturbed. The feature extended north-south 40 feet across the stream channel, immediately east of the concrete dam. The main portion of the feature consisted of two lines of logs spaced approximately 7 feet apart with facing boards on the upstream side of each line of logs. Evenly spaced logs crossed the timbers and measured approximately 10 feet long and varied in diameter (Photograph 12). Alternating levels of logs formed a crib-like structure across the former river channel.

An additional section or crib of the structure was present at the northern end near the former shoreline. This 6 x 13 ft section extended upstream from the main structure (Photograph 13). The main structure consisted of four levels of timbers and/or logs constructed in a crib framework. Each level was recorded and removed. As in structure 2, all of the cross-timbers sloped downstream approximately 100.

At the second level of the structure, an additional section of construction, or crib, was noted on the downstream side of the southern end of the main structure (lower left in the field sketch), immediately adjacent to the concrete dam (Photograph 14). This rectangular area extended 13 feet downstream and was 9

feet wide. This crib of the timber construction was faced with vertical boards on the southern side and consisted of two levels of long square timbers with a single crosspiece at the western end.

8. Significance

The remains of the wooden dam on the Patapsco River are significant for their informational value concerning wooden dam technology common in the mid-nineteenth century, and frequently associated with the power generation systems employed for manufacturing. Wooden crib dams designed to support the power systems for industrial manufacturing represented advancement in scale from the modest dams associated with the grist mills and sawmills that supported more localized economies. While timber dams were commonly constructed throughout the nineteenth century, the materials used necessitated a submerged design for longevity. The majority of examples recorded in the Historic American Engineering Record were identified during river channel modification projects, which exposed previously submerged structural features.

The remains on the Patapsco River likely are associated with wooden dam(s) constructed in 1867 as part of the water power system for the Union Manufacturing Company. The 1867 timber dam replaced an original 1808 dam, which was destroyed by flood in 1866. Following its construction, the use of natural cements and Portland concrete in the construction of dams became increasingly popular in the post Civil War era. The 1867 dam was, in turn, later replaced by the 1912 reinforced concrete dam, which was removed in 2010. These three sequential dams document the pattern of innovation and advancements in construction technologies associated with water power from the early nineteenth through the early twentieth centuries. The wooden dam was included among the contributing elements to the Oella Historic District (MIHP #BA-150), an historic property that was listed in the National Register of Historic Places in 1976.

Context for Union Manufacturing Company/Oella Mills

After the passage of President Thomas Jefferson's Embargo Act of 1807, a group of prominent Baltimore men gathered and discussed the formation of a manufacturing company. The Embargo Act halted all trans-Atlantic trade but was aimed primarily at trade with Britain and France. With the sudden decrease in goods, the men saw a great business opportunity and quickly formed the Union Manufacturing Company in 1808. On 20 February 1808, the "Articles of Agreement of the Union Manufacturing Company of Maryland" was published in the Baltimore American. The first stockholder meeting was held on 7 April 1808 at the Merchants' Coffee House in Baltimore where John McKim was elected as the first president of the Company (Bagnall 1893: 490). The Union Manufacturing Company was organized with a capital of \$1,000,000 and 20,000 shares (Scharf 1881:407; McGrain 1976:1).

The trustees first purchased 350 acres from Charles Ridgely in July 1808 and an additional 458 acres from the Ellicott family (Jonathan, George, Elias, and John) in February 1809 (McGrain 1976: 2). Cotton production began in an old grist mill located on the property (McGrain 2007: 532). An additional 444.5 acres was sold to Robert McKim, William Wilson, William Patterson, John Gill, Benjamin Ellicott, William Jones, John Trimble, James H. McCulloch, Ludwig Herring, Augustus Jacob Schwartz, Nathan Levering, and James Beatty in trust for the Union Manufacturing Company on 22 July 1808. In late December 1808, the Maryland Legislature granted a charter establishing the Union Manufacturing Company to the

aforementioned men including John McKim (Bagnall 1893: 492-493). The first Stockholders Report described the completed bridge, dam, and mill race:

Near the northern boundary of the land...a Bridge has been thrown over the River...Not far above the bridge a dam has been constructed across the falls, of the most substantial materials, and completed in a manner which promises great duration. From this dam, a race, or canal is leveled of twenty feet in breadth, extending down the east of the stream upwards of a mile and a quarter, to the commencement of the first range of mill seats (McGrain 1976: 2).

The timber dam spanned 170 feet across the Patapsco River (Bishop 1864:131). The land was patented in 1811 containing 865 acres. The property was expanded in 1812 with the purchase of a tract of land, Patapsco Mill Seat, and again in 1814 with the purchase of 730 acres (McGrain 1976:2).

The first mill, designed by Maximilian Godefroy, was completed on 6 October 1809. The five-story mill measured 106' x 44' and housed 800 spindles (Brooks and Parsons 1988: 237; McGrain 2007: 532). The trustees placed an advertisement in the Maryland Republic and hired Matthew Waddell [or Waddle], from Glasgow Scotland, as the first superintendent of the mill works (Howard District Press 1847; Bagnall 1893: 493). The second cotton mill was finished in 1813 and housed between 5000 and 7000 spindles. An article in the Niles Register on 12 November 1813 outlined the company's plans to construct a third and fourth mill after the second was completed (McGrain 2007: 532). On 13 December 1815 a fire destroyed the first mill causing an estimated \$60,000 worth of damage (Bagnall 1893: 494-495).

Further damage to the mill works was caused by a flood on 1 August 1817. The flood destroyed "the western abutments of the dam, the head gates, and about 40 perches of the race bank" (Brooks and Rockel 1979:190; McGrain 1976:3). The Union Manufacturing Company decided to continue production solely with the second mill and not rebuild the 1808 mill. With the addition of power looms in 1820, the company witnessed a surge in business leading to the construction of a new mill in 1822 (Bagnall 1893: 495). The new mill accommodated 7000 spindles and 150 power looms. In 1838, construction began on a cotton duck mill (McGrain 2007: 533). The company manufactured duck canvas from 1830 through 1849, after which the company reverted to producing lighter fabrics (Bagnall 1893: 496).

The Union Manufacturing Company suffered severe damage from the October 1866 flood. A manager for the company, Richard Townsend, listed the losses of the Union Manufacturing Company: "Dam, and the Bridge, connecting the Mills with the Railroad – the stone stable – the Wagoner's house - & quantities of Wood, Coal & Hay" (Sharp 2001:80). Two years later, another flood swept through the Patapsco River Valley in July. The Union Manufacturing Company lost the newly constructed stable, wagoneer's house, and other property "that would float away" the rebuilt dam survived the flood although the mill race was severely damaged (Sharp 2001:85). The company resumed production in November 1868 while four of the nine enterprises along the Patapsco River "utterly vanished" (Sharp 2001:96).

A weaving mill was erected in October 1881 (Bagnall 1893: 496). The following year, the mill works expanded again with a 234 x 55' mill constructed of "slow-burning Georgia pine planking." The newly constructed mill was dedicated with a ball featuring three bands and two nights of celebration (McGrain 2007: 533).

Union Dam and Mill Race (HO-534)
Patapsco Valley State Park
R. Christopher Goodwin & Associates, Inc.
December 2010
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The Union Manufacturing Company decided to sell their enterprise after suffering losses due to the financial depression in the early 1880s. William J. Dickey purchased the entire industry 11 February 1887 (Bagnall 1893: 496). W.J. Dickey renamed the enterprise Oella Mills after the tract name as noted on the 1811 patent (McGrain 1976:4). Dickey changed the manufacturing at Oella Mills from cotton production to wool production (McGrain 2007: 533). The company reorganized after W.J. Dickey died in 1896 and continued operations as W.J. Dickey and Sons, Inc.

According to John McGrain, the Union Dam was rebuilt in concrete in 1912 by the Amberson Hydraulic Company (1976:5). During World War I the company produced uniforms for the armies of the United States and Italy. On 26 January 1918, a disastrous fire caused by the explosion of an electric globe destroyed three main mill buildings and a warehouse (McGrain 1976:4). The company erected a brick mill and resumed operations on 1 July 1919 2007: 535; McGrain 1976:4).

The construction of Liberty Lake and its dam disrupted the water power to the mills in 1951. During the 1960s and early 1970s the demand for woolen goods decreased as the demand for double-knit cloth increased. In March 1972, the mill complex shut down (McGrain 2007: 535). Also in 1972, Union Dam was breached by a flood on the west bank; additional damage to the dam occurred during the 1975 flood (McGrain 1976:5).

Crib and Timber Dam Construction and the Oella Mills

The timber (Structure 2) and crib (Structure 3) dams associated with the Union Manufacturing Company are representative of timber and crib dam construction practices during the mid-to-late nineteenth century for industrial use. The nearby mill race delivered the diverted water through a mile-long channel to the mills in Oella. Remains of the dam and the mill race document the early power system for the manufactory.

Although it is unclear whether the downstream (Structure 3) or upstream dam (Structure 2) was built first, the extant portions of the downstream feature recorded as Structure 3 exhibit elements typical for cribbed construction. Portions of the cribbing at the bank and the intervening dam were recorded with the characteristic cribbed structures. A typical crib dam included a number of wooden cribs set into the banks of the stream with a v-shaped dam stretching between them across the channel. Crib dams were generally constructed in locations that exhibit a "narrow channel, with a high bank on each side" (Leffel 1874: 45). The dams were created by constructing several square or rectangular cribs, with notched and saddled logs, that were generally filled with rocks, gravel, and clay. More cribs were built until the height of the dam was sufficient for the purpose of its construction (ASCE 2000:12-9). After the desired height of the dam was reached, the dam was often covered with planking to ensure it was water-tight (Turneaure et al 1908: 412). Generally, the wooden cribs are in-filled with soil, rock, brush or other materials to anchor them in place (Leffel 1874:46), and the upstream face of the dam is covered with planks. Structure 3 exhibits both of these elements.

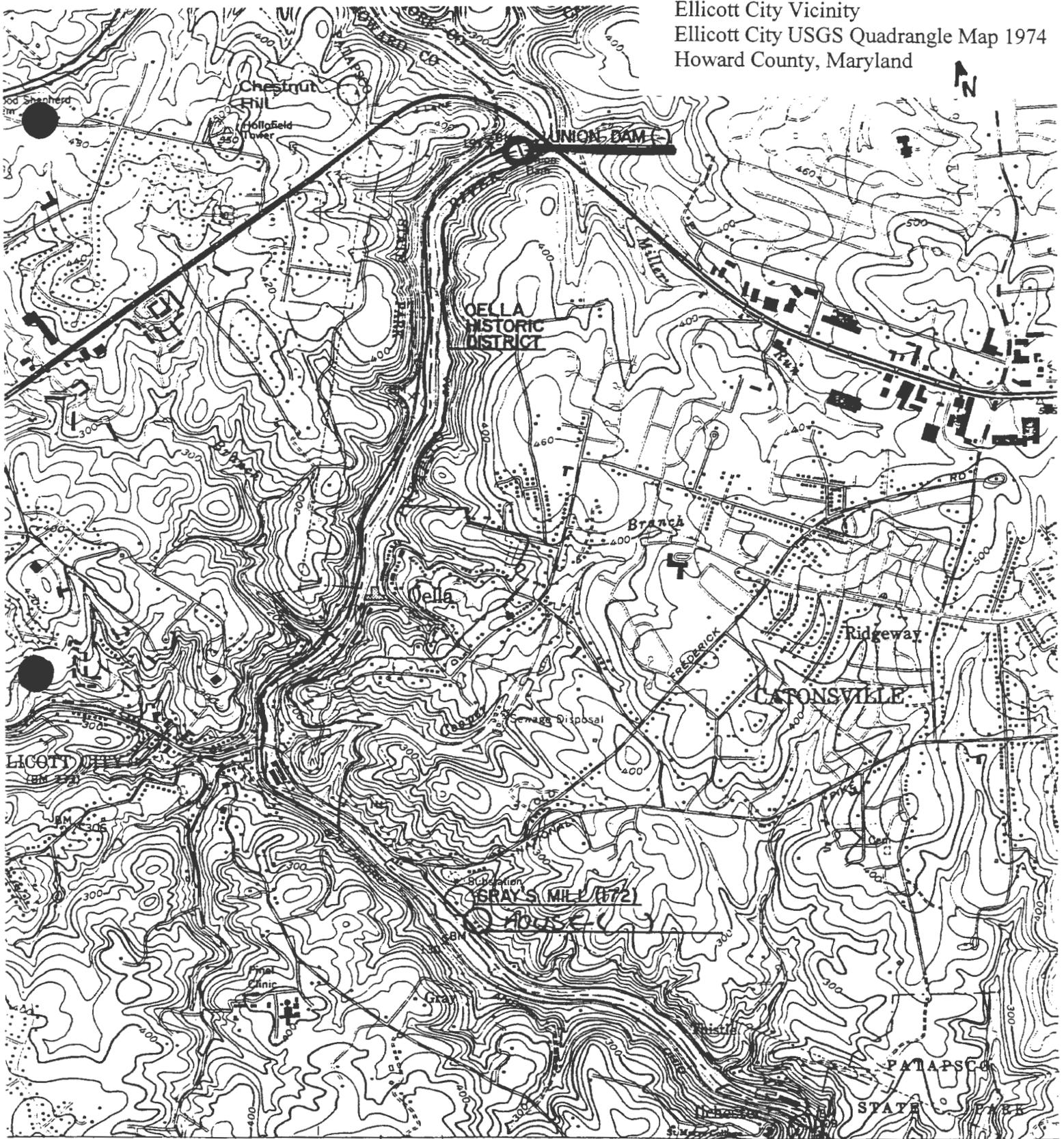
Timber dams were built in a variety of ways with some common or typical elements; the construction largely depended on its location and the needs for water control. Rebuilt after the 1866 flood, Structure 2 was an integral part of the redevelopment of the Union Manufacturing Company operations. Structure 2 exemplifies timber construction techniques, with a peeled log deck, cross timbers for support and vertical

Union Dam and Mill Race (HO-534)
Patapsco Valley State Park
R. Christopher Goodwin & Associates, Inc.
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planking on the upstream side of the face of the dam. Timber dams of the period often were constructed, as in the case of the Patapsco River example, with a slanted down-stream face to discourage base erosion. Downstream timber aprons often were constructed to control under scouring.

With the continued success of the operations after the sale to William J. Dickey and the addition of a weaving mill to the complex in 1881, the renamed Oella Mills continued to prosper and expand to the extent that a concrete dam was built in 1912, replacing the old wooden dam, which remained substantially in place until the removal of the concrete dam in 2010. Although partially demolished, the remaining portions of the dam are an important example of the adaptive construction and engineering techniques applied to timber dam construction in the middle of the nineteenth century. Although the interior spaces of the dam are in-filled with stones and gravel, it does not exhibit the typical crib construction. It is unclear if Structure 3 predates or is contemporary with Structure 2, but Structure 3 reflects the more accurately the techniques used for cribbed construction with at least two separate cribs still intact at the time of demolition. This structure also exhibits the vertical plank face typical for cribbed construction.

Union Dam and Mill Race (110-534)
 Ellicott City Vicinity
 Ellicott City USGS Quadrangle Map 1974
 Howard County, Maryland



3 MI TO MD 175
 EST BRIDGE 5.9 MI



100 FEET
 DATUM OF 1929

HO-534
 ELICOTT CITY
 QUAD



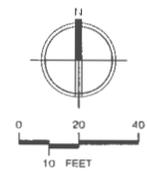
PATTERSON VIADUCT
 ILLCHESTER BRIDGE & TUNNEL
 ROAD CLASSIFICATION

- Heavy-duty Light-duty
- Medium-duty Unimproved dirt
- Interstate Route
- U.S. Route
- State Route

ELICOTT CITY, MD



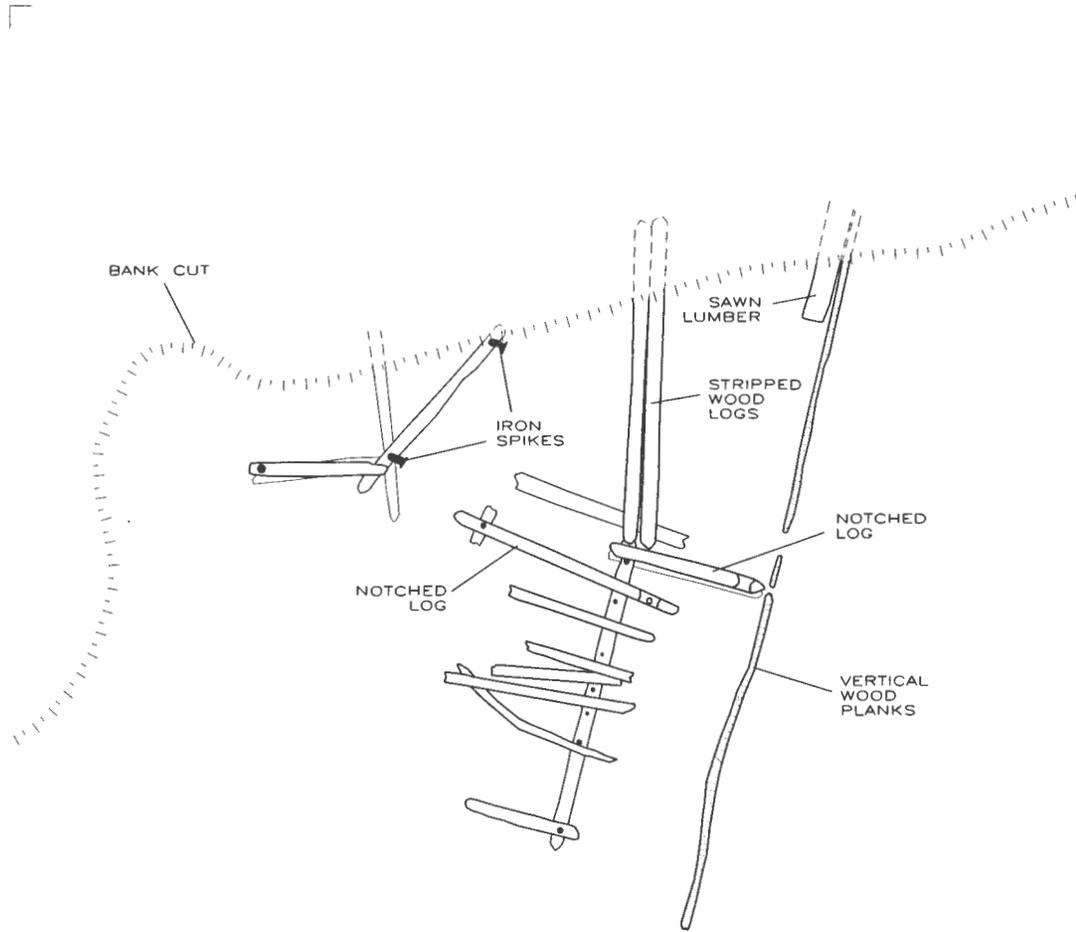
AMERICAN RIVERS
PATAPSCO
Location of Dam
Structures



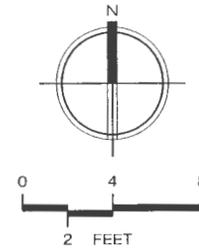
KEY:
 --- TREELINE
 --- RIVER EDGE

R. Christopher Goodwin & Associates, Inc.
 241 East Fourth Street, Suite 100, Frederick, MD 21701
 DATE: 00 & 00 PREPARED BY: BAW

Union Dam and Mill Race (HO-534)



AMERICAN RIVERS
PATAPSCO
Structure 1
Plan



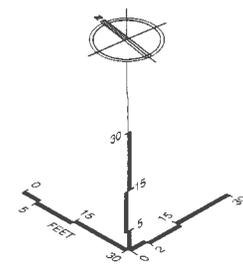
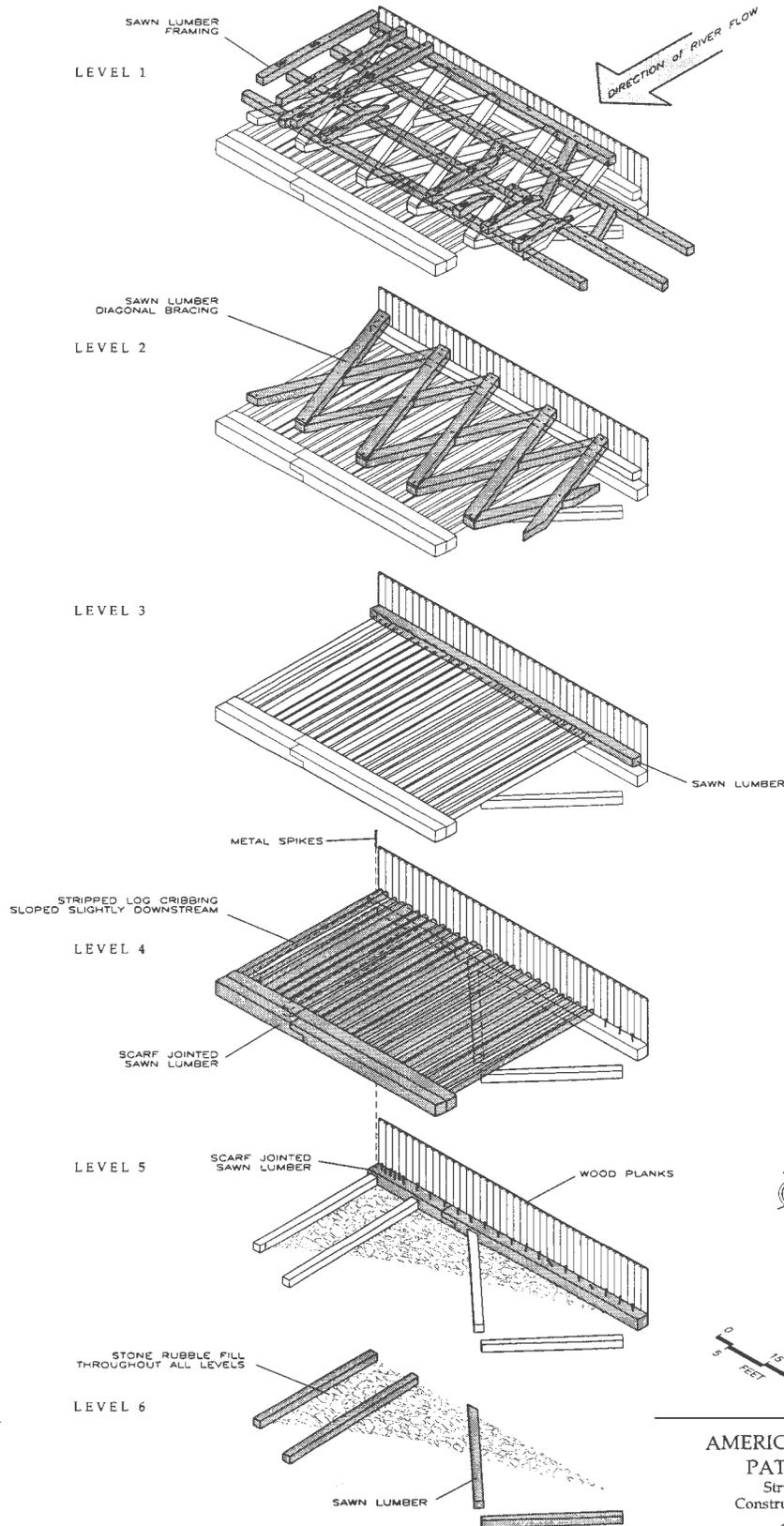
R. Christopher Goodwin & Associates, Inc.

241 East Fourth Street, Suite 300, Frederick, MD 21701

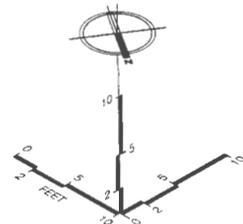
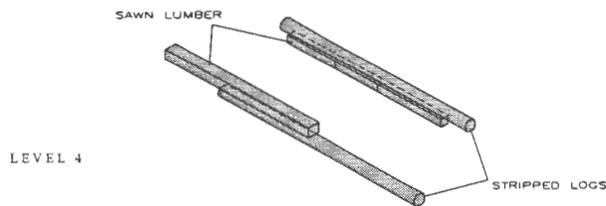
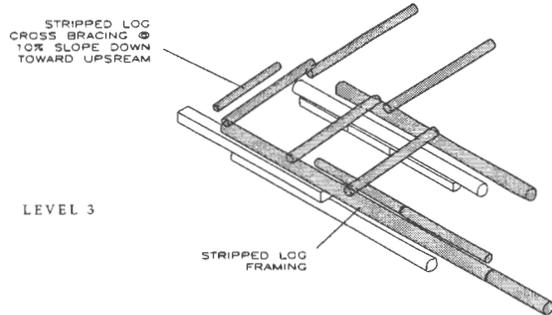
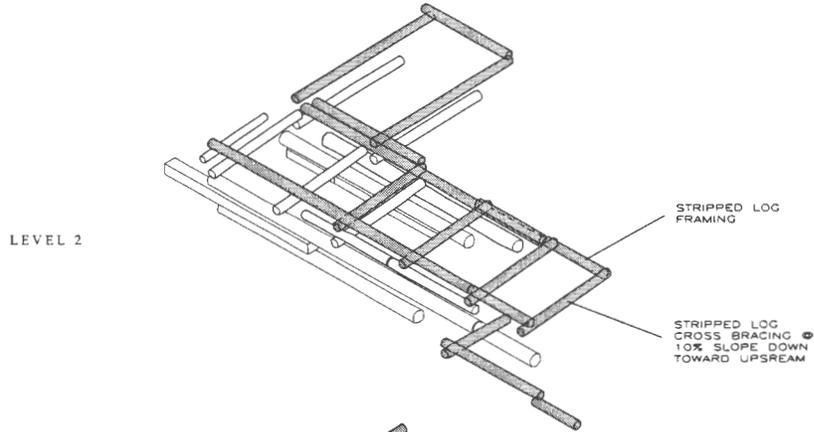
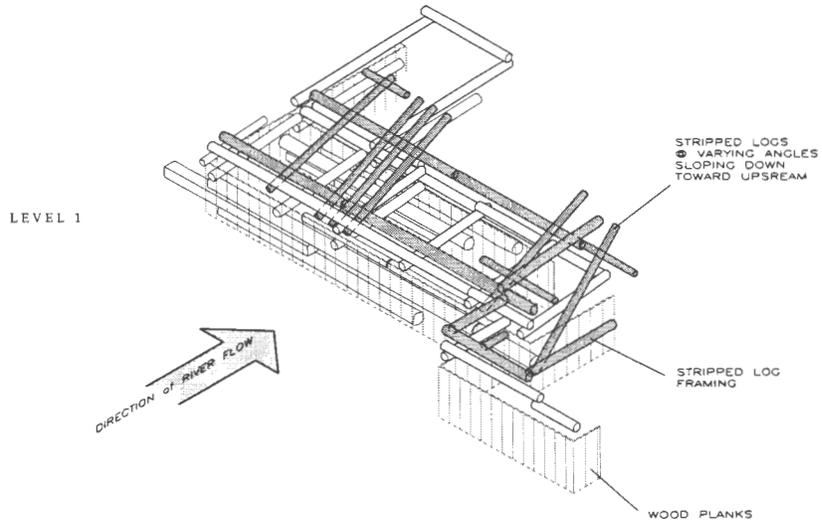
DATE: 09.16.10

PREPARED BY: BW

Union Dam and Mill Race (HO-534)



AMERICAN RIVERS
PATAPSCO
Structure 2
Construction Detail



AMERICAN RIVERS
PATAPSCO
Structure 3
Construction Detail

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Union Dam and Mill Race (HO-534)
Ellicott City, Howard County, Maryland
Resource Sketch Map with Photograph Key

12

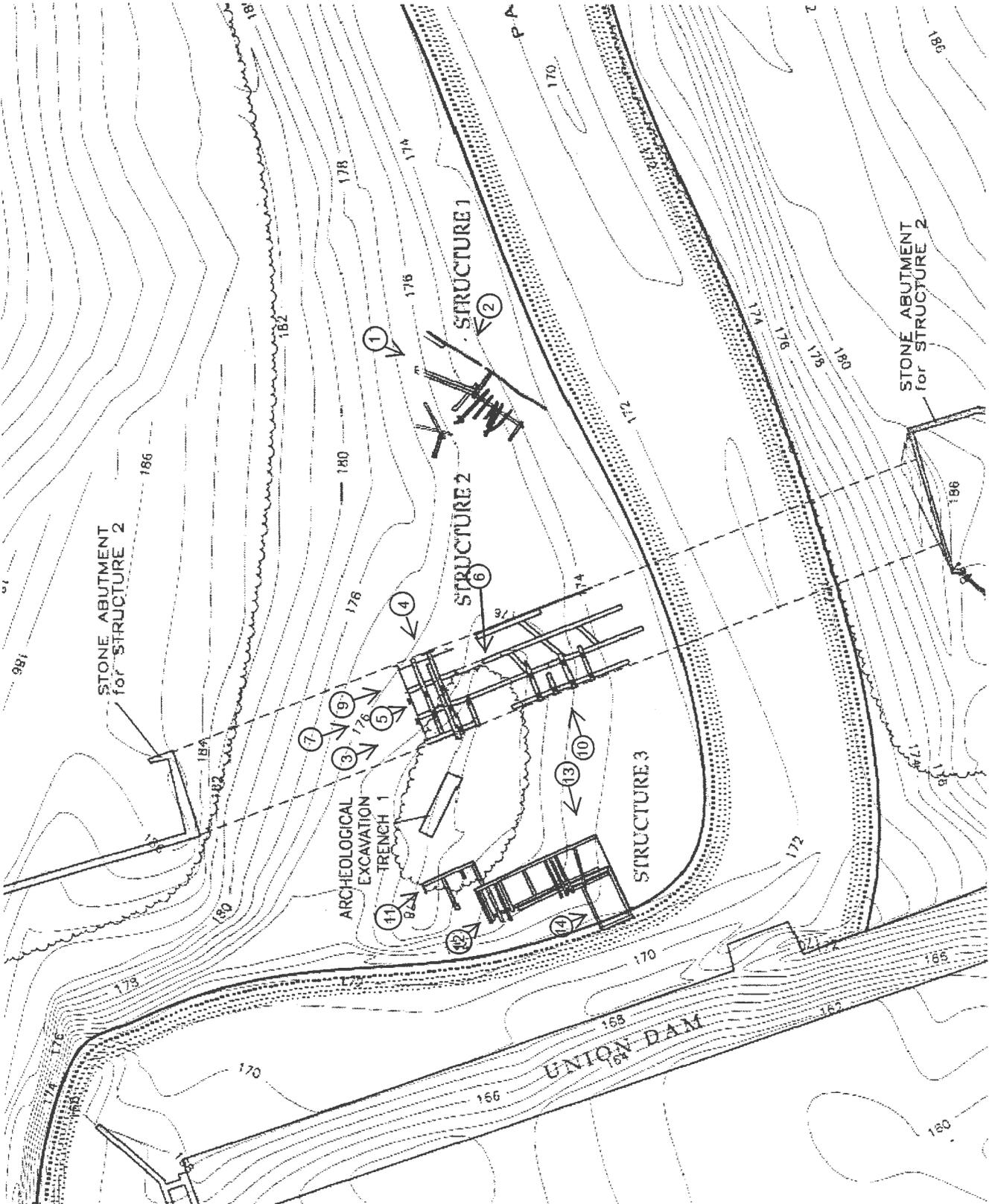


Photo Log

MIHP # HO-534

Union Dam and Mill Race

Howard County, Maryland

Photos taken by: Sue Sanders

Photos taken on: June-July 2010

Photo paper and ink: HP Viverra ink 97 Tri-Color cartridge, 101 Blue Photo cartridge, and 102 Gray

Photo cartridge on HP Premium Photo Paper (high gloss)

Verbatim Ultralife Gold Archival Grade CD-R, PhthaloCyanine Dye

HO-534_2010-06-02_01 – Structure 1 before excavation

HO-534_2010-06-02_02 – Downstream Timbers for Structure 1

HO-534_2010-06-02_03 – Upper row of partial cross timbers

HO-534_2010-06-14_04 – Upstream face of Structure 2 after excavation of Trench 2

HO-534_2010-06-15_05 – Level 1 consisted of the partial crosspieces and the long sills visible at the surface

HO-534_2010-06-18_06 – Lap joints with steel pins were used to join the timber sections of the sills

HO-534_2010-06-18_07 – Overview of levels 2 and 3 before removal of timbers

HO-534_2010-06-18_08 – Notched and pinned joint for Levels 2 and 3

HO-534_2010-06-23_09 – Level 4, “deck” made of peeled and notched logs

HO-534_2010-06-25_10 – Level 5 timbers

HO-534_2010-06-02_11 – Structure 3 “Downstream Feature” at the start of excavation; line of uprights visible at the right side of the photograph

HO-534_2010-06-29_12 – The log cribs that formed the main section of Structure 3

HO-534_2010-06-29_13 – The additional crib at the shoreline; also formed of logs in a crib framework

HO-534_2010-07-01_14 – The southernmost portion of the cribbing for Structure 3

R. Christopher Goodwin &
Associates, Inc.

241 East Fourth Street

Frederick, MD 21701

Prepared by:

Date Prepared:

September 2010



HO-534

Union Dam and Mill Race

Howard Co., MD

RCGA, Inc.

June 2, 2010

MD SHPO

Structure 1 before excavation

Photo 1 of 14





HO-534

Union Dam and Mill Race

Howard Co., MD

RCGA, Inc.

June 2, 2010

MD SHPO

Downstream timbers for Structure 1

Photo 2 of 14







HO-534

Union Dam and Mill Race

Howard Co., MD

RC&A, Inc.

June 2, 2010

MD SHPO

Upper row of partial cross timbers

Photo 3 of 14





HO-534

Union Dam and Mill Race

Howard Co., MD

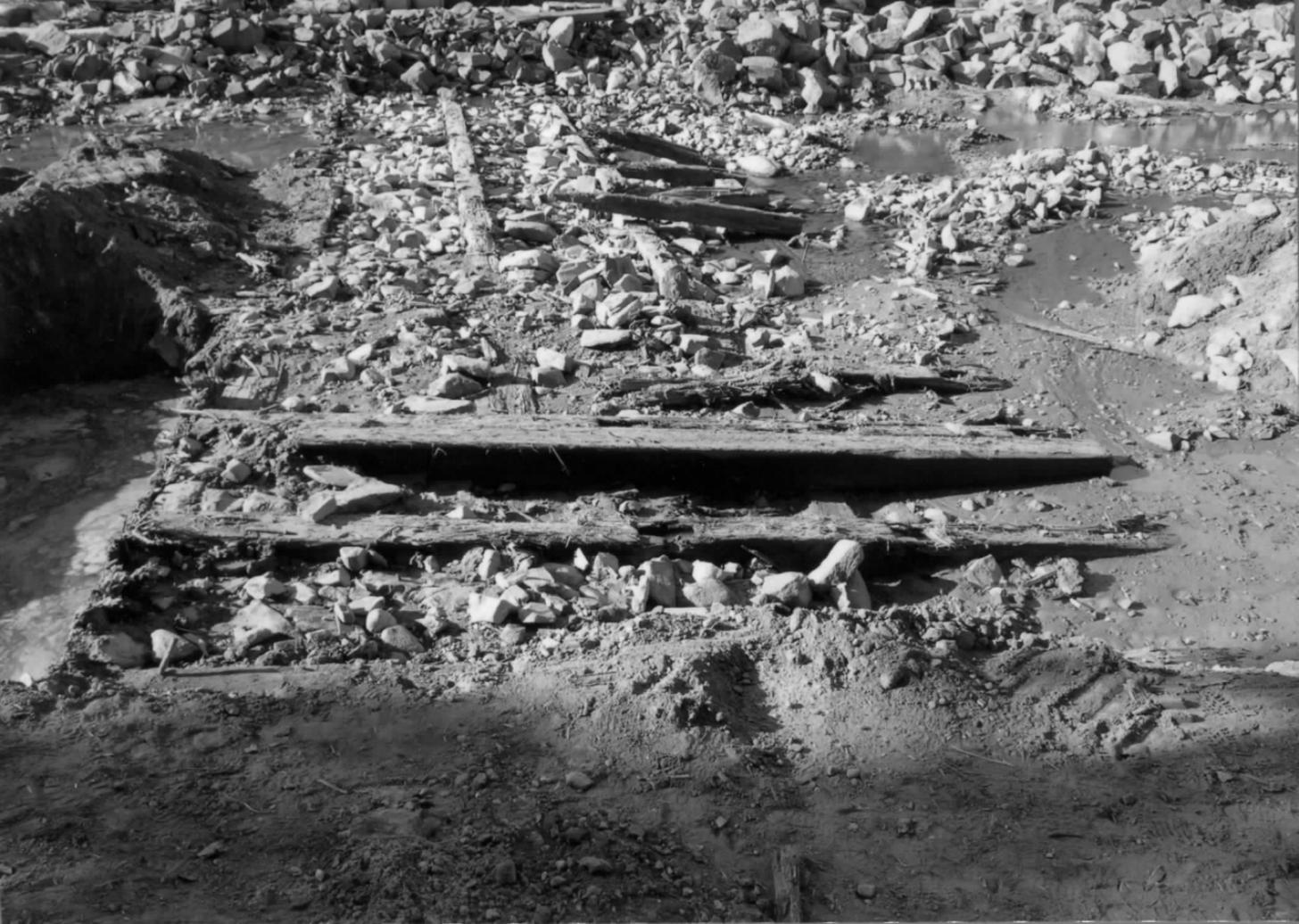
RCGA, Inc.

June 14, 2010

MD SHPO

Upstream face of Structure 2 after excavation of Trench 2

Photo 4 of 14



H0-534

Union Dam and Mill Race

Howard Co., MD

RCGA, Inc.

June 15, 2010

MD SHPO

Level 1 consisted of the partial crosspieces and the long sills
visible at the surface

Photo 5 of 14





HO-534

Union Dam and Mill Race

Howard Co., MD

RCGA, Inc.

June 18, 2010

MO SHPO

Lap joints with steel pins were used to join the timber sections
of the sills

Photo 6 of 14





HO-534

Union Dam and Mill Race

Howard Co., MD

RCGA, Inc.

June 18, 2010

MDSHPD

Overview of levels 2 and 3 before removal of timbers

Photo 7 of 14



HO-534

Union Dam and Mill Race

Howard Co., MD

RCGA, Inc.

June 18, 2010

MD SHPO

Notched and pinned joint for Levels 2 and 3

Photo 8 of 14





HO-534

Union Dam and Mill Race

Howard Co., MD

RCGA, Inc.

June 23, 2010

MD SHPO

Level 4 "deck" made of peeled and notched logs

Photo 9 of 14







HO-534
Union Dam and Mill Race
Howard Co., MD
RCGA, Inc.
June 25, 2010
MD SHPO
Level 5 timbers
Photo 10 of 14





HO-534

Union Dam and Mill Race

Howard Co., MD

RCGA, Inc.

June 2, 2010

MD SHPO

Structure 3 "Downstream Feature" at the start of excavation; line of uprights
visible at the right side of the photograph

Photo 11 of 14





HO-534

Union Dam and Mill Race

Howard Co., MD

RCGA, Inc.

June 29, 2010

MD SHPO

The log cribs that formed the main section of structure 3

Photo 12 of 14







HO-534

Union Dam and Mill Race

Howard Co., MD

RCGA, Inc.

June 29, 2010

MD SHPO

The additional crib at the shoreline; also formed of logs in
a crib framework

Photo 13 of 14







HO-534

Union Dam and Mill Race

Howard Co., MD

RCGA, Inc.

July 1, 2010

MD SHPD

The southernmost portion of the cribbing for structure 3

Photo 14 of 14



Maryland Historical Trust Maryland Inventory of Historic Properties Form

Inventory No. HO-534

1. Name of Property (indicate preferred name)

historic Union Dam
other Union Dam and Mill Race (preferred); Union Manufacturing Company Sites (BA-2809, 1999)

2. Location

street and number Patapsco Valley State Park, near Route 40 not for publication
city, town Ellicott City X vicinity
county Howard County and Baltimore County

3. Owner of Property (gives names and mailing addresses of all owners)

name Maryland Department of Natural Resources
street and number 820 Baltimore National Pike telephone 419-461-5005
city, town Ellicott City state MD zip code 21043

4. Location of Legal Description

courthouse, registry of deeds, etc. (see continuation sheet) liber folio
city, town tax map tax parcel tax ID number

5. Primary Location of Additional Data

- Contributing Resource in National Register District (Oella Historic District MIHP #BA-150)
 Contributing Resource in Local Historic District
 Determined Eligible for the National Register/Maryland Register
 Determined Ineligible for the National Register/Maryland Register
 Recorded by HABS/HAER
 Historic Structure Report or Research Report at MHT
 Other: MIHP #BA-2809

6. Classification

Category	Ownership	Current Function	Resource Count
<input type="checkbox"/> district	<input checked="" type="checkbox"/> public	<input type="checkbox"/> agriculture	Contributing Noncontributing
<input type="checkbox"/> building(s)	<input type="checkbox"/> private	<input type="checkbox"/> commerce/trade	<input type="checkbox"/> buildings
<input checked="" type="checkbox"/> structure	<input type="checkbox"/> both	<input type="checkbox"/> defense	<input type="checkbox"/> 2 sites
<input type="checkbox"/> site		<input type="checkbox"/> domestic	<input type="checkbox"/> 4 structures
<input type="checkbox"/> object		<input type="checkbox"/> education	<input type="checkbox"/> 6 objects
		<input type="checkbox"/> funerary	<input type="checkbox"/> Total
		<input type="checkbox"/> government	
		<input type="checkbox"/> health care	
		<input type="checkbox"/> industry	
		<input type="checkbox"/> landscape	
		<input type="checkbox"/> recreation/culture	
		<input type="checkbox"/> religion	
		<input type="checkbox"/> social	
		<input type="checkbox"/> transportation	
		<input type="checkbox"/> work in progress	
		<input type="checkbox"/> unknown	
		<input checked="" type="checkbox"/> vacant/not in use	
		<input type="checkbox"/> other:	
			Number of Contributing Resources previously listed in the Inventory
			3

7. Description

Inventory No. HO-534

Condition

<input type="checkbox"/>	excellent	<input checked="" type="checkbox"/>	deteriorated
<input type="checkbox"/>	good	<input type="checkbox"/>	ruins
<input type="checkbox"/>	fair	<input type="checkbox"/>	altered

Prepare both a one paragraph summary and a comprehensive description of the resource and its various elements as it exists today.

Physical Description

Union Dam, associated with the Union Mill complex and Oella near Ellicott City spans the Patapsco River about 1.75 miles upstream from the mill site at Oella. Connecting the two is the remains of the mill race. The mill race follows the east bank of the river downstream to the mill site. In addition to the extant concrete Union Dam are remnants of its predecessor, an 1808 dam made of wood palings and stone with stone abutments. The original dam was reconstructed after a flood in 1867, and was located upstream a short distance from the current dam.

The dam and the beginning of the race lie just downstream from the Baltimore National Pike (US Route 40) bridge over the Patapsco River. The land slopes steeply down to the river on both sides creating a ravine through which the river runs. A foot trail leads down to the dam on the west side of the river from the Patapsco Valley State Park Hollofield Area parking lot.

The B&O Railroad runs along the west bank of the river, entering a stone-faced and brick-lined tunnel just downstream from the dam to navigate the steep topography along the river. A date tablet at the south tunnel opening reads "19 UNION DAM 02". Prior to the construction of the tunnel, the railroad ran closer to the river's edge with part of the old railroad bed still visible, and stone stringers which held the tracks still in place.

The current Union Dam:

The current dam is an early example of a reinforced concrete structure dating from 1912. It spans the river and appears to have had lift gates on each side. Flooding from Hurricane Agnes in 1972 caused a breach on the west side possible lift gate area, and water now flows unrestrained through the opening leaving very little held in the area that was formerly the pool or small lake formed by the dam.

The dam structure is a buttressed type and was constructed by the Ambursen Hydraulic Construction Company of Boston Massachusetts. It slants or angles forward as it rises in height from the bottom of the river bed, toward the downstream side. The downstream side is hollow, receding back along the slant at approximately a 45 degree angle. The angled concrete slab construction has concrete reinforcement in the form of vertical piers or buttresses at regular intervals, supporting the canted dam wall or deck and creating a series of bays. The marks left from the wooden forms for the poured concrete slabs are clearly visible. Areas of the structure where the concrete has spalled or broken away reveal metal reinforcing bars. Bulkheads at each end of the dam may have held lift sluice gates on the west side to control the level of the water behind the dam, and to let water into the mill race on the east side. Wing walls angle out from the ends of the dam to support the banks. The only gates remaining are partially extant and

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opened into the mill race on the east bank. The gates were wooden and operated by lift mechanisms. At each side of the dam, where the wing walls begin to flair out, were cast iron cog wheel hand operated gate lift gears. These machines are no longer remaining, but they were present, identified and photographed in 1988. They do not appear in photographs taken in 2001. On the east lift gate, remnants of the gates to the mill race remain, a few pieces of wood attached to iron vertical rods from which the gates were suspended. On the west side, part of the gate chamber remains, but damage caused by Hurricane Agnes in 1972 removed most of the gate and/or wall material, creating a large breach. The only evidence remaining that indicates that there was a gate on the west side of the dam is the "gate chamber" as identified in previous surveys of the dam.

The east lift gate fed water into the mill race to operate the mills downstream and the west lift gate if it was present, allowed water to flow into the river from the dam, bypassing the raceway. When water reached the height of the dam, it also flowed over it. The west gate (if there was one in the original construction) apparently regulated the flow of water into the river downstream at times when the water level was too low to flow over the dam.

Since the dam no longer functions, and the river maintains its normal levels, much of the dam's structure is visible above the water.

A 1918 book by Edward Wegman, C.E., entitled *The Design and Construction of Dams*, includes a chapter on Reinforced Concrete Dams (Chapter XIV). The author notes that the Ambursen Hydraulic Construction Company made a specialty of constructing reinforced concrete dams, and by 1910 had built 59 such structures. The book has an illustration of a typical "concrete-steel" dam that is very similar to Union Dam. Wegman describes the dam type:

Buttresses extending under the whole depth and increasing in thickness from the top downward, according to the height of the dam, are built 12 ½ to 15 feet apart from centre to centre. They are braced laterally by concrete beams, which serve to support the scaffolding during the construction. The maximum load on the piers of the highest dams does not exceed ten tons per square foot. Openings are constructed in the buttresses which make it possible to inspect the lower side of the dam while water is passing over the rollway. If the rock foundation be rough, the buttresses require no anchorage, but in the case of smooth rock, the buttresses are either fastened down by steel dowels or footings are cut in the rock. To prevent leakage under the dam, a heavy cut-off wall may be sunk

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in the ledge at the heel of the dam, which also affords additional anchorage.

The buttresses support a deck composed of 1:2:4 concrete mixed very wet with small stone and floated to a close surface. The deck is reinforced by self-locking steel bars embedded near its lower surface and spanning the buttresses. The thickness of the deck is proportioned to the depth of water it has to support. The crest is heavily reinforced in thickness...Steel rods are embedded in the masonry of the dam in various directions to bind the whole structure together. (Wegman, page 210-211)

The Mill Race:

In addition to the dam, the Union Dam area includes the 1808 mill race which began at the site of the original dam and flowed downstream to the Union Mills near Ellicott City, along the east side of the river. The mill race is incorporated into the current dam and its east side lift gate area. The current 1912 dam utilized the original 1808 raceway with some modification in the vicinity of the lift gates including poured concrete surfacing of the west berm of the mill race. The mill race is 20 feet wide (MIHP Form BA 2809, Union Manufacturing Co. Sites). In the vicinity of the dam, the east side of the raceway is formed by the natural gorge or ravine wall, and the west berm man-made of earth and stone. Stone walls line the west side of the raceway in the vicinity of the dam's lift gate. Just downstream, the west berm has been covered with poured concrete and planking, a modification that apparently reinforced the berm in an area subject to flood damage. The race continues upstream from the present dam, curving toward the river and just above the stone abutment for the original dam from 1808, which was modified in 1867 after a flood. This portion of the upper race and probable original head gate area, was probably under water when the 1912 dam was fully operational.

Original Dam Remnant, East Abutment and West Abutment:

After the 1912 dam was damaged in 1972, and the breach at the west side possible gate area occurred, the water level of the pool behind the dam fell to normal river levels. When the river level is low enough, remnants of the original timber and stone dam protrude from the silt on the river bottom. Rotted off vertically set wood planks stick out of the silt, with stones on either side. What was left of the dam would have been submerged when the current concrete dam was built just downstream. Stone abutments remain on either side of the river near the location of the dam remnant and may have been part of that initial construction. The abutment walls display stone work from two periods. Some masonry appears to date from the early 19th century, and

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Number 7 Page 3

other work using large squared stones with cut rusticated edges, is typical of the later 19th century. The original dam is said to have been rebuilt after a flood in 1867, which could explain the different periods and styles of workmanship associated with the abutments.

In addition to the stone and plank dam remnant, there are two upright planks, and part of stone wall on the east bank of the river immediately upstream from the original dam remnant and just behind (northeast of) the east stone abutment. This may be remains of the original gate to the raceway.

Railroad Resources, original B&O Railroad Bed and Stone Stringers:

The original path of the Baltimore and Ohio Railroad followed the west bank of the Patapsco river, keeping to the low and level land along the river and avoiding the steep terrain immediately adjacent. The union Dam area is located on the lower portion of a twist in the river where it curves sharply to the east and bends back to the west. In 1902, the B&O Railroad constructed a tunnel that cut through the ridge forming the finger of land within the river's loop. When the tunnel was completed, the old railroad route along the river was abandoned. It is now incorporated into walking trail for Patapsco Valley State Park. The portion of the old railroad right of way between the Union Dam and the present active railroad tracks contains stone stringers for the original tracks, consisting of rectangular blocks of stone embedded in the ground. Some of the stone stringers show cuts and holes where straps were placed to secure the rails.

Resource Count:

Concrete Dam – 1 structure

Mill race (east bank) – 1 structure

1808-1868 wood dam remnant – 1 site

Stone abutment (east bank) – 1 structure

Stone abutment (west bank) – 1 structure

Ca.1830 B&O Railroad stone stringers along abandoned right-of-way (west bank) – 1 site

8. Significance

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Period	Areas of Significance	Check and justify below			
<input type="checkbox"/> 1600-1699	<input type="checkbox"/> agriculture	<input type="checkbox"/> economics	<input type="checkbox"/> health/medicine	<input type="checkbox"/> performing arts	
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> archeology	<input type="checkbox"/> education	<input checked="" type="checkbox"/> industry	<input type="checkbox"/> philosophy	
<input checked="" type="checkbox"/> 1800-1899	<input type="checkbox"/> architecture	<input type="checkbox"/> engineering	<input type="checkbox"/> invention	<input type="checkbox"/> politics/government	
<input checked="" type="checkbox"/> 1900-1999	<input type="checkbox"/> art	<input type="checkbox"/> entertainment/ recreation	<input type="checkbox"/> landscape architecture	<input type="checkbox"/> religion	
<input type="checkbox"/> 2000-	<input type="checkbox"/> commerce	<input type="checkbox"/> ethnic heritage	<input type="checkbox"/> law	<input type="checkbox"/> science	
	<input type="checkbox"/> communications	<input type="checkbox"/> exploration/ settlement	<input type="checkbox"/> literature	<input type="checkbox"/> social history	
	<input type="checkbox"/> community planning		<input type="checkbox"/> maritime history	<input type="checkbox"/> transportation	
	<input type="checkbox"/> conservation		<input type="checkbox"/> military	<input type="checkbox"/> other: _____	

Specific dates 1809; 1912; 1951; 1972 **Architect/Builder** Ambursen Hydraulic Cement Co.

Construction dates 1809; 1912

Evaluation for:

National Register Maryland Register not evaluated

Prepare a one-paragraph summary statement of significance addressing applicable criteria, followed by a narrative discussion of the history of the resource and its context. (For compliance projects, complete evaluation on a DOE Form – see manual.)

The Union Dam (Howard and Baltimore County), older stone abutment and mill race (both in Baltimore County), as well as the associated Union/Dickey mill building sites to the south (Baltimore County), were listed as contributing resources in the Oella Historic District (MIHP #BA-150, 1976). The stone abutment remnant on the west bank (Howard County) of the Patapsco River just above the current Union Dam appears to be associated with the 1867 replacement dam. It sits within what was described in the 1999 MIHP documentation of the Union Manufacturing Company Sites (BA-2809) as the "construction staging area." The staging area was described in 1809 by Union Manufacturing Company president Robert McKim in his first annual report. However, none of the buildings or structures described are now extant and were likely destroyed in the 1830s when the B&O Railroad ran its main line through this area. The old B&O Railroad right-of-way, abandoned with the 1902 Union Tunnel realignment, is now used as a walking path but remnants of cut stone "stringers," on which early tracks were laid, can still be found along the path. Taken together this group of resources represents the evolution of industrial activity surrounding the Union Dam.

Historic Context

In the year 1803 the British and French went to war. Although the United States declared a policy of neutrality, both the British and the French commandeered American merchant vessels to prevent the transport of goods to the other. In 1807 President Thomas Jefferson placed an embargo on American shipping in an effort to stop both powers from seizing American ships and to force both governments into recognizing American neutrality. The embargo at first received support from merchants and farmers in Maryland and other eastern states but they soon realized it was more harmful to domestic trade than it was to either the British or the French. From the port of Baltimore flour exports decreased by half between 1807 and 1808 (Walsh & Fox 1974:176).

The international "economic warfare" which occurred during the first decade of the 19th century had a profound impact on merchants as well as farmers (Peskin 2003:164; Bagnall 1893:488). In the port city of Philadelphia, merchants began forming associations, their groups calling for the development of domestic

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manufactures to end U.S. dependence on foreign imports. Movement founders knew there was a need for change – changes in capital investments toward local manufacturers, developing local or regional marketing networks for raw materials, and a change away from the American preference for imported products, particularly clothing (Peskin 2003:164-167). In Baltimore, members of the Maryland Association for the Encouragement of Domestic Manufactures made a public pledge to wear only “American-made” clothing, with the caveat, “as far as practicable.” (Peskin 2003:169) The Athenian Society, another Baltimore association, established a “warehouse for domestic manufactures” in 1809 that sold American textiles as well as “gloves, bags, sandpaper, and starch.” (Peskin 2003:168)

The unpopular embargo ended in 1809 when Thomas Jefferson left office. Despite James Madison’s follow-up attempts at economic sanctions, British and French warships continued to harass American merchant ships. The British were most aggressive, forcing sailors onto their warships and confiscating cargoes. Maryland merchants, farmers, and millers were vocal in their opposition to government policies to get Great Britain and France to recognize American sovereignty. They wanted a declaration of war on England over the issue of impressment of sailors and taking of cargo. President Madison called for a declaration of war on June 1, 1812, and Congress responded with a positive vote. Maryland’s congressional delegation voted seven to four in favor of declaring war on England.

Although many factories established during this early period of industrialization did not survive following the cessation of hostilities with England in 1815, a few did continue producing for domestic markets. It was these early factories, particularly those producing domestic textiles, iron, steel, and firearms, that were the foundation of future industrialization in the United States (Herrin 2002:56).

The Baltimore-based Union Manufacturing Company of Maryland, established in 1808, was a direct outgrowth of the domestic manufactures movement. Originally intended to include a number of wool and cotton textile factories along the Patapsco River, it was an industry well-suited to the waterpower and manpower-rich Baltimore region with ready access to cotton from the South. Later, the Baltimore & Ohio Railroad purchased right-of-way through Union Manufacturing Company property, ensuring relatively cheap and fast transportation of its products. The Union Manufacturing Company of Maryland, later William J. Dickey & Sons, continued to produce cotton textiles for more than 100 years.

Resource History

The Union Manufacturing Company began as an association of Baltimore merchants, part of the domestic manufacturing movement resulting from the U.S. trade embargo of 1807. The first “meeting of citizens, desirous of promoting the establishment of cotton and wool manufactures,” was held on January 2, 1808 at the Merchants’ Coffee House in the city of Baltimore. William Patterson, a local merchant, was appointed chairman of a committee to explore the possibilities and to solicit involvement of “persons having any

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knowledge or information concerning" the manufacture of textiles. By February 20th the group published its "Articles of Agreement of the Union Manufacturing Company of Maryland" in the Baltimore journal, the *Federal Gazette*. Article One described the mission of the company, "The establishing, carrying on, and encouraging useful manufactures of all the useful and necessary articles, which have heretofore been imported from foreign countries, and the establishment of manufactories of cotton and wool by means of the latest improved labor-saving machines, to be put in motion by water..." (Bagnall 1893:490) The act of the Maryland legislature to incorporate the Union Manufacturing Company of Maryland was passed in December of 1808 (*Archives of Maryland*, Vol. 597, p. 24). Named on the incorporation papers were Robert McKim, William Patterson, William Wilson, Ludwig Herring, John McKim, James H. McCulloch, John Gill, James Beatty, Benjamin Ellicott, A.J. Schwartz, Nathan Levering, John Trimble, and William Jones.

Between February and December of 1808, the commissioners (above-named) were busy with meetings and with gathering subscriptions of stock shares to the tune of \$350,000 by April 1808 (Bagnall 1893:492). They also began purchasing the land on which to place their extensive planned enterprise. In July 1808, Charles Ridgely of Hampton sold two parcels of land on the Patapsco River north (up river) of Ellicott's lower mills. The two tracts, one of 94 ½ acres called *Cragged Hills* and the other 350 acres called *Contentment*, already had a history in the local milling industry.

Nicholas Randall patented *Cragged Hills*, located "on the North East side of Patapsico [sic] River" in 1783, including his 1782 10-acre patent called *Jacob's Desire* on the "North side of the Main Falls of Patapsico..." (Baltimore Co. [BC] Pat. Cert. #1259; BC Pat. Cert. #2538). In 1784 the Maryland legislature committed to construct a road "to and from the mill-seat of Nicholas Randall," between "Ellicott's upper mill" and "Ellicott's lower mill" (*Archives of Maryland*, Vol. 203, p. 406). By 1794, at the time Thomas Griffith drew his Map of Maryland, Randall had a "Saw Mill" on his tract, although it appears the road was cut on the other side of the river (Figure 1). Charles Ridgely "of Hampton" owned that west bank tract of land, 350 acres called *Contentment*, which he purchased in 1774 (Anne Arundel Co. [AA] Deed Book [DB] IB5, p. 78). By 1808, Ridgely and Randall owned both tracts "in equal moieties or half parts" indicating they were likely in the milling business together (BC DB WG99, p. 207). Nicholas Randall sold his half ownership to Ridgely at the end of June 1808 and on July 22nd Charles Ridgely sold both tracts to the trustees of the Union Manufacturing Company for \$8,000 (BC DB WG99, p. 277).

In December 1808, the Maryland legislature passed "An Act to incorporate the Union Manufacturing Company of Maryland" (*Archives of Maryland*, Vol. 597, p. 24). The Act declared Robert McKim, William Wilson, William Patterson, John Gill, Benjamin Ellicott, William Jones, John Trimble, James H. McCulloch, Ludwig Herring, August Jacob Schwartze, Nathan Levering, and James Beatty – the trustees still holding the land – and any stockholders as "one body politic and corporate." Still, it was a full year before the trustees transferred the title to the land to the company (BC DB 104, p. 274) and another year beyond that (February 1809) before they purchased 458 additional acres from Jonathon, George, Elias, and John Ellicott (BC DB 109,

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p. 51). The company had already begun construction, as indicated in the deed which included "the buildings now erecting and preparing for the Cotton Factory."

On January 4, 1809, Robert McKim, then president of the Union Manufacturing Company, issued a report to the stockholders of the company in the newspaper *American and Commercial Advertiser*. McKim's description of the constructions already completed or underway revealed a clear plan of action formulated by the board of directors. McKim declared the company's intention to power as many as sixteen mills at two mill seats on the east bank of the Patapsco. To facilitate their extensive construction plans, the company began by converting "an old mill house" on the west bank into a machinist's shop "with lathes, etc. to be turned by water," and constructed an adjoining sawmill "which is now in operation." Three other "small buildings" located the west bank of the river were also repaired, "and are now tenanted by useful mechanics." Finally a blacksmith shop, "with two fires," was added to the company's west bank complex. (MD Archives, MSA SC 3392-3-49)

McKim's report also described the new dam, "constructed across the falls, of the most substantial materials, and completed in a manner which promises great duration." The report continued with a description of the raceway, of which 300 perches (4,950 feet) had already been dug:

From this dam a race or canal is leveled of twenty feet in breadth, extending down the east of the stream upwards of a mile and a quarter, to the commencement of the first range of mill seats. This canal is estimated to convey all the waters of the Patapsco, and besides affording a good boat navigation for that distance has an elevation of 50 feet, 25 feet of which is intended to be used in the first range of buildings, proposed to be eight in number, and the remaining 25 feet in the second or lower range, which will consist of the same number when the whole plan is complete. (Ibid)

The 1808 dam, constructed of wood with heavy stone abutments between the *Cragged Hills* and *Contentment* tracts, diverted much of the water of the Patapsco to a channel in the east bank through wooden head gates and into the stone walled raceway. Although only traces of the wooden dam structure, head gates, and stone abutments remain of this original dam, the raceway continued in use into the 1970s with few changes to its appearance. The raceway is approximately one and three-quarter miles long ("Union Dam and Mill Race," HO-534, 1979).

By 1810, production began at the Cotton Factory. A British diplomat, Sir August John Foster, described the operation in his diary. Cotton from New Orleans was spun "chiefly into yarn and jean and royal rib for vest material" (as cited in "Oella Historic District," BA-150, 1975). The factory employed 300 men, women, and children who lived in company houses on the hills above the mill (Ibid). In 1811, the company had all of its land resurveyed and patented as one tract called *Oella*, "in commemoration of the first Woman who applied herself to the spinning of Cotton on the Continent of America." (AA Pat. Cert. #1102)

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Plans for expansion resulted in a second mill building in 1813 and two more on the drawing board but fires and floods continually thwarted those plans ("UMC Sites," BA-2809, 1999; "Oella Historic Dist.," BA-150, 1975). The remaining factory building continued production of cotton yarn and threads and in 1819 water-powered looms were introduced, profoundly expanding the business. Notes John McGrain in his documentation for the "Oella Historic District," the expansion made the business "the largest textile concern outside of New England":

At that time the company employed ten men, sixteen boys and 104 girls. One hundred fifty thousand pounds of raw cotton were made into 120,000 pounds of yarn and 240,000 yards of cloth a year. (McGrain, "Oella Historic District," BA-150, 1975)

It was in the 1820s that the merchants, agriculturalists, and legislators of Maryland and Virginia began formulating plans for new transportation options in the region. The Potomac River had already proved too unreliable as a corridor of commerce. Plans were now underway to replace river transport with a "still-water" canal. Baltimore merchants were at odds with Georgetown merchants over the eastern port for the canal. Georgetown was favored by Virginians for its proximity to Virginia ports. A "Map of the practicable routes of a canal from Baltimore to the Potomak," said to be drawn in 1823 (Figure 2), showed a route up the Patapsco River passing on the west bank by the Union Factory, as well as by the Eagle Factory likely the "old mill house" described by Robert McKim in his 1809 report (see above). This route failed to win approval and the Chesapeake & Ohio Canal Company began excavations of the canal at Georgetown in July 4th, 1828. It was the same day that the first rail was laid by the Baltimore & Ohio Railroad. Rail transportation in 1828 was in its infancy, painfully slow and without the power needed to climb even the lowest grades. It was not considered a threat to the canal. But history would prove otherwise as the B&O Railroad, which followed the unused canal route up the Patapsco River, quickly outpaced the canal in its construction as well as its ability to transport goods quickly and relatively cheaply.

The early B&O Railroad route along the west bank of the Patapsco passed immediately west of the Union Manufacturing Company dam and may have impacted the company's early machine shop/sawmill complex. This route, abandoned in 1902 when the Union Tunnel was constructed, still exists in the form of granite stringers along what is now a walking path on the west bank. Laid in parallel lines along the right-of-way, these stones supported the strap-rails used during the earliest years of the railroad (Bianculli 2003:59).

In 1850, the railroad right-of-way through the Union Manufacturing Co. land on the west bank of the Patapsco was greatly expanded. The land conveyed was 66 feet in width or "33 feet on either side of the center line of the said Rail Road," and was intended "to embrace the ground now staked out for a change of the location of the said Road at a curve near the Mill Dam..." (Howard Co. [HC] DB 9, p. 443). In addition to paying \$10,000 for the land, the railroad company agreed to install two switches and a siding opposite the two UMC factories then in operation as well as "facilitate the transportation to and from the works aforesaid; furnishing

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the cars that may be necessary therefore..." (Ibid). By this time a third mill was added and a bridge was in place crossing the river from the mill complex to the rail siding (Sharp, "UMC Sites," 1999).

This new arrangement with the railroad was no doubt a boon to the Union Manufacturing Company of Maryland as it faced not only local competition but also greatly expanding textile mill operations in New England. The 1850 U.S. Manufacturers Census records for Baltimore County show the UMC out-producing its nearest neighbor competitors, the Granite Manufacturing Company and the Thistle Factory, both located just a short way down the Patapsco River. In 1850, the UMC produced 2,500,000 yards of "Muslin & Drill," nearly double the amounts produced at Thistle and Granite. The UMC employed 104 males and 310 females through the year, significantly more than Thistle and Granite, but paid the lowest wages. By 1860, UMC production increased, partly by the addition of 250 power looms, with 2,900,000 yards of "Sheeting & Drilling" produced. (MD Archives, MSA S1184)

Flooding of the Patapsco River was a perennial problem but in the mid-1860s, the floods proved more than the old 1808 dam could handle. It appears an 1866 flood destroyed the Union Manufacturing Company dam. A description of the replacement dam, built in 1867 according to the U.S. Census Office, was given in the 1885 publication "Reports on the Water-Power of the United States" (GoogleBooks):

The dam is of wood, 185 feet long and 10 feet high, and was built in 1867 at a cost of about \$15,000. It ponds the water over about 17 acres, and from it a race 2 miles in length leads to the mill, where the fall is 30 feet. A power of 310 horse-power is utilized, and can be obtained all the year, so that no steam-power is used. The mill is run ten hours a day, and water generally wastes over the dam except at very low stages. (p. 574)

The cut stone abutment for this new dam was added to the remains of the original 1808 stone abutment and appears to have used the same head gate and race arrangement. Remarkably, the new wood dam apparently withstood the devastating Patapsco flood of 1868, which destroyed the Granite Manufacturing Company mill.

The 1877 Hopkins Atlas of Baltimore County, District No. 1 (Figure 3), shows the extent of the Union Manufacturing Company land holdings, buildings, mill race and replacement dam. It appears the railroad improvements of the 1850s, and possibly the 1868 flood as well, removed any evidence of the earlier "Eagle Factory" and UMC staging area on the west bank – Howard County (formerly part of Anne Arundel County) – side of the river.

The 1880s brought with it a depression in textile commerce and in 1887, the UMC determined to sell its property (Bagnall 1893:497). The Baltimore woolen manufacturing company William J. Dickey & Sons purchased the land and buildings in March 1887 (BC DB JWS 153, p. 566; HC DB JW 51, p. 537). Although the new owners modernized the factory complex under the name "Oella Mills," little was done to the dam and mill race until after the turn of the 20th century.

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In 1903, following the death of William J. Dickey in 1896, the company and its holdings were transferred to his sons under the name William J. Dickey & Sons, Inc. (BC DB 254, p. 519). In 1912, the W. J. Dickey Company, as it was known, constructed a completely new concrete dam just a few feet down river from the 1867 dam. It is not known if a flood destroyed the older dam prompting the new construction.

The concrete dam was built by the Ambursen Hydraulic Cement Company (Zembala 1995). Reinforced concrete dam technology was still new in the first decades of the 20th century, the first constructed in 1904 (Wegmann 1918:210). The Ambursen Company of Boston, Mass. specialized in this new technology and by 1910 had constructed 59 such dams (Ibid). The Union dam was likely among the smaller dams built by the Ambursen Company and utilized an open buttress design (Figure 4). By this time the water from the Union Dam served to generate electricity to power the Oella Mills. Mechanisms on the east abutment of the dam raised the head gates allowing water to flow down the old raceway, its old stone walls now encased in concrete. The larger concrete dam apparently raised the water level of the river behind it high enough to cover the old dam's stone abutments and preserved remnants of the wood structure. The 1912 concrete dam, like its two wood predecessors, was designed to allow excess water to overflow the barrier during normal seasonal flow and floods. (Figures 5 and 6 show the dam in operation ca.1950s; Figure 7: 1918 sluice gate advertisement; Figures 8-10: Union Dam head (sluice) gate remains in 1979 and 2008)

Although several of the Dickey factory buildings were destroyed by fire in 1918, the company rebuilt and continued to produce textiles. In 1972, a flood resulting from Hurricane Agnes breached the dam and reportedly inundated the power plant, permanently ending operations at the Dickey Company mills (McGrain, "Oella Historic District," 1975).

9. Major Bibliographical References

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(see continuation sheet)

10. Geographical Data

Acreage of surveyed property Approx. 4 acres
Acreage of historical setting Approx. 900 acres
Quadrangle name Ellicott City Quadrangle scale 1:24,000

Verbal boundary description and justification

The surveyed property encompassing the Union Dam and associated structures is bounded on the north by the U.S. Route 40 bridge, on the west by the lowest contour line along the base of the hill, on the east by the east side of the raceway, and on the south by a straight line drawn from the southern end of the walking trail where it intersects the current railroad right-of-way across the Patapsco River to the eastern edge of the raceway.

The survey boundary is intended to encompass the Union Dam and the associated sites in the immediate vicinity of the dam. Other sites associated with the Union Manufacturing Company and W.J. Dickey & Sons milling operations are entirely located in Baltimore County and have been surveyed within several earlier survey forms and the Oella National Register District.

11. Form Prepared by

name/title Edie Wallace, historian; Paula S. Reed, architectural historian
organization Paula S. Reed & Assoc., Inc. date October 2008
street & number 1 W. Franklin St., Suite 300 telephone 301-739-2070
city or town Hagerstown state Maryland

The Maryland Historic Sites Inventory was officially created by an Act of the Maryland Legislature to be found in the Annotated Code of Maryland, Article 41, Section 181 KA, 1974 supplement.

The survey and inventory are being prepared for information and record purposes only and do not constitute any infringement of individual property rights.

return to: Maryland Historical Trust
DHCD/DHCP
100 Community Place
Crownsville, MD 21032-2023
410-514-7600

Maryland Historical Trust

Maryland Inventory of Historic Properties Form

Inventory No. HO-534

Name Union Dam and Mill Race
Continuation Sheet

Number 9 Page 1

Major Bibliographical References

- American and Commercial Daily Advertiser, Jan-June 1809, Maryland State Archives, Annapolis, MD.
- Anne Arundle Co., Baltimore Co., and Howard Co. Land Records, www.mdlandrec.net.
- Bagnall, William R. The Textile Industries of the United States. The Riverside Press, Cambridge, 1893 (GoogleBooks).
- Bianculli, Anthony J. Trains and Technology. Vol. 3, University of Delaware Press, 2003.
- Herrin, Dean A. America Transformed: Engineering and Technology in the Nineteenth Century. United States National Park Service. National Architectural and Engineering Records Division, ASCE Publications, 2002.
- Hnedak, John D. "Union Dam and Mill Race." MIHP #HO-534, 1978-79, Maryland Historical Trust, Crownsville, MD.
- McGrain, John. "Oella Historic District." National Register documentation, 1975, Maryland Historical Trust, Crownsville, MD.
- Peskin, Lawrence A. Manufacturing Revolution. Johns Hopkins University Press, Baltimore, MD, 2003.
- Sharp, Henry K. "Union Manufacturing Company Sites." MIHP #BA-2809, 1999, Maryland Historical Trust, Crownsville, MD.
- U.S. Census Office. Manufacturers Census Reports 1850 and 1860. Maryland Archives, Annapolis, MD.
- U.S. Census Office. "Reports of the Water-Power of the United States." GPO, Washington, 1885 (GoogleBooks).
- Walsh, Richard & William Lloyd Fox, Maryland A History. Maryland Historical Society, Baltimore, MD, 1974.
- Wegmann, Edward. The Design and Construction of Dams. New York: John Wiley & Sons, Inc., 1918 reprint, revised (GoogleBooks).

Howard County – west bank

Howard County Circuit Court
Ellicott City, Maryland
Tax Map 25, Parcel 91
Liber 261, Folio 208
Liber 514, Folio 667 (dam)

Baltimore County – east bank

Baltimore County Circuit Court
Towson, Maryland
Tax Map 94, Parcel 74
Liber 5015, Folio 43



Figure 1: Section from the 1794 Thomas Griffith "Map of Maryland" showing the Nicholas Randall "Saw Mill" (Papenfuse & Coale 1982:51)

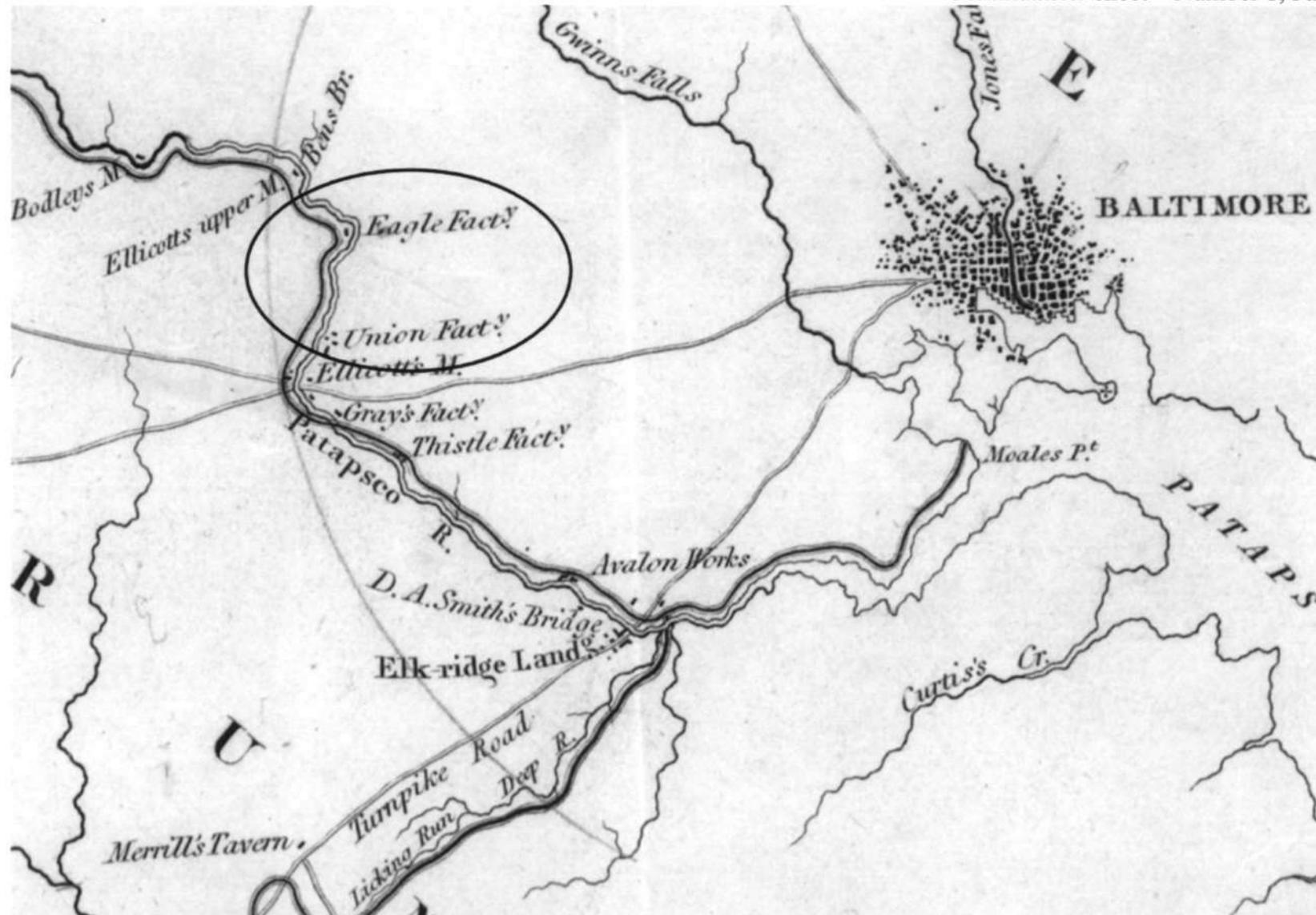


Figure 2: Section of the ca.1823 map of possible canal routes through Maryland (Library of Congress)

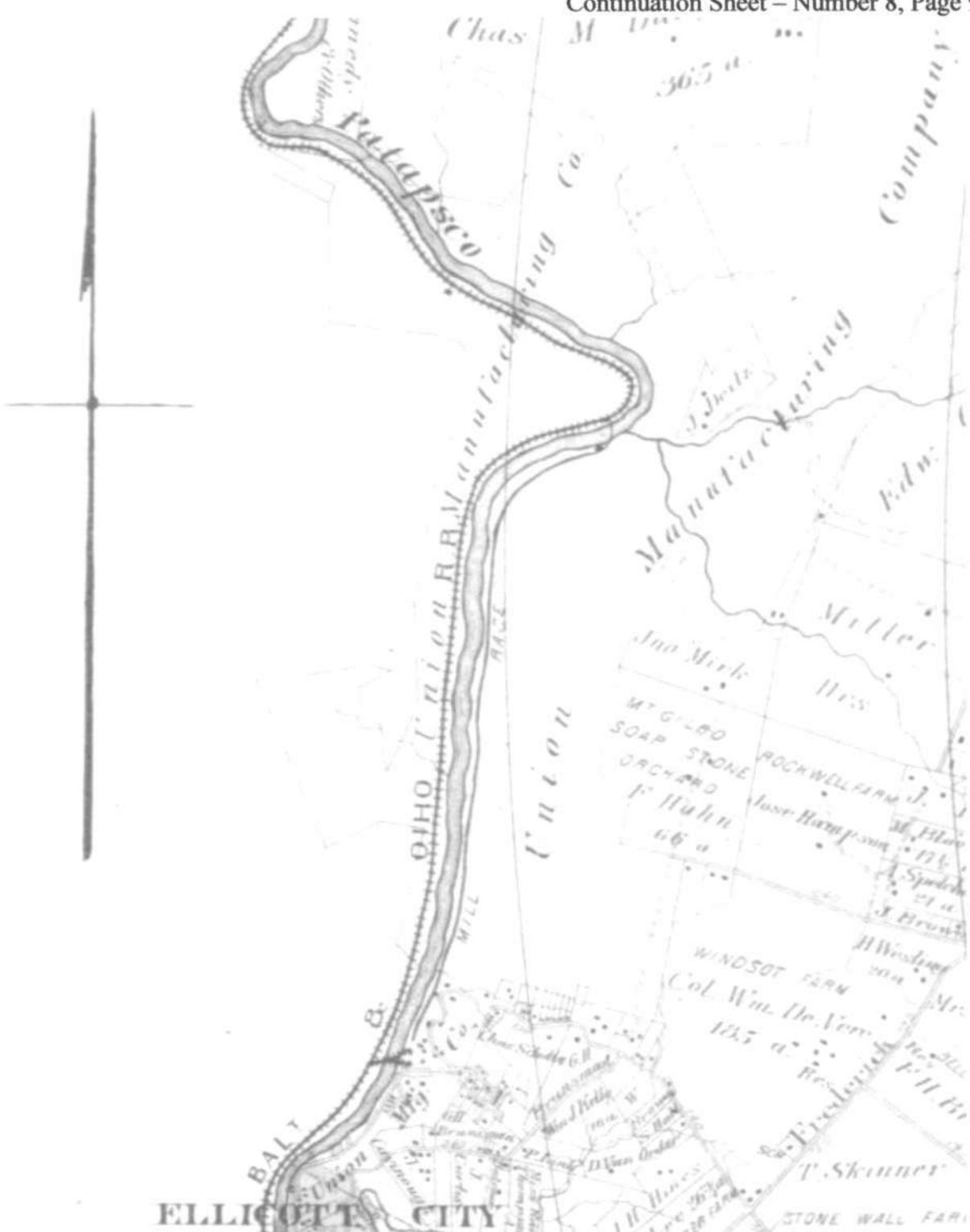


Figure 3: Section of the 1877 G.M. Hopkins "Atlas of Baltimore County," 1st District, showing the Union Manufacturing Company land, dam, mill race, and buildings

REINFORCED CONCRETE DAMS.

211

far below the water line. Bulkheads are formed at the ends of the dam by carrying the same deck above the flood and increasing the height of the buttresses correspondingly, as shown in Fig. 42. Steel rods are embedded in the masonry of the dam in various directions to bind the whole structure together.

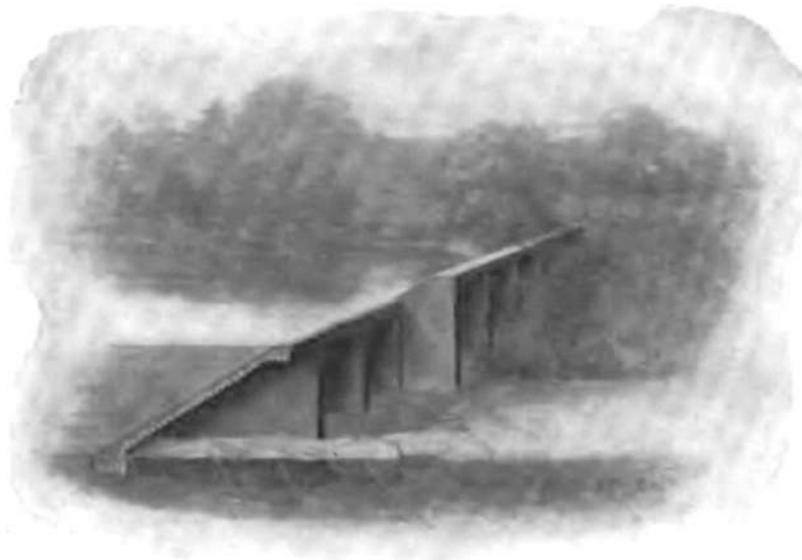


FIG. 42.—SECTION OF CONCRETE-STEEL DAM FOR MODERATE HEAD AND LEDGE FOUNDATION.

Fig. 43 shows a modification of Fig. 42 in which the deck is carried a certain distance over the crest in order to throw the ice and water far down-stream.

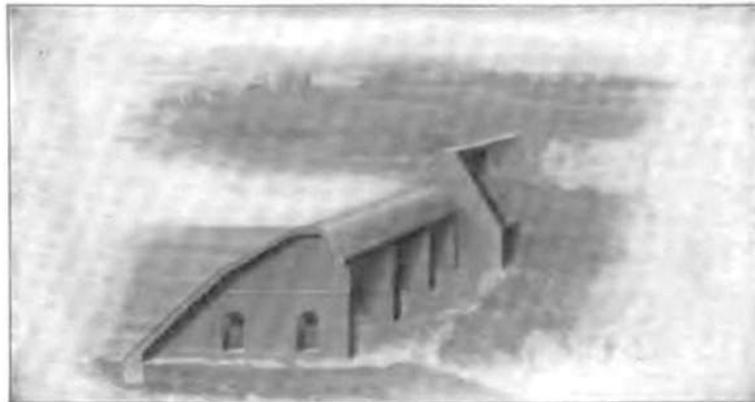


FIG. 43.—SECTION OF CONCRETE-STEEL CURTAIN-DAM.

Figure 4: Two examples of reinforced concrete, open buttress dam designs (Wegmann 1918:211)



Figure 5: 1950s photo of the Union Dam in operation, view S (Balt.Co. Public Library, courtesy MD DNR)



Figure 6: Undated (1950s?) photo of the Union Dam in operation, view NW (Enoch Pratt Free Library, permission pending)

Coffin Valve Co.
Boston, Mass.
Makers of the Largest Valves and Sluice Gates in America



Battery of Five 8 ft. by 12 ft. Coffin Sluice Valves at Minidoka, Idaho.
Powerful Mechanism was furnished by which the valve could be operated by one man.

Figure 7: 1918 advertisement for sluice or head gates (Wegmann 1918)



Figure 8: 1979 photograph of the east bank head or sluice gate mechanisms, view N (MD DNR)



Figure 9: 2008 photograph of head gates, view NW (PSR)



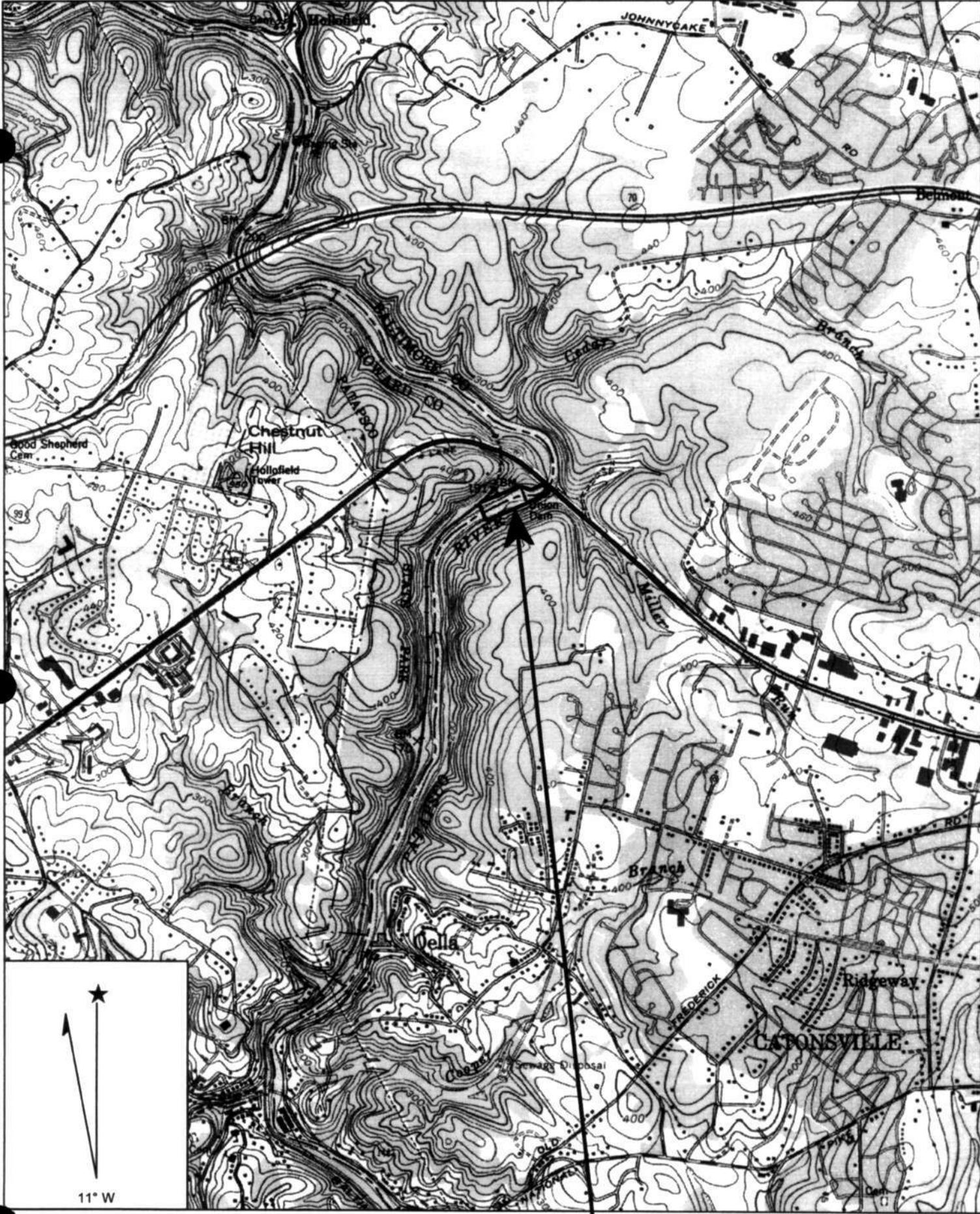
Figure 10: 2008 photograph of head gates, view SE (PSR)



UNION DAM AND MILL RACE

MIHP # HO-534
 HOWARD + BALTIMORE COUNTIES

SITE PLAN
 (NOT TO SCALE)
 UNION DAM, PATAPSCO VALLEY
 STATE PARK 11/08



Name: ELLICOTT CITY
 Date: 11/6/2008
 Scale: 1 inch equals 2000 feet

Location: 039° 17' 21.6" N 076° 46' 56.0" W
 Caption: Union Dam, MIHP #HO-534
 Patapsco River
 Howard and Baltimore Counties
 USGS Elicott City Quadrangle



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Howard / Baltimore Counties, MD

10/08

MD SHPO

Union Dam, downstream side from west bank

#1 of 53



HO-534

Union Dam, Mill Race

(BA-2809

(Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

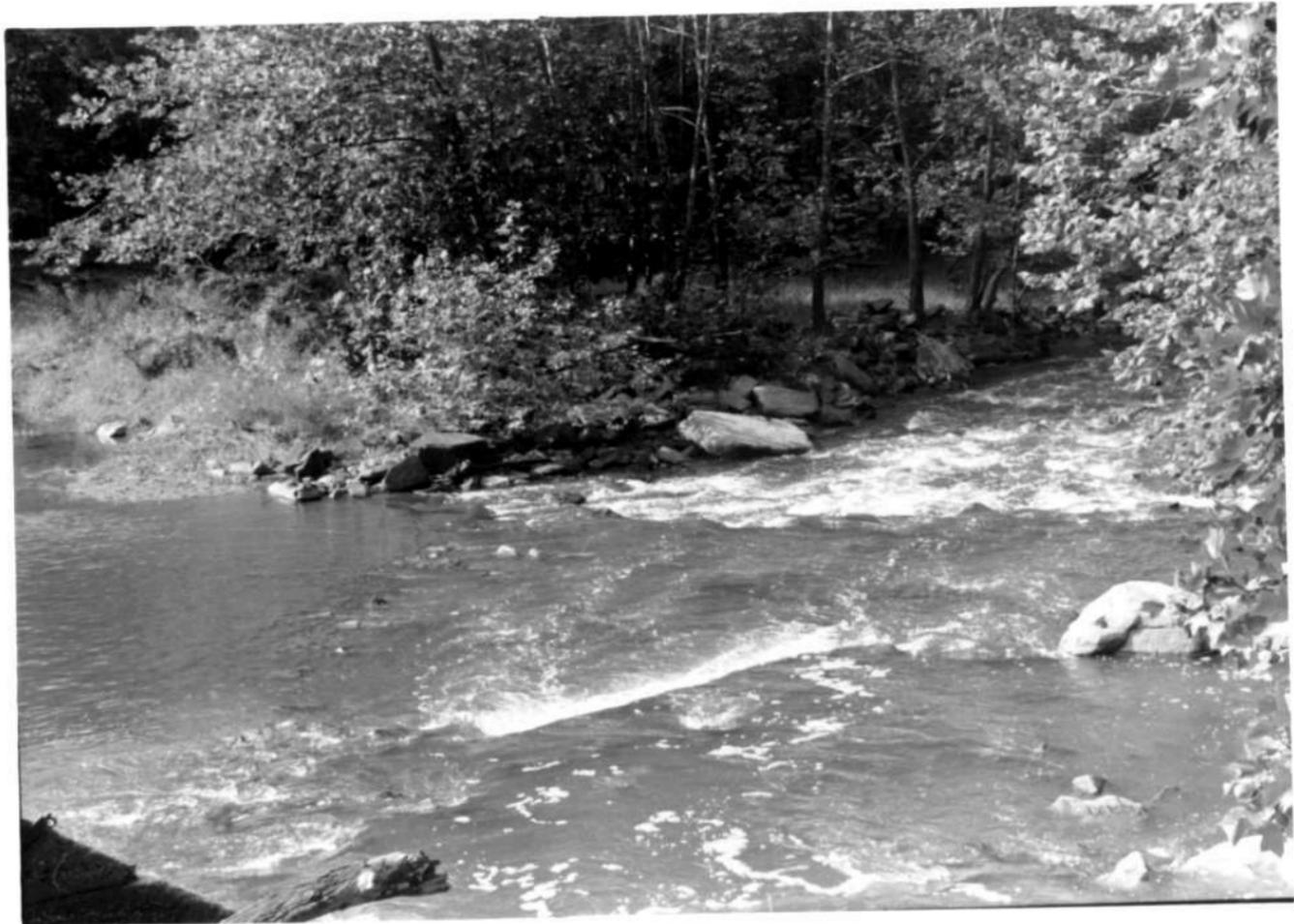
10/08

Paula Reed

MDSHPO

Pool on downstream side of dam from west Bank

#2 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard/Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

View from dam downstream, west bank

#3 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard/Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

US Rte 40 highway bridge, from west bank, just
upstream from Union Dam.

4 of 53



HO-534

Union Dam, Mill Race

(BA-2809)

(Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Union Dam, West side SE view

#5 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

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MDSHFO

Union Dam, west side from hill side above

#6 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard/Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Union Dam, west shore, west gate area, now breached
downstream view

#7 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

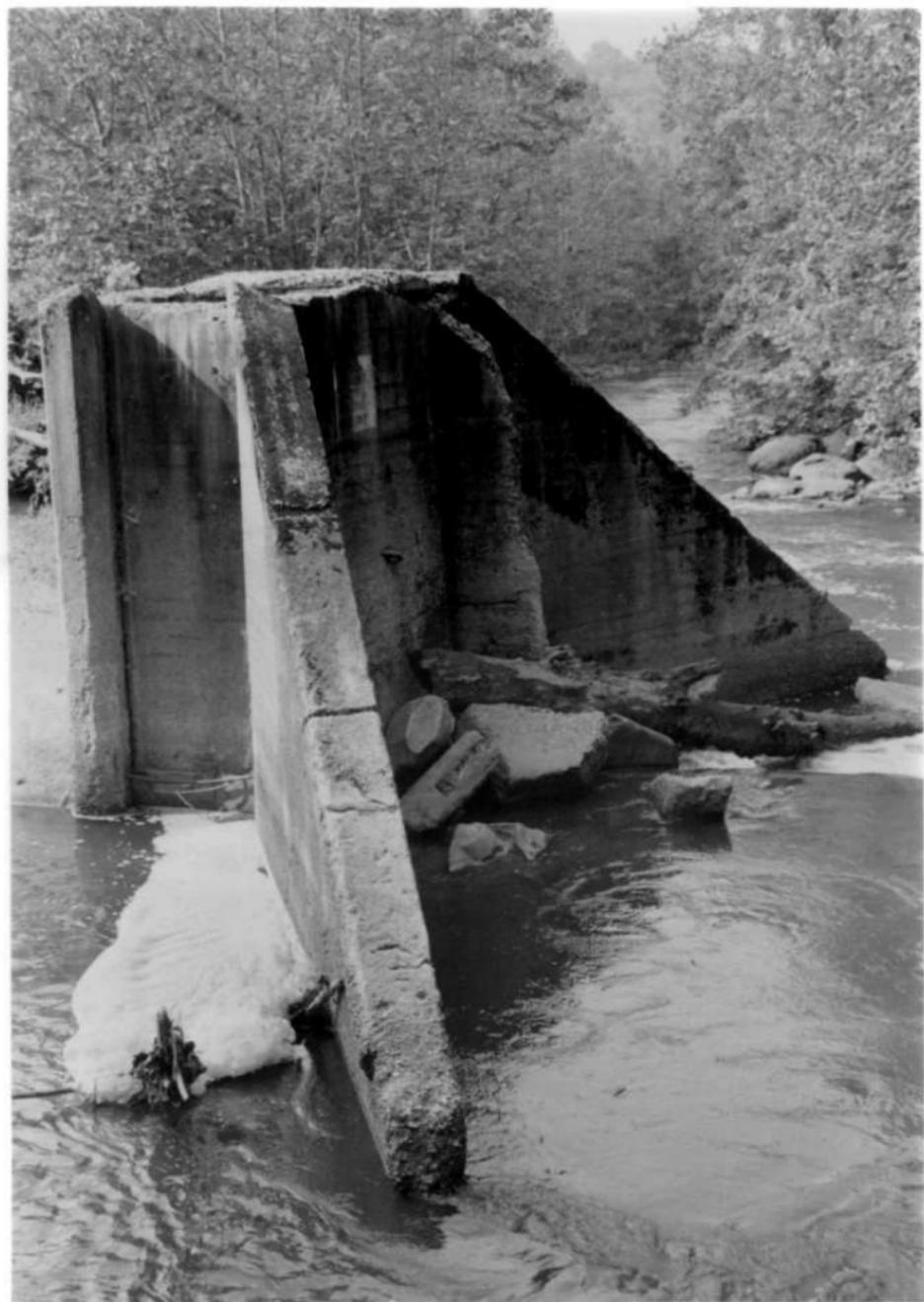
10/08

Paula Reed

MDSHPO

Union Dam, west side SE view, upstream side

#8 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard/Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Union Dam, west side gate chamber, wing wall
and breached area view downstream

#9 of 53



HO-534

Union Dam, Mill Race

(BA-2809

(Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard/Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Union Dam, west wing wall and breached area
South view

#10 of 53



H0-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Sites)

Patepsco Valley State Park

Howard/Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Union Dam, west side, South view

#11 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Site)

Patapsco Valley State Park

Howard/Baltimore Counties, MD

10/08

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MDSHPO

Union Dam from west shore, west wing wall and breach

12 of 53

ANA



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

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MDSHTO

Union Dam upstream side from east bank

#13 of 53



HO-534

Union Dam, Mill Race

(BA-2809

(Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard/Baltimore Counties, MD

10/08

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MDSHPO

East side abutment and wing wall

#14 of 53



HO-534

Union Dam, Mill Race

BA-2809

(Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHP

Union Dam, upstream side, view toward west
shore from Sand bar in river

#15 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Union Dam upstream side from west bank

#16 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Union Dam, concrete slab construction. Up stream
side, view SE.

#17 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard/Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Union Dam, portion of west side wing wall and
breach.

#18 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard | Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Union Dam. Upstream side from east bank

19 of 53



HO-534

Union Dam, Mill Race

(BA-2809
Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Downstream side from east bank

20 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSTPO

Union Dam, downstream side, view to west
bank

#21 of 53



HO-534

Union Dam, Mill Race

BA-2809

Union Manufactory Co. Sites

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHP

Union Dam, downstream side, view to west
bank

#22 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Union Dam, downstream side view to west
bank.

23 of 53



HO-534

Union Dam, Mill Race

BA-2809

(Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

East bank wing wall between dam and race way
gate up stream view

24 08 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

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MDSHP

East bank lift gate opening into railway

25 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

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MDSHPO

East bank lift gate to race upstream side

26 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

East bank lift gate into raceway, downstream side

27 08 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Stone, west wall of race, just below the dam

28 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

East bank, wing wall and raceway gate upstream
view. Original raceway well in foreground

29 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

east bank, raceway, downstream view

30 of 53



HO-534

Union Dam, Mill Race

(BA-2809

(Union Manufactories Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

East bank, dislodged concrete and stones of
the raceway wall, downstream view

#31 of 53



H10-534

Union Dam, Mill Race

(BA-2809

(Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSTPO

Mill race below dam with concrete and plank
covering

#32 of 53



HO-534

Union Dam, Mill Race

BA-2809

(Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

east bank, stone covered with concrete and
plank raceway wall, upstream view
#33 of 53



HO-534

Union Dam, Mill Race

(BA-2809

(Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard/Baltimore Counties

10/08

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MDSHPO

Detail, west berm with concrete over stone
just below the dam.

#34 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard/Baltimore Counties, MD

10/08

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MDSHPB

East bank, concrete dam gate into race way

Downstream view

#35 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard/Baltimore Counties, MD

10/08

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MDSHPO

Union Dam. Remnant of original dam abutment and
revetment, east side

#36 of 53



HO-534

Union Dam, Mill Race:

(BA-2809

Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Union Dam. Remnant of original dam abutment
and revetment, east side

#37 of 53



HO-534

Union Dam Mill Race

(BA-2809

Union Manufacturing Co. Sites.)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

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MDSHPO

Presumed west bank abutment for original dam, just
upstream from present dam.

38 of 53



HO-534

Union Dam, Mill Race

(BA-2809

(Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Remnant of presumed west bank abutment for original dam, just upstream from present dam.

39 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

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MDSHPO

Stone presumed east abutment for original dam

SE view

#40 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Stone abutment, presumably for original dam, upstream
view, east bank

#41 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

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MDSHPO

East bank, vertical pieces to right of stones, part
of original dam structure

#42 0653



HO-534

Union Dam, Mill Race

(BA-2809)

Union Manufactory Co. Sites

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

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MDSHPO

East bank remnants of original dam construction
vertical plank pieces, protruding from ground. Just
upstream from current dam. #43 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactories Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Remnants of wood vertical planks, part of the
original dam structure, east bank. (Directly above
stones) #44 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Possible remnant of original race head gate,
east bank just upstream from abutment

#45 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

Possible gate remnants from original dam (rebuilt 1968)

East bank and just upstream from east stone abutment

#46 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard/Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

East bank, revetment, at original head of race, possible
gate housing.

#47 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

East bank, head of original race, upstream of stone
abutment. Possible gate remnant

48 of 53



HO-534

Union Dam, Mill Race

(BA-2809
Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

View upstream, east bank stone abutment on left.

#49 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard/Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

B+O Railroad tunnel, 1902, South portal

#50 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufactory Co. Sites)

Patapsco Valley State Park

Howard / Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

B+O old railroad bed with stone stringer in place

#51 of 53



HO-534

Union Dam, Mill Race

(BA-2809

Union Manufacturing Co. Sites)

Patapsco Valley State Park

Howard/Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

B+O Railroad bed with Stone stringers

#52 of 53



HO-534

Union Dam, Mill Race

(BA-2809)

(Union Manufacturing Co. Sites)

Pastapsco Valley State Park

Howard/Baltimore Counties, MD

10/08

Paula Reed

MDSHPO

B+O Railroad stringer with marks from strap attachment

53 of 53

MARYLAND HISTORICAL TRUST

INVENTORY FORM FOR STATE HISTORIC SITES SURVEY

1 NAME

HISTORIC

Union Dam and ~~Tunnel~~ Mill Race

AND/OR COMMON

2 LOCATION

STREET & NUMBER

Crosses the Patapsco in the park from Balto. Co. to Howard Co. near

CITY, TOWN

CONGRESSIONAL DISTRICT

U.S. 40, Catonsville

 VICINITY OF

STATE

COUNTY

3 CLASSIFICATION

CATEGORY

DISTRICT
 BUILDING(S)
 STRUCTURE
 SITE
 OBJECT

OWNERSHIP

PUBLIC
 PRIVATE
 BOTH
PUBLIC ACQUISITION
 IN PROCESS
 BEING CONSIDERED

STATUS

OCCUPIED
 UNOCCUPIED
 WORK IN PROGRESS
ACCESSIBLE
 YES: RESTRICTED
 YES: UNRESTRICTED
 NO

PRESENT USE

AGRICULTURE MUSEUM
 COMMERCIAL PARK
 EDUCATIONAL PRIVATE RESIDENCE
 ENTERTAINMENT RELIGIOUS
 GOVERNMENT SCIENTIFIC
 INDUSTRIAL TRANSPORTATION
 MILITARY OTHER

4 OWNER OF PROPERTY

NAME

Maryland Department of Natural Resources

Telephone #:

STREET & NUMBER

Taylor Avenue

CITY, TOWN

STATE, zip code

Annapolis

VICINITY OF

Maryland 21401

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE,
 REGISTRY OF DEEDS, ETC.

Liber #:

Folio #:

STREET & NUMBER

CITY, TOWN

STATE

6 REPRESENTATION IN EXISTING SURVEYS

TITLE

DATE

 FEDERAL STATE COUNTY LOCAL

DEPOSITORY FOR
 SURVEY RECORDS

CITY, TOWN

STATE

7 DESCRIPTION

HO-534

CONDITION

- EXCELLENT
- DETERIORATED
- GOOD
- RUINS
- FAIR
- UNEXPOSED

CHECK ONE

- UNALTERED
- ALTERED

CHECK ONE

- ORIGINAL SITE
- MOVED DATE _____

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

The dam spans the Patapsco (Baltimore and Howard counties) approximately 1.75 miles above Oella. The mill race parallels the east shore of the river.

8 SIGNIFICANCE

PERIOD		AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
<input type="checkbox"/> PREHISTORIC	<input type="checkbox"/> ARCHEOLOGY-PREHISTORIC	<input type="checkbox"/> COMMUNITY PLANNING	<input type="checkbox"/> LANDSCAPE ARCHITECTURE	<input type="checkbox"/> RELIGION	
<input type="checkbox"/> 1400-1499	<input type="checkbox"/> ARCHEOLOGY-HISTORIC	<input type="checkbox"/> CONSERVATION	<input type="checkbox"/> LAW	<input type="checkbox"/> SCIENCE	
<input type="checkbox"/> 1500-1599	<input type="checkbox"/> AGRICULTURE	<input type="checkbox"/> ECONOMICS	<input type="checkbox"/> LITERATURE	<input type="checkbox"/> SCULPTURE	
<input type="checkbox"/> 1600-1699	<input type="checkbox"/> ARCHITECTURE	<input type="checkbox"/> EDUCATION	<input type="checkbox"/> MILITARY	<input type="checkbox"/> SOCIAL/HUMANITARIAN	
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> ART	<input checked="" type="checkbox"/> ENGINEERING	<input type="checkbox"/> MUSIC	<input type="checkbox"/> THEATER	
<input checked="" type="checkbox"/> 1800-1899	<input type="checkbox"/> COMMERCE	<input type="checkbox"/> EXPLORATION/SETTLEMENT	<input type="checkbox"/> PHILOSOPHY	<input type="checkbox"/> TRANSPORTATION	
<input type="checkbox"/> 1900-	<input type="checkbox"/> COMMUNICATIONS	<input checked="" type="checkbox"/> INDUSTRY	<input type="checkbox"/> POLITICS/GOVERNMENT	<input type="checkbox"/> OTHER (SPECIFY)	
		<input type="checkbox"/> INVENTION			

SPECIFIC DATES

BUILDER/ARCHITECT

STATEMENT OF SIGNIFICANCE

The Union Dam and mill race is included in the "Oella Historic District", entered on the National Register of Historic Places in 1976 (see Oella form) and has been connected with the operation of the mill since the Union Manufacturing Company first began operations at Oella in 1808. The mill race connecting the dam with the mill is believed to be the longest race serving a single mill in the United States, with a length of 1.75 miles [although there are some longer ones serving more than one mill].

The opening of Liberty Reservoir in 1951 cut off for good and all the water supply to the dam and race. The dam was enlarged at least once; damage to the structure during Hurricane Agnes in 1972 revealed portions of the original dam within the present structure.

Recommendations

Routine maintenance of dam and race and recording by a qualified industrial-archeologist are called for. Procedures to secure against future floods should be investigated.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

Interview, John McGrain, Paltimore County Planning Dept., 1979

"Oella" N.R. Form

Patapsco State Park Files

CONTINUE ON SEPARATE SHEET IF NECESSARY

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY _____

VERBAL BOUNDARY DESCRIPTION

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	COUNTY
Maryland	Baltimore
STATE	COUNTY
Maryland	Howard

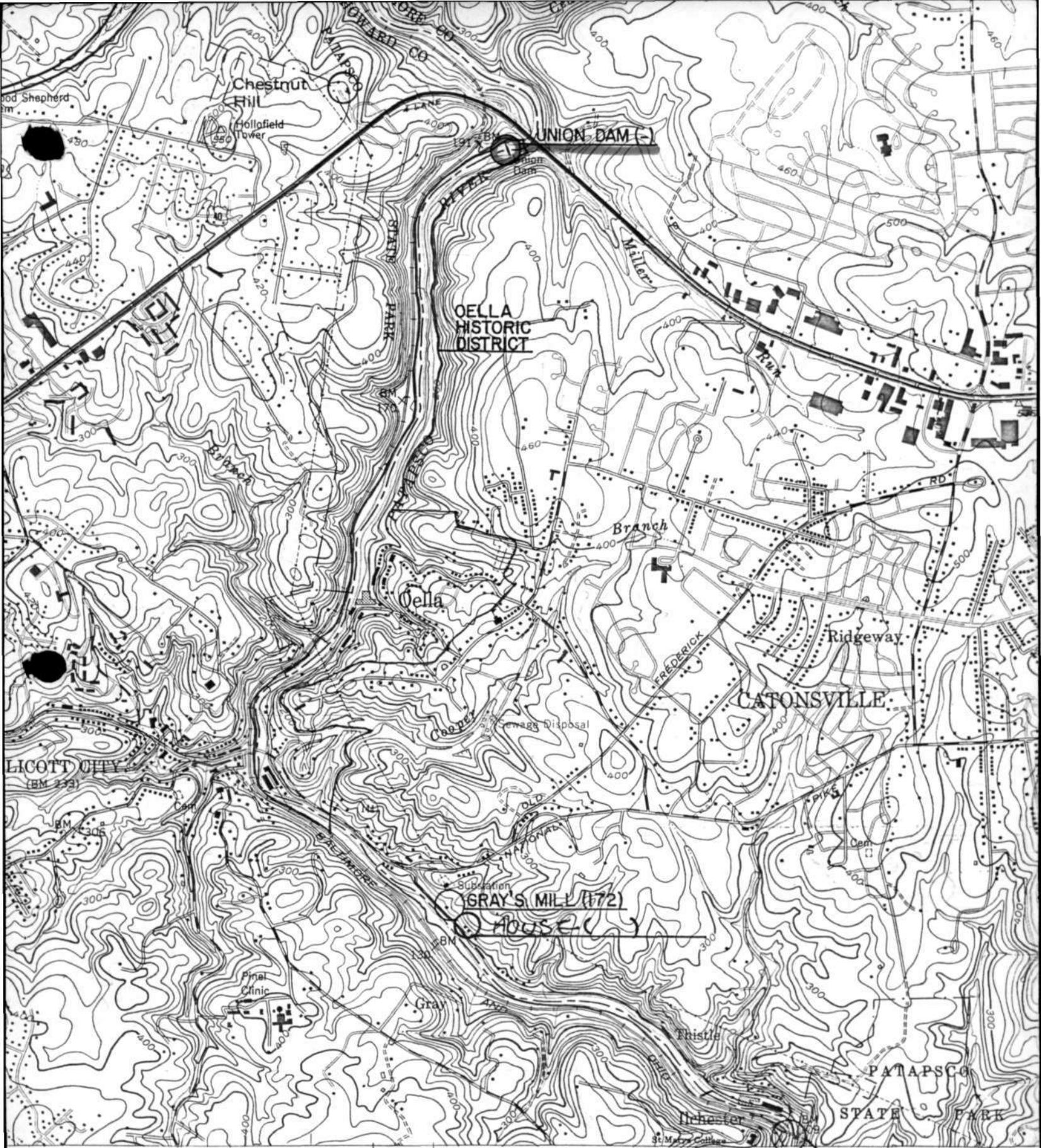
11 FORM PREPARED BY

NAME / TITLE	DATE
John D. Hnedak, Historic Sites Survey Team Captain	1978-79
ORGANIZATION	TELEPHONE
Maryland Historical Trust	269-2438
STREET & NUMBER	STATE
21 State Circle	Maryland 21401
CITY OR TOWN	
Annapolis	

The Maryland Historic Sites Inventory was officially created by an Act of the Maryland Legislature, to be found in the Annotated Code of Maryland, Article 41, Section 181 KA, 1974 Supplement.

The Survey and Inventory are being prepared for information and record purposes only and do not constitute any infringement of individual property rights.

RETURN TO: Maryland Historical Trust
The Shaw House, 21 State Circle
Annapolis, Maryland 21401
(301) 267-1438



1/2 MI. TO MD. 175
EST. BRIDGE 5.9 MI.

345 47'30" 346 347000m E

INTERIOR-GEODETICAL SURVEY, RESTON, VIRGINIA-1976

**PATTERSON VIADUCT
WILLCHESTER BRIDGE & TUNNEL**
ROAD CLASSIFICATION

- Heavy-duty
- Medium-duty
- Light-duty
- Unimproved dirt
- Interstate Route
- U. S. Route
- State Route



1 MILE
HO-534
ELICOTT CITY
QUAD

0 FEET
DATE OF 1929





Ellicott City mill race

How 5.4

HO-534

NATIONAL REGISTER OF HISTORIC PLACES

PROPERTY PHOTOGRAPH FORM

(Type all entries - attach to or enclose with photograph)

STATE	
COUNTY	
FOR NPS USE ONLY	
ENTRY NUMBER	DATE

FIELD

SEE INSTRUCTIONS

1. NAME

COMMON: **Ellicott Mill Race**

AND/OR HISTORIC:

2. LOCATION

STREET AND NUMBER:

Frederick Road at Oella Avenue

CITY OR TOWN:

Ellicott City

STATE:

Md.

CODE

COUNTY:

Baltimore Co.

CODE

3. PHOTO REFERENCE

PHOTO CREDIT: **John W. McGrain**

DATE OF PHOTO: **July 1972** (~~Roll 437~~)

NEGATIVE FILED AT:

34 Willow Avenue, Towson, Md. 21204 (Roll 437)

4. IDENTIFICATION

DESCRIBE VIEW, DIRECTION, ETC.

looking northward up stone mill race from north edge of Frederick Road; this portion of mill race, previously filled up, was unearthed by 1972 flood. Also visible, stone piers of former trolley car approach to Patapsco River crossing by company-owned bridge.



Union Dam, from U.S. 40 bridge (195_)

H-5-29

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

40-534

NATIONAL REGISTER OF HISTORIC PLACES

PROPERTY PHOTOGRAPH FORM

(Type all entries - attach to or enclose with photograph)

STATE

COUNTY

FOR NPS USE ONLY

ENTRY NUMBER

DATE

1. NAME

COMMON: Union Dam

AND/OR HISTORIC:

2. LOCATION

STREET AND NUMBER:

Just downstream of U.S. 40 bridge over Patapsco River

CITY OR TOWN:

Oella/Ellicott City P.O.]

STATE: Md.

CODE

COUNTY:

Baltimore/Howard Co.

CODE

3. PHOTO REFERENCE

PHOTO CREDIT: John W. McGrain

DATE OF PHOTO: 1950's

NEGATIVE FILED AT:

34 Willow Avenue, Towson, Md. 21204 (2 1/4 x 3 1/4 neg)

4. IDENTIFICATION

DESCRIBE VIEW, DIRECTION, ETC.

Looking downstream from south side of U.S. 40 bridge

SEE INSTRUCTIONS

FIELD