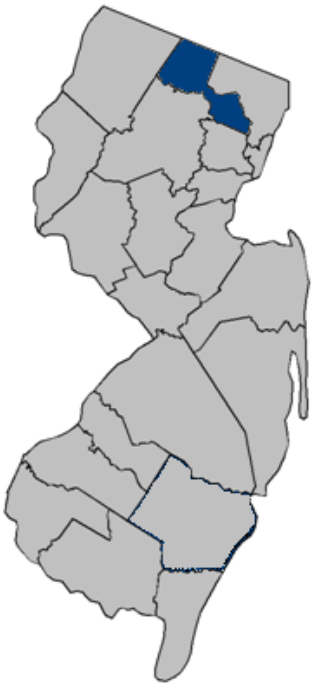
FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 5



PASSAIC COUNTY, NEW JERSEY (ALL JURISDICTIONS)

COMMUNITY NAME	COMMUNITY NUMBER
BLOOMINGDALE, BOROUGH OF	345284
CLIFTON, CITY OF	340398
HALEDON, BOROUGH OF	340399
HAWTHORNE, BOROUGH OF	340400
LITTLE FALLS, TOWNSHIP OF	340401
NORTH HALEDON, BOROUGH OF	340402
PASSAIC, CITY OF	340403
PATERSON, CITY OF	340404
POMPTON LAKES, BOROUGH OF	345528
PROSPECT PARK, BOROUGH OF	340406
RINGWOOD, BOROUGH OF	340407
TOTOWA, BOROUGH OF	340408
WANAQUE, BOROUGH OF	340409
WAYNE, TOWNSHIP OF	345327
WEST MILFORD, TOWNSHIP OF	340411
WOODLAND PARK, BOROUGH OF*	340412

FEMA

Preliminary: January 9, 2015

FLOOD INSURANCE STUDY NUMBER
34031CV001B
Version Number 2.1.1.1

* The Borough of Woodland Park was formerly known as the Borough of West Paterson.

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

Initial Countywide FIS Effective Date: September 28, 2007

Revised Countywide FIS Date:

This preliminary FIS report does not include unrevised Floodway Data Tables or unrevised Flood Profiles. These Floodway Data Tables and Flood Profiles will appear in the final FIS report.

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FLOOD INSURANCE STUDY
PASSAIC COUNTY, NEW JERSEY (ALL JURISDICTIONS)

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) investigates the existence and severity of flood hazards in, or revises and updates previous FISs/Flood Insurance Rate Maps (FIRMs) for, the geographic area of Passaic County, New Jersey, including the Boroughs of Bloomingdale, Haledon, North Haledon, Pompton Lakes, Prospect Park, Ringwood, Totowa, Wanaque and Woodland Park (formerly West Paterson); the Cities of Clifton, Passaic and Paterson; and the Townships of Little Falls, Wayne and West Milford.

This FIS aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This FIS has developed flood risk data for various areas of the county that will be used to establish actuarial flood insurance rates. This information will also be used by Passaic County officials to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and will also be used by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are found in Title 44 of the Code of Federal Regulations (CFR), Part 60.3.

In some States or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973, as amended.

This FIS has been prepared in a countywide format to include all communities within Passaic County. Information on the authority and acknowledgments for each jurisdiction included in this countywide FIS, as compiled from their previously printed FIS reports, is shown below.

Bloomingdale, Borough of: the hydrologic and hydraulic analyses in the FIS report dated December 4, 1985, represent a revision of the original analyses performed by the U.S. Army Corps of Engineers (USACE), performed by O'Brien & Gere Engineers, Inc., under subcontract to the New Jersey Department of Environmental Protection (NJDEP) for the Federal Emergency Management

	Agency (FEMA) under Contract No. H-3959. This work was completed in December 1983.
Clifton, City of:	the hydrologic and hydraulic analyses in the FIS report dated December 15, 1981, were performed by the NJDEP for FEMA under Contract No. H-3959. This work was completed in February 1979.
Haledon, Borough of:	the hydrologic and hydraulic analyses in the FIS report dated September 16, 1980, were performed by the NJDEP for the Federal Insurance Administration (FIA) under Contract No. H-3959. This work was completed in February 1979.
Hawthorne, Borough of:	the hydrologic and hydraulic analyses in the FIS report dated March 1980 were performed by Tippetts-Abbett-McCarthy-Stratton, Engineers and Architects, under subcontract to the NJDEP for the FIA under Contract No. H-3855. This work was completed in March 1977.
Little Falls, Township of:	the hydrologic and hydraulic analyses in the FIS report dated February 17, 1981, were performed by the NJDEP for the FIA under Contract No. H-3855. This work was completed in March 1979.
North Haledon, Borough of:	the hydrologic and hydraulic analyses in the FIS report dated January 2, 1981, were performed by the NJDEP for the FIA under Contract No. H-3959. This work was completed in February 1979.
Passaic, City of:	the hydrologic and hydraulic analyses in the FIS report dated March 1979 were performed by Tippetts-Abbett-McCarthy-Stratton, Engineers and Architects, under subcontract to the NJDEP for the FIA under Contract No. H-3855. This work was completed in February 1977.
Paterson, City of:	the hydrologic and hydraulic analyses in the FIS report dated August 1976 were performed by Tippetts-Abbett-McCarthy-Stratton for the FIA under Contract No. H-3733.
Pompton Lakes, Borough of:	the hydrologic and hydraulic analyses in the FIS report dated September 18, 1987, represent a revision of the original analyses performed by the Soil Conservation Service, performed by O'Brien & Gere Engineers, Inc., under subcontract to NJDEP for

FEMA under Contract No. H-3959. This work was completed in December 1983.

Prospect Park, Borough of: the hydrologic and hydraulic analyses in the FIS report dated June 1977 were performed by NJDEP for the FIA under Contract No. H-3855. This work was completed in April 1977.

Ringwood, Borough of: the hydrologic and hydraulic analyses in the FIS report dated August 3, 1981, were performed by Elson T. Killam Associates, Inc., under subcontract to NJDEP for FEMA under Contract No. H-3959. This work was completed in December 1978.

Totowa, Borough of: the hydrologic and hydraulic analyses in the FIS report dated February 5, 1985, were performed by URS/MRS Engineers under subcontract to NJDEP for FEMA under Contract No. H-3959. This work was completed in January 1978.

Wanaque, Borough of: the hydrologic and hydraulic analyses in the FIS report dated August 15, 1989, were performed by Elson T. Killam Associates, Inc., under subcontract to NJDEP for the FIA under Contract No. H-3959. This work was completed in December 1978.

Wayne, Township of: the hydrologic and hydraulic analyses in the FIS report dated September 29, 1986, represent a revision of the original analyses performed by the U.S. Geological Survey (USGS), prepared by O'Brien & Gere Engineers, Inc., under subcontract to NJDEP for FEMA under Contract No. 3959. This work was completed in December 1983.

West Milford, Township of: the hydrologic and hydraulic analyses in the FIS report dated February 2, 1989, represent a revision of the original analyses performed by NJDEP, performed by Elson T. Killam Associates, Inc., under subcontract to NJDEP for FEMA under Contract No. H-3959. The original analyses were completed in December 1978. This work was completed in October 1987.

Woodland Park (formerly West Paterson), Borough of: the hydrologic and hydraulic analyses in the FIS report dated June 15, 1981, were performed by

NJDEP for the FIA under Contract No. H-3959. This work was completed in September 1978.

For the September 28, 2007, FIS, revised hydrologic and hydraulic analyses for Molly Ann Brook, from the confluence with the Passaic River in the City of Paterson to Church Street in the Borough of Haledon, were prepared for FEMA by Medina Consultants, P.C., under Contract No. EMN-2003-CO-0005. That work was completed in September 2006.

Flood hazard mapping for the 2007 FIS and FIRMs uses digital orthophotography produced at a scale of 1:2,400 (1"=200') with a 1-foot pixel resolution. Digital orthophotography combines the image characteristics of a photograph with the geometric qualities of a map. Digital orthophotography is a process that converts aerial photography from an original photo negative to a digital product that has been positionally corrected for camera lens distortion, vertical displacement and variations in aircraft altitude and orientation. Aerial photography of the entire State of New Jersey was captured during March-May 2002. The ortho-rectification process achieved a +/- 4.0-foot horizontal accuracy at a 95-percent confidence level, National Standard for Spatial Data Accuracy (NSSDA).

For the [*date*] FIS, revised hydrologic and hydraulic analyses for the Passaic River were prepared for FEMA by Risk Assessment, Mapping and Planning Partners (RAMPP) (A Joint Venture between Dewberry, ESP and URS Corporation), under contract HSFEHQ-09-D-0369. This work was completed in March 2012.

Revised hydrologic analyses for Buttermilk Falls, Weasel Brook, the Wanaque River, the Pequannock River, and the Third River were prepared by the NJDEP, a Cooperating Technical Partner with FEMA, in August 2012. The hydraulic analyses were prepared by URS Corporation for NJDEP, under contract P1066-00. This work was completed in August 2013.

Revised hydraulic analyses for Acid Brook, Cupsaw Brook, Dowling Brook, Haycock Brook, High Mountain Brook, Meadow Brook, Packanack Brook, the Pequannock River, the Pompton River, the Ramapo River, Ringwood Creek, Singac Brook and West Brook were prepared by AECOM for NJDEP. This work was completed in August 2013

Flood hazard mapping for the [*date*] FIS and FIRMs uses digital orthophotography produced at a scale of 1:2,400 (1"=200') with a 1-foot pixel resolution. The aerial photography was captured during March-April 2012. The ortho-rectification process achieved a +/- 4.0-foot horizontal accuracy at a 95-percent confidence level, NSSDA.

The coordinate system used for the production of the digital FIRM is State Plane in the New Jersey projection zone 2900 US feet, referenced to the North American Datum of 1983.

1.3 Coordination

Consultation Coordination Officer's (CCO) meetings may be held for each jurisdiction in this countywide FIS. An initial CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to explain the nature and purpose of an FIS, and to identify the streams to be studied by detailed methods. A final CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to review the results of the study.

The dates of the initial and final CCO meetings held for Passaic County and the incorporated communities within its boundaries prior to the September 28, 2007, FIS are shown in Table 1, "Initial and Final CCO Meetings."

TABLE 1 - INITIAL AND FINAL CCO MEETINGS

Community	Initial CCO Date	Final CCO Date
Bloomingdale, Borough of	March 11, 1976	October 22, 1984
Clifton, City of	March 9, 1976	April 24, 1979
Haledon, Borough of	March 9, 1976	February 21, 1979
Little Falls, Borough of	May 16, 1975	March 20, 1979
North Haledon, Borough of	March 9, 1976	February 21, 1979
Passaic, City of	May 16, 1975	November 13, 1978
Paterson, City of	April 18, 1975	December 3, 1975
Pompton Lakes, Borough of	March 11, 1976	December 12, 1984
Prospect Park, Borough of	May 16, 1975	April 7, 1977
Ringwood, Borough of	March 22, 1976	February 21, 1980
Totowa, Borough of	March 2, 1976	January 20, 1984
Wanaque, Borough of	March 22, 1976	January 15, 1980
Wayne, Township of	March 11, 1976	January 11, 1985
West Milford, Township of	March 22, 1976	February 21, 1980
Woodland Park (formerly West Paterson), Borough of	March 9, 1976	April 14, 1979

Final CCO meeting for the September 28, 2007 FIS were held on November 28, 2006 at the Passaic County Office of Emergency Management and was attended by FEMA, NJDEP and community representatives.

For this [*date*] FIS, an initial CCO meeting was held via WebEx on October 4, 2010, at 10 a.m. and was attended by FEMA, RAMPP and community representatives.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Passaic County, New Jersey.

All or portions of the flooding sources listed in Table 2, "Flooding Sources Studied by Detailed Methods," were studied by detailed methods. Limits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2).

TABLE 2 - FLOODING SOURCES STUDIED BY DETAILED METHODS

Acid Brook
Belcher Creek
Belcher Creek Branch 1
Belcher Creek Branch 2
Branch, Weasel Brook
Branch 3-5-2, Weasel Brook
Burnt Meadow Brook
Burnt Meadow Brook Branch 5
Buttermilk Falls
Cold Spring Brook
Cooley Brook
Cupsaw Brook
Cupsaw Brook Branch 1
Cupsaw Brook Branch 2
Cupsaw Brook Branch 3
Cupsaw Brook Branch 4
Deep Brook
Dowling Brook
Erskine Brook
Glen Place Brook
Goffle Brook
Great Notch Brook
Green Brook
Haycock Brook
High Mountain Brook (Downstream Reach)
High Mountain Brook (Upstream Reach)
High Mountain Brook 2
Jones Brook
Longhouse Creek
MacDonald Brook
Meadow Brook
Meadow Brook Branch 2
Molly Ann Brook
Molly Ann Brook Tributary 3
Molly Ann Brook Tributary 4
Molly Ann Brook Tributary 6
Morsetown Brook
Naachtpunkt Brook
Naachtpunkt Brook (Upper Reach)
Oakwood Lake Brook
Packanack Lake
Passaic River
Pearl Brook
Peckman River
Pequannock River
Pompton River
Pompton River Unnamed Tributary
Post Brook and Rainbow Valley Lake
Post Brook (West Milford)
Post Brook Branch 1
Post Brook Branch 2
Post Brook Branch 3
Post Brook Branch 4
Ramapo River
Ringwood Creek
Ringwood Creek Branch 1
Singac Brook
Slippery Rock Brook
Squaw Brook
Stephens Lake Brook
Stephens Lake Brook Branch 1
Stephens Lake Brook Branch 2
Third River
Tributary 1 to Posts Brook
Tributary 2 to Posts Brook
Tributary 1 to Singac Brook
Tributary 3 to Singac Brook
Tributary to Van Dam Brook
Van Dam Brook
Wabash Brook
Wanaque River
Weasel Brook
West Brook Reach 1
West Brook Reach 2
West Brook Branch 7

There were two streams named High Mountain Brook that were studied using detailed methods. Therefore, High Mountain Brook in the Borough of Ringwood has been renamed High Mountain Brook 2.

For the September 28, 2007, FIS, Molly Ann Brook was restudied using detailed methods. The revised hydrologic analysis includes the entire basin area of Molly Ann Brook (a drainage area of 7.94 square miles). The revised hydraulic analysis extends from its confluence with the Passaic River in the City of Paterson to Church Street in the Borough of Haledon.

As part of the [*date*] FIS, updated analyses were included for the flooding sources shown in Table 3, “Scope of Revision.”

TABLE 3 – SCOPE OF REVISION

Stream	Limits of Revised or New Detailed Study
Acid Brook	From confluence with Ramapo River to approximately 2,320 feet upstream of Interstate 287
Branch 3-5-2 Weasel Brook	From confluence with Weasel Brook to approximately 1,205 feet upstream of County Highway 609
Buttermilk Falls	From confluence with Molly Ann Brook to approximately 1,514 feet upstream of County Highway 675
Cupsaw Brook	From confluence with Wanaque Reservoir to approximately 232 feet upstream of Kraft Place
Dowling Brook	From confluence with Passaic River to approximately 70 feet upstream of Lackawanna Avenue
Haycock Brook	From confluence with Ramapo River to approximately 4,223 feet upstream of Route 502
High Mountain Brook (Upstream Reach)	From confluence with Stephens Lake Brook to approximately 4,300 feet upstream of Stephens Lake Road
Meadow Brook	From confluence with Wanaque River to approximately 540 feet upstream of High Mountain Brook
Molly Ann Brook	From confluence with Passaic River to approximately 2,512 feet upstream of Sicomac Road
Packanack Brook	From confluence with Pompton River to approximately 3,428 feet upstream of Packanack Lake Drive
Passaic River	The entire reach within Passaic County
Pequannock River	From confluence with Pompton River to the confluence of Oak Ridge Reservoir
Pompton River	From confluence with Passaic River to the confluence of Pequannock River
Pompton River (Unnamed Tributary)	From the confluence with Pompton River to approximately 2,453 feet upstream of North Road
Ramapo River	From confluence with Pompton River to Bergen / Passaic county boundary
Ringwood Creek	From confluence with Wanaque Reservoir to approximately 2,618 feet upstream of County Highway 698
Singac Brook	From confluence with Passaic River to the confluence of Preakness Brook
Third River	From confluence with Passaic River to approximately 1,200 feet upstream of US Highway 46
Wanaque River	From confluence with Pequannock River to approximately 95 feet upstream of Ringwood Avenue
Weasel Brook	From approximately 576 feet downstream of Clifton Avenue to approximately 1,750 feet upstream of Confluence with Weasel 3-5-2 Brook
West Brook Reach 1	From confluence with Wanaque Reservoir to approximately 5,771 feet upstream of Magee Road

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

Riverine flooding sources throughout the county have been studied by detailed methods at different times and, prior to the September 28, 2007, countywide FIS, often on a community-by-community basis. Table 4, "Model Dates for Riverine Flooding" represents the hydraulic modeling dates for the detailed study flooding sources in the county.

TABLE 4 – MODEL DATES FOR RIVERINE FLOODING

STREAM NAME	COMMUNITY	MOST RECENT MODEL DATE
Acid Brook	Borough of Pompton Lakes/ Borough of Wanaque	August 2013
Belcher Creek	Township of West Milford	October 1987
Belcher Creek Branch 1	Township of West Milford	October 1987
Belcher Creek Branch 2	Township of West Milford	October 1987
Branch, Weasel Brook	City of Clifton	February 1979
Branch 3-5-2, Weasel Brook	City of Clifton	August 2013
Burnt Meadow Brook	Borough of Ringwood	December 1978
Burnt Meadow Brook Branch 5	Borough of Ringwood	December 1978
Buttermilk Falls	Borough of North Haledon	August 2013
Cold Spring Brook	Borough of Bloomingdale	December 1983
Cooley Brook	Township of West Milford	October 1987
Cupsaw Brook	Borough of Ringwood	August 2013
Cupsaw Brook Branch 1	Borough of Ringwood	December 1978
Cupsaw Brook Branch 2	Borough of Ringwood	December 1978
Cupsaw Brook Branch 3	Borough of Ringwood	December 1978
Cupsaw Brook Branch 4	Borough of Ringwood	December 1978
Deep Brook	Borough of Hawthorne	March 1977
Dowling Brook	Borough of Woodland Park	August 2013
Erskine Brook	Borough of Ringwood	February 1979
Glen Place Brook	Borough of North Haledon/ Township of Wayne	December 1983
Goffle Brook	Borough Hawthorne	March 1977
Great Notch Brook	Township of Little Falls/ Borough of Woodland Park	March 1979
Green Brook	Township of West Milford	October 1987
Haycock Brook	Township of Wayne	August 2013
High Mountain Brook (Downstream Reach)	Borough of Wanaque	December 1983
High Mountain Brook (Upstream Reach)	Borough of Ringwood/ Borough of Wanaque	August 2013
High Mountain Brook 2	Borough of Ringwood	December 1978
Jones Brook	Township of Wayne	December 1983

TABLE 4 – MODEL DATES FOR RIVERINE FLOODING-continued

STREAM NAME	COMMUNITY	MOST RECENT MODEL DATE
Longhouse Creek	Township of West Milford	October 1987
MacDonald Brook	City of Passaic	February 1977
Meadow Brook	Borough of Wanaque/ Borough of Ringwood	August 2013
Meadow Brook Branch 2	Borough of Ringwood	December 1978
Molly Ann Brook	City of Paterson, Borough of Haledon Borough of Prospect Park	September 2006
Molly Ann Brook	Borough of Haledon, Borough of North Haledon	August 2013
Molly Ann Brook Tributary 3	Borough of North Haledon	February 1979
Molly Ann Brook Tributary 4	Borough of North Haledon	February 1979
Molly Ann Brook Tributary 6	Borough of North Haledon	February 1979
Morsetown Brook	Township of West Milford	October 1987
Naachtpunkt Brook (Lower Reach)	Township of Wayne/ Borough of Totowa	December 1983
Naachtpunkt Brook (Upper Reach)	Township of Wayne	December 1983
Oakwood Lake Brook	Borough of Bloomingdale	December 1983
Packanack Brook	Township of Wayne	August 2013
Passaic River	City of Clifton, City of Passaic, City of Paterson, Borough of Hawthorne Borough of Prospect Park, Borough of Totowa, Borough of Woodland Park (formerly Borough of West Paterson) Township of Little Falls, Township of Wayne	April 2012
Pearl Brook	Borough of Woodland Park	September 1978
Peckman River	Borough of Woodland Park/ Township of Little Falls	August 2013
Pequannock River	Borough of Pompton Lakes, Borough of Bloomingdale, Township of West Milford	August 2013/ September 2014 August 2013
Pompton River	Township of Wayne	August 2013
Pompton River Unnamed Tributary	Township of Wayne	August 2013
Post Brook and Rainbow Valley Lake	Borough of Pompton Lakes/ Borough of Wanaque	December 1983
Post Brook (West Milford)	Township of West Milford	October 1987
Post Brook Branch 1	Borough of Wanaque	December 1983
Post Brook Branch 2	Borough of Wanaque	December 1983
Post Brook Branch 3	Township of West Milford	October 1987
Post Brook Branch 4	Township of West Milford	October 1987
Ramapo River	Township of Wayne/ Borough of Pompton Lakes	August 2013
Ringwood Creek	Borough of Ringwood	August 2013
Ringwood Creek Branch 1	Borough of Ringwood	December 1978

TABLE 4 – MODEL DATES FOR RIVERINE FLOODING-continued

STREAM NAME	COMMUNITY	MOST RECENT MODEL DATE
Singac Brook	Township of Wayne/ Borough of Totowa	August 2013
Slippery Rock Brook	City of Paterson/ Borough of Woodland Park	September 1978
Squaw Brook	Borough of North Haledon	August 2013
Stephens Lake Brook	Borough of Ringwood	December 1978
Stephens Lake Brook Branch 1	Borough of Ringwood	December 1978
Stephens Lake Brook Branch 2	Borough of Ringwood/ Borough of Wanaque	December 1978
Third River	City of Clifton/ Borough of Woodland Park	August 2013
Tributary 1 to Posts Brook	Borough of Bloomingdale	December 1983
Tributary 2 to Posts Brook	Borough of Bloomingdale	December 1983
Tributary 1 to Singac Brook	Township of Wayne	December 1983
Tributary 3 to Singac Brook	Township of Wayne	December 1983
Tributary to Van Dam Brook	Borough of Bloomingdale	December 1983
Van Dam Brook	Borough of Bloomingdale	December 1983
Wabash Brook	City of Clifton	February 1979
Wanaque River	Borough of Pompton Lakes/ Borough of Wanaque	August 2013
Weasel Brook	City of Passaic, City of Clifton	August 2013
West Brook Reach 1	Borough of Wanaque/ Borough of Ringwood/ Township of West Milford	August 2013
West Brook Reach 2	Township of West Milford	October 1987
West Brook Branch 7	Township of West Milford	October 1987

This FIS also incorporates the determinations of letters issued by FEMA resulting in map changes (Letter of Map Revision [LOMR], as shown in Table 5, "Letters of Map Change."

TABLE 5 - LETTERS OF MAP CHANGE

Community	Flooding Source(s)/Project Identifier	Date Issued	Type
Township of Little Falls and Borough of Woodland Park (formerly West Paterson)	Peckman River, Great Notch Brook, Dowling Brook; updated hydraulic analysis, hydrologic analysis, and topographic data	August 14, 2007	LOMR

TABLE 5 - LETTERS OF MAP CHANGE (continued)

Community	Flooding Source(s)/Project Identifier	Date Issued	Type
Borough of Wanaque	Posts Brook - Lower Twin Lake	November 18, 2008	LOMR

Numerous flooding sources in the county were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. There are also streams with Limited Detail studies in areas having low development or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and Passaic County.

2.2 Community Description

Passaic County is located in the northern central and northeast part of New Jersey. It is bordered to the northeast by Orange and Rockland Counties, New York, to the northwest by Sussex County, New Jersey, to the west by Morris County, New Jersey, to the South by Essex County, New Jersey, and to the east by Bergen County, New Jersey. It is also bounded in several locations by the Passaic and Pequannock Rivers, and spans 185 square miles. The population of Passaic County was 501,226 in 2010 (U.S. Census Bureau, 2010). Several major highways span Passaic County, including Interstate 80, the Garden State Parkway, and Interstate 287. Several rail and bus lines also pass through the County. The southern half of Passaic County is urban and densely populated, while the northern half of the County is predominantly rural.

Historically, the southern half of Passaic County was a largely industrial area, and while most related activity has since ceased, it remains a densely populated part of the greater New York metropolitan area. The northern half of Passaic County is far less populated, with a multitude of lakes, streams and recreational areas. Several large State parks and wildlife management areas are located in this part of Passaic County.

The terrain of Passaic County is greatly varied. In the southern half of the County the terrain is quite flat, with several cities and highly developed areas, while the northern half of the County is very mountainous. The highest point in Passaic County is 1,450 feet above sea level, in the northernmost municipality of West Milford; the lowest point is 30 feet above sea level, in the southern municipality of Clifton.

2.3 Principal Flood Problems

The urban parts of Passaic County are vulnerable to severe flooding and flood-related damage. Low-lying areas throughout Passaic County are subject to periodic flooding caused by the overflow of streams. Flooding from the Passaic River affects the communities of Bloomingdale, Hawthorne, Little Falls, Passaic, Paterson, Prospect Park, Totowa, Wayne and Woodland Park (formerly West Paterson). This is due to the establishment of highly developed areas adjacent to the Passaic River. Flooding from Molly Ann Brook affects the communities of

Haledon, North Haledon, Paterson and Prospect Park. Flooding from the Pequannock River affects low-lying areas of Bloomingdale and Pompton Lakes. Flooding from the Wanaque River affects Pompton Lakes, Ringwood and Wanaque.

Flooding in Passaic County is the result of heavy rainfall produced by hurricanes moving up the coast, large frontal storms from the west and south, and local thunderstorms. One of the largest storms on record occurred in 1903, with an estimated peak discharge at the mouth of the Passaic River of 39,800 cubic feet per second (cfs), and a recurrence interval of approximately 100 years (U.S. Department of the Interior, 1904). Other historically large storms that caused widespread flooding and damage occurred in 1902, 1936, 1945, 1951, and 1955. More recently, major flooding occurred along the Passaic in 1968, 1971, 1972, 1973, two in 1975, 1984, 1992, 1999, 2005, 2007, and 2010, all of which warranted Federal Disaster declarations.

The Passaic River also experienced flooding as a result of Hurricane Irene. Preliminary gage recordings from August 30, 2011, at the Little Falls gage exceeded the 1984 storm event (the USACE calibrated a HEC-1 model and a UNET model to this event) flow and gage height at 20,800 cfs and 134.19 feet NAVD88, respectively (http://waterdata.usgs.gov/nwis/uv/?site_no=01389500&agency_cd=USGS). However, storms later than 1984 were used for both hydroloic and hydraulic model calibrations.

Smaller tributaries in Passaic County also cause flooding in individual communities. The Borough of Bloomingdale experiences additional flooding from Cold Spring Brook, Oakwood Lake Brook, Posts Brook Tributaries 1 and 2, Van Dam Brook and the Van Dam Brook Tributary. Low-lying areas above and below Oak Street are subject to flooding during heavy rainstorms.

The City of Clifton experiences additional flooding from the Third River, Wabash Brook, Plog Brook, Weasel Brook, Weasel Brook Branch and Weasel Brook Branch 3-5-2. Various stream encroachment projects, inadequate culverts, and low-lying areas contribute to flooding concerns during heavy rainstorms. The Third River causes flooding from the corporate limits to U.S. Highway 46 in the western section of the City. The Passaic River backwater influence also extends significantly up the Third River. Weasel Brook and Weasel Brook Branch cause flooding in the low-lying area just upstream of Conrail. Flooding from Plog Brook was alleviated in the area immediately downstream from Van Houten Avenue through a pipe. The system has been supplemented with another pipe system that can contain the 1-percent-annual-chance (100-year) flood.

The Borough of Haledon experiences flooding in low-lying areas along Molly Ann Brook, aggravated by the contribution of flow from Molly Ann Brook Tributary 2 at the Church Street Bridge. Street flooding has also occurred at Haledon Avenue, North 16th Street and Church Street. Flooding has occurred at the apartment complex near Church Street and Richardson Street.

The Borough of Hawthorne experiences additional flooding from Goffle Brook and Deep Brook. Low-lying areas and an inadequate culvert located under the

industrial complex north of Wagaraw Road causes flow to escape the banks and pass over Wagaraw Road. Flooding also occurs at the confluence of Deep Brook and Goffle Brook at the intersection of Goffle Road and Goffle Hill Road.

The Borough of Little Falls experiences additional flooding from the Peckman River and Great Notch Brook. Flooding occurs mainly due to low-lying areas and insufficient culvert and bridge openings, particularly in the residential areas having steep slopes.

The Borough of North Haledon experiences moderate flooding in the area adjacent to High Mountain Road, and streams in the Borough exhibit potential bank degradation and erosion due to high velocity flows in the steep channels.

The City of Passaic experiences additional flooding from Weasel Brook and MacDonald Brook. Flooding generally occurs in low-lying areas adjacent to these streams.

The City of Paterson has experienced large inundation areas at Dundee Dam on the Passaic River. In addition, Slippery Rock Brook causes flooding between Route 80 and the Passaic River due to small bridge openings and other manmade channel constrictions, as well as the accumulation of debris. Several areas throughout the City have been flooded due to heavy rainfall and inadequate storm sewer capacity. Two locations with extensive flooding are East 33rd Street between McLean Boulevard and Park Avenue, and Graham Avenue between Twelfth Avenue and Broadway.

The Borough of Pompton Lakes experiences additional flooding from the Ramapo River, Posts Brook and Acid Brook, mainly in low-lying areas adjacent to these streams.

The Borough of Ringwood experiences additional flooding from Ringwood Creek, Cupsaw Brook and West Brook.

The Borough of Totowa is subject to flooding from the Passaic River in the low-lying areas near Totowa Road and Holy Sepulcher Cemetery. Limited development along the Singac Brook and Naachtpunkt Brook and steep topography along the Passaic River, however, have limited flooding within the Borough.

The Borough of Wanaque experiences additional flooding from Post Brook, Meadow Brook and High Mountain Brook. Flooding generally occurs in low-lying areas along these streams. The flood of May 1968 damaged streets as well as residential and commercial buildings, and also affected the Borough's Haskell Sewage Treatment Plant. USGS stream flow and water surface records indicated that this flood would also have discharged flow equivalent to a 5-percent-annual-chance (20-year) storm from Raymond Dam, had the water supply reservoir not been below capacity at the time of the event.

The Township of Wayne is subject to additional flooding from Haycock Brook, Jones Brook, Naachtpunkt Brook, the Pompton River, the Ramapo River, Singac Brook and Singac Brook Tributaries 1 and 3.

The Township of West Milford is subject to additional flooding from Belcher Creek and Morsetown Brook in the low-lying areas, and at Union Valley Road in the vicinity. Low-lying areas adjacent to Longhouse Creek, Cooley Brook, Green Brook and Branches of Belcher Creek are also subject to flooding.

The Borough of Woodland Park (formerly West Paterson) experiences additional flooding from the Peckman River and the downstream portion of Dowling Brook in low-lying areas. Other watercourses within the Borough have limited development and relatively steep slopes, minimizing potential flooding and damage. On July 23, 1945, 7.6 inches of rainfall fell in 17 hours, causing a section of earth embankment on Barbour's Pond to wash out. The stored capacity of 60 million gallons was discharged into the New Street Reservoir, whose multiple-arch dam was quickly overtopped by approximately 2 feet. Extensive damage was sustained in the general area; however, this incident was considered a structural failure and not a recurring event.

2.4 Flood Protection Measures

There are numerous dams located on streams throughout Passaic County, which can affect flood flows. However, they are not managed as flood protection structures. The effects of these dams are therefore not incorporated into the flood hazard mapping for this FIS. All jurisdictions within Passaic County restrict building in floodplain areas in accordance with FEMA land-use regulation requirements, and enforce the rules, regulations and minimum standards concerning development in flood hazard areas, as set forth by the NJDEP, Division of Water Resources. Development in areas of Passaic County located within the Highlands Preservation Area is further restricted in areas of steep slope or close proximity to water bodies.

The Borough of Haledon, Borough of Hawthorn and City of Passaic, among others, participate in a clean-up program of various streams following significant storms, in order to remove debris to help avoid the possible worsening of present and future flood conditions.

According to the *Passaic County, New Jersey Multi-Jurisdictional Hazard Mitigation Plan*, dated August 12, 2010, the following mitigation actions have been identified by each community. For more information regarding the Passaic County, NJ Hazard Mitigation Plan please visit the following website: http://www.passaiccountynj.org/index.aspx?NID=1059.

Borough of Bloomfield:

-Backup power
-Acquisition/elevation of 20 floodprone properties
-Construct new and upgrade existing culverts, retention basinsand flood ponds
-Floodproofing Repetitive Loss properties
-Install river gage on the Pequannock River

City of Clifton :

- -Backup power
- -Installation of stormwater management culverts
- -Relocate Passaic Valley Sewage Pumping Station
- -Stormwater management system upgrade along Route 3 and Route 46
- -Upgrade culvert on Sylvan Avenue

Borough of Haledon:

- -Backup power
- -Public Warning/Alert System
- -Floodproof eight floodprone properties

Borough of Hawthorne:

- -Backup power
- -Elevate seven sewer and water pump stations along the Passaic River above the floodplain
- -Re-channel Goffle Brook into the Passaic River
- -Stream stabilization and bank augmentation on Goffle Brook

Township of Little Falls:

- -Backup power
- -Stream bank stabilization along the Peckman River
- -Upgrade and improvement of embankment wall located along Cedar Grove Road
- -Upgrade of stormwater pumping station facilitating water removal
- -Elevation of identified properties
- -Early warning system

Borough of North Haledon:

- -Backup power
- -Elevation of utilities out of floodprone basement of Municipal Building
- -Stream bank stabilization and bank augmentation along Molly Ann Brook
- -Inundation study for Yahn's Pond Dam

City of Passaic:

- -Backup power
- -Stream bank stabilization and augmentation along the Passaic River
- -Code update
- -Elevation/Flood-proofing of four repetitive loss properties

City of Paterson:

- -Backup power
- -Riverbank augmentation of the Passaic River
- -Floodproof Public Safety Building
- -Acquisition of identified homes

Borough of Pompton Lakes:

- -Backup power
- -Engineering study to determine mitigation actions along identified streets
- -Acquisition of identified properties
- -Improved drainage along Sunset Road
- -River silt and snag removal
- -Install check valves on storm drains
- -Purchase Vac-Truck for storm drain cleaning and related projects
- -Riverbank restoration on the Wanaque, Pequannock and Ramapo Rivers
- -Annual river clean-up on the Wanaque, Pequannock and Ramapo Rivers
- -Purchase articulating bucket truck for downed or other tree work
- -Debris removal at the confluence of the rivers
- -Install local river gage system
    - -Determine properties at risk due to failure of the Ramapo River Dam

Borough of Prospect Park:

- -Backup power
- -Installation of back-flow valves on storm-water outflow pipes to prevent infiltration of sewage system on Short Street near East Main Street

Borough of Ringwood:

- -Backup power
- -Retrofit impact resistant shutters to windows and doors on Municipal Building
- -Floodproof utilities in Municipal Building
- -Hazard threat recognition regarding mapping and capping of iron mines
- -Upgrade and improvement of stormwater culverts along McGee Road
- -Dam Inundation study of Monksville Dam

Borough of Totowa:

- -Backup power
- -Engineering study to determine best mitigation action of Fire Department
- -Engineering study to determine risk of dam failure
- -Engineering study to determine route of flooding and appropriate mitigation action identified properties
- -Acquisition of identified properties
- -Rebuild and relocate Williams Street Sewer Pumping Station
- -Rehabilitation and install new pump for stormwater for Lower Borough area

-Rebuild Riverview Pump Station
-Install early warning system

Borough of Wanaque:

-Backup power
-Dredge/deepen/widen Post Brook/Post Brook Tributary
-Stormwater management culvert upgrade
-Floodproof floodprone identified properties
-Determine properties at risk due to failure of Monksville Dam and Raymond Dam

Township of Wayne:

-Backup power
-Acquisition of identified properties
-Old Wayne Dike upgrade
-Planning and Zoning on-going project to review and revise regulations

Township of West Milford:

-Backup power
-Upgrade and improve stormwater culverts
-Armor Lower Pond Dam at Bubbling Spring
-Stream bank stabilization of banks of High Crest Dam
-Replace Crescent Road Bridge, High Crest Drive Bridge
-Dredge Belcher Creek

Borough of Woodland Park (formerly West Paterson):

-Backup power
-Construct a bypass tunnel from the Peckman River to divert water and avoid flash flooding
-Construct dikes, improve conveyance, flood tunnel along the Passaic River
-Install emergency flood warning system
-Elevate and/or floodproof repetitive loss properties
-Determine properties at risk due to New Street Reservoir Dam

Other flood protection measures are listed below:

In the City of Clifton, a major portion of Plog Brook is piped through a series of concrete pipes to alleviate much of the flooding along this small stream. The Broad Street Bridge over the Third River was rebuilt and has reduced flooding. A diked ponding area upstream of Conrail along Weasel Brook has been constructed, and information on this project was included in the flood alleviation plan for Weasel Brook entitled Report on the Works and Improvements for Alleviation of Floods on Weasel, Wabash and MacDonald Brooks, Clifton, New Jersey (City of Clifton, 1947). Additionally, a number of streams in the City have been piped at various times in the past to reduce flooding.

In the City of Paterson, the Hillcrest Flood Relief Project was built by the City in 1957 to relieve flooding in Molly Ann Brook. It consists of an overflow weir intake leading to a 108-inch conduit that conveys excess Molly Ann Brook flow to the Passaic River below Great Falls. The project also includes two overflow relief sewers and a bypass culvert around a building constructed over the brook.

Presently, the USACE is undertaking a long-term flood control project along Molly Ann Brook in the City of Paterson and Borough of Haledon. This project involves channel improvements, bridge modifications or replacements, and the removal of one structure (a warehouse). Channel improvements include widening, deepening, and the addition of concrete cantilever retaining walls and U-walls, as well as bank reinforcement where necessary. The length of this project is approximately 2.5 miles and it extends from its confluence with the Passaic River in the City of Paterson to Church Street in the Borough of Haledon. This project is designed to provide protection from a 2-percent-annual-chance (50-year) storm. The effects of this project have been incorporated into the [*date*] FIS.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the county, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this FIS. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the county at the time of completion of this FIS. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for the flooding sources studied in detail affecting the county.

Prior to the September 27, 2007, FIS, the hydrologic procedures used to establish peak discharge-frequency relationships for each flooding source studied by detailed approximate methods in the county included Special Report 38 (U.S. Department of the Interior, 1974), drainage-discharge ratio development, Rational Method and Gage Analysis.

Special Report 38, developed by the NJDEP in cooperation with the USGS, uses a series of mathematical and graphical relationships to estimate discharge-frequency data. Various parameters such as drainage area, main channel slope, surface storage area, and an index of manmade impervious cover based on basin population and development conditions are used in this type of analysis.

The drainage-discharge ratio is determined by comparing a known discharge at a known point (gaging station) and the discharge at the area in question. The following equation was used at several streams in Passaic County to determine this relationship:

$$Q_1 / Q_2 = (A_1 / A_2)^T,$$

where Q_1 and A_1 are the known discharge from a gaging station and the associated drainage area; Q_2 and A_2 are the discharge to be calculated and the associated drainage area, and T is the transfer exponent (Water Resources Council, 1967).

The Rational Method is used for streams with a drainage area less than approximately 1 square mile. The equation for the Rational Method is:

$$Q = CIA,$$

where Q is the discharge to be calculated, C is the runoff coefficient (dependent on land use), I is the rainfall intensity for the design storm, and A is the drainage area.

Gage analysis fits annual peak flow data to a statistical distribution (Log Pearson Type III) to determine a discharge frequency relationship.

In the Borough of Bloomingdale, Special Report 38 was used to estimate the peak discharges for Cold Spring Brook, Van Dam Brook, Oakwood Lake Brook and Van Dam Brook Tributary. Discharges for Posts Brook Tributaries 1 and 2 were obtained from the FIS for the Borough of Wanaque, which analyzed the hydraulic characteristics of several spillways throughout the basin area and routed hydrographs for sub-areas to determine peak flow rates.

In the City of Clifton, Special Report 38 was used to determine the discharges using a correlation of data developed by the USGS for the Second River in Belleville, New Jersey; Weasel Brook Branch and Wabash Brook.

In the Borough of Hawthorne, peak discharges for Goffle Brook and Deep Brook were developed using Special Report 38 because both streams are ungaged.

In the Borough of Little Falls, peak discharges for the Peckman River and Great Notch Brook were developed using Special Report 38 because both streams are ungaged.

In the Borough of North Haledon, streams with drainage areas greater than 1 square mile were determined using Special Report 38, while streams having a drainage area less than 1 square mile were determined using the Rational Method.

In the City of Passaic, the log-Pearson Type III method was used to determine discharges for Weasel Brook (Water Resources Council, March 1976), as mentioned above for analysis in the City of Clifton. However, because this study was conducted prior to the study in Clifton, the unrevised drainage area of 4.45 square miles was used. Data obtained for Weasel Brook (Water Resources Council, March 1976) was also used to determine discharges for MacDonald Brook.

In the City of Paterson, discharges for Slippery Rock Brook were computed using the drainage-discharge ratio.

In the Borough of Ringwood, discharges for the 10-, 2-, and 1-percent-annual-chance storms were determined using Special Report 38 for Burnt Meadow Brook, Stephens Lake Brook, High Mountain Brook and their various branches. For areas with a drainage area less than 1 square mile, the Rational Method was used. A log-Pearson Type III analysis was used to determine the 0.2-percent-annual-chance storm discharges for the above-mentioned rivers. Discharges in the Wanaque Reservoir were computed through the use of a linear regression model of the reservoir developed from gaged inflows and outflows, based on the assumption that the reservoir is full at the start of the storm event.

In the Borough of Totowa, discharges were determined using Special Report 38 for Naachtpunkt Brook. These discharges were then modified to accurately represent the actual characteristics of the area.

In the Borough of Wanaque, Special Report 38 was used to determine the 10-, 2-, and 1-percent-annual-chance peak discharges for High Mountain Brook, High Mountain Brook Branch 2, Post Brook, Rainbow Valley Lake, Post Brook Branches 1 and 2. A log-Pearson Type III analysis was used to determine the 0.2-percent-annual-chance discharges of these streams. Discharges for Wanaque Reservoir were determined using a linear regression model of the Reservoir as described in the Ringwood analysis above.

In the Township of Wayne, Special Report 38 was used to determine the 10-, 2-, and 1-percent-annual-chance storm discharges for Jones Brook, Naachtpunkt Brook (Main and Upper Reaches), and Singac Brook Tributaries 1 and 3. A log-Pearson Type III analysis was used to determine the 0.2-percent-annual-chance storm discharges. Data for Packanack Lake was obtained from the original FIS for Wayne.

In the Township of West Milford, Special Report 38 was used to determine 10-, 2-, and 1-percent-annual-chance discharges for Longhouse Creek, Cooley Brook, Green Brook, and Morsetown Brook. A log-Pearson Type III analysis was used to develop water surface profiles in Greenwood Lake.

In the Borough of Woodland Park (formerly West Paterson), discharges for the Peckman River were determined using Special Report 38. Discharges for Pearl Brook, Slippery Rock Brook and Great Notch Brook were determined using the Rational Method.

For the September 27, 2007, FIS, the following analyses were conducted:

Information on the methods used to determine peak discharge-frequency relationships for the streams restudied as part of this countywide FIS is shown below.

All revised discharges for Molly Ann Brook, from the confluence with the Passaic River in the City of Paterson to the area downstream of County Highway 677 in the Borough of Haledon, were calculated in accordance with procedures outlined in the USGS publication entitled "Nationwide Summary of U.S. Geological Survey Regional Regression Equations for Estimating Magnitude and Frequency of Floods for Ungaged Sites, 1993," also referred to as Water-Resources Investigations (WRI) Report 94-4002 (U.S. Department of the Interior, 1994).

Flow locations were selected at various points along the reaches of the stream. Locations were first selected based on prior documented FEMA Flow Locations for prior studies of the drainage basin and USACE flow locations for the ongoing Molly Ann Brook Flood Control Project (USACE, 1993). Additional flow locations were added along the stream to provide a uniform drainage analysis of the study area.

Based on WRI Report 94-4002, the variables governing the peak stream flows for each of the flow locations are Drainage Area, Main Channel Slope, Population Density and Surface Storage Index. With the flow locations selected, the drainage area to each of the locations was delineated based on the USGS 7 ½ minute quadrangle map.

The Main Channel Slope was measured between points which are 10 percent and 85 percent of the main channel length upstream from the study site. This was measured based on the USGS 7 ½ minute quadrangle map (U.S. Department of the Interior, 1972).

The Population Density was calculated based on Census 2000 Data obtained from the New Jersey Department of Labor and Workforce Development (2001). First, the Population Density was calculated for each overall community area. A weighted value was then calculated for each incremental drainage area based on estimated community coverage.

The Surface Storage Index is the percentage of the drainage area occupied by lakes and swamps. There are two reservoirs, Oldham Pond and Haledon Reservoir, located on Molly Ann Brook upstream of the detail study limit. Neither reservoir is a significant surcharge holdout. Therefore, this study – and the USACE study as well – neglects any detention effects of these ponds. Their areas, however, are reflected in the Surface Storage Index.

One gage, USGS No. 01389765 at Overlook Avenue, North Haledon (U.S. Department of the Interior, retrieved June 6, 2006), was located along Molly Ann Brook. The historical annual peak rainfall was downloaded from the USGS website in the form of a WATSTORE file. A PEAKFQ analysis was run in accordance with the "Users Manual for Program PEAKFQ, Annual Flood Frequency Analysis Using Bulletin 17B Guidelines (U.S. Department of the Interior, 1998)."

A regression analysis was then performed at each of the flow locations in accordance with WRI Report 94-4002 to calculate flood discharges. The regression analysis was performed using the National Flood Frequency Program (NFF) (U.S. Department of the Interior, 2002). This program employs the New Jersey regional regression equations established in Special Report 38 to calculate discharges for the 50-, 20-, 10-, 4-, 2-, and 1-percent-annual-chance flood. These equations are applicable to rural and urbanized areas because they account for basin development through a population density variable. The discharges for the 0.2-percent-annual-chance flood are extrapolated by the NFF. This involves fitting a log-Pearson Type III curve to the 50- to 1-percent-annual-chance flood discharges, and extrapolation of this curve of the 0.2-percent-annual-chance flood discharge.

The governing variables along with the PEAKFQ discharges were inputted into the program. At the gage location, the PEAKFQ discharges were weighed against the regression analysis at that gage location. For each flow location within 50 percent of the drainage area upstream or downstream of a gage location, the calculated gage flow was weighed against the calculated regression analysis. For flow locations outside of the 50-percent range of a gage location, the calculated regression flow is utilized as the discharge for the flow location.

Finally, a discharge comparison was performed between the effective FIS, USACE flood protection study discharges and this study. This study exhibits higher flows that the effective FIS in part due to the various hydrologic methodologies under comparison and the significant increase in basin development of the span of 20 or more years. The flood bypass culvert located at Crosby Avenue in Haledon was not considered in this hydrologic study; however, its effect is reflected in the hydraulic analysis.

For the [*date*] FIS the following analyses were conducted:

Flood flow frequencies for Acid Brook, Branch 3-5-2 Weasel Brook, Buttermilk Falls, Cupsaw Brook, Dowling Brook, Haycock Brook, High Mountain Brook (upstream), Molly Ann Brook, the Pequannock River between Oak Ridge Reservoir and the Charlotteburg Reservoir, Singac Brook, Weasel Brook and West Brook were computed using USGS Regional Regression equations for the State of New Jersey. For Acid Brook, Molly Ann Brook, Singac Brook, and West Brook, NJDEP's 2007 Land Use/Land Cover data, available at http://www.state.nj.us/dep/gis/lulc07shp.html, were used to determine storage. For Buttermilk Falls, Cupsaw Brook, Dowling Brook, Haycock Brook, High Mountain Brook, the Pequannock River between Oak Ridge Reservoir and the Charlotteburg Reservoir, Branch 3-5-2, Weasel Brook and Weasel Brook, an online tool – StreamStats - developed by the USGS, was used (http://water.usgs.gov/osw/streamstats/new_jersey.html).

HEC-HMS (version 3.4) was used to develop peak discharge frequency relationships for Meadow Brook, Packanack Brook, Pompton River, and Pompton River UNT (Unnamed Tributary). Rainfall data for different recurrence intervals were obtained from NOAA Atlas 14 (http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=nj) and land use data for the watershed

areas within the New Jersey boundary were obtained from NJDEP (Soils data were obtained from the Natural Resources Conservation Service [NRCS] (http://www.nrcs.usda.gov/wps/portal/nrcs/site/soils/home/) The NRCS curve number method was used to estimate loss and the Soil Conservation Service unit hydrograph was used for flow transformation. Routing was performed by Muskingum Cunge and Modified Puls method. Recession base flow was simulated for watersheds draining into the Ramapo River and the Pequannock River. For other streams, base flow was not considered.

A HEC-HMS model of the Pompton River Basin was calibrated to four storm events including Hurricane Irene (August 27-29, 2011) (RAMPP, 2013). The hydrology of the Pompton River watershed is significantly influenced by numerous lakes and reservoirs with varying degrees of storage capacity and flow attenuation characteristics. The existing model development by the RAMPP team only includes storage areas that are capable of affecting 1-percent-annual-chance discharges. The following reservoirs are included in the basin model:

- Charlotteburg Reservoir
- Clinton Reservoir
- Echo Lake Spillway Dam
- Greenwood Lake
- Monksville Reservoir
- Oak Ridge Reservoir
- Wanaque Reservoir

The Canistear Reservoir was not modeled because it is located on a tributary headwater well upstream of the main river system and was identified as providing little storage by the USACE (1995).

Flood flow frequencies for the Pequannock River, between the downstream West Milford corporate limits and the confluence with Van Dam Brook, were based on the statistical analysis of USGS gage data of gage 01382500 at Macopin Intake Dam using a systematic record of 73 years. Flood flow frequencies for Ringwood Creek were based on a statistical analysis of USGS gage data of gage 01384500 near Wanaque. All procedures were performed in accordance with the USGS "Methodology for Estimation of Flood Magnitude and Frequency for New Jersey Streams" Scientific Investigations Report 2009-5167 (SIR 2009-5167), by Watson and Schopp. As indicated in this report, Passaic County is located in the non-Coastal Plain Region; therefore, the generalized skew and standard error were 0.41 and 0.53, respectively. SIR 2009-5167 also indicates this portion of Passaic County to be located in the Glaciated Valley and Ridge flood-frequency region, so an exponent, b, of 0.59 was used for estimating flood frequencies for ungaged sites along the stream.

Flood flow frequencies for the Ramapo River and the Pompton River in Passaic County were developed from the calibrated unsteady HEC-RAS model. The hydrographs input into the unsteady HEC-RAS model were developed using the HEC-HMS model. The details on calibration of the unsteady HEC-RAS model can be found in the Hydraulics section of this report.

Flood flow frequencies for the Third River in Passaic County (with nodes located upstream of confluence with the Passaic River, at the Garden State Parkway, and just downstream of Grove Street) are unchanged from the previous effective FIS dated September 28, 2007, for the community. As specified in that study, these discharges were computed using the USGS Special Report 38.

Flood flow frequencies for the Wanaque River were unchanged from the previous effective FIS dated September 28, 2007. These were calculated using log-Pearson Type III equations.

RAMPP completed hydrologic modeling for the Passaic River using HEC-HMS 3.5 (USACE) in 2013. The study consisted of five HEC-HMS models (Pompton, Rockaway, Whippany, Upper Passaic and Central Passaic Watersheds) linked to four approximate unsteady state and one detailed unsteady state HEC-RAS models. The detailed unsteady model was further linked below the Little Falls USGS Gaging Station to two more HEC-HMS models (Saddle and Lower Passaic Watersheds).

This combined HEC-HMS/unsteady state HEC-RAS modeling system was developed to accommodate the unique storage and flow conditions, which can include flow reversals in the portion of Passaic between the USGS gages at Chatham and Little Falls (Central Passaic Watershed). The calibration of individual HEC-HMS basin models was completed with available gage data. An unsteady state detailed HEC-RAS model, however, completes the hydrologic model calibration for the modeling; it relies on the stage data for USGS gages located along the Passaic River.

The two HEC-HMS basin models (Saddle and Lower Passaic Watersheds) below the USGS gage at Little Falls rely on the discharge hydrograph from the upstream detailed unsteady state HEC-RAS model. Only a calibration of the Saddle Basin HEC-HMS model was completed for this portion of the study; no recent gage data were available for use in the calibration of the Lower Passaic HEC-HMS model.

Individual HEC-HMS basin models are most accurate at the downstream gage locations used in their calibration. There are numerous lakes and reservoirs in those basins that are not reflected in these models, but which may be of some local importance. The effects of these features in the basin models were accounted for with adjustments to curve numbers (CNs) and lag times. As a consequence, sub-basins located upstream of gage locations may not accurately predict 1-percent-annual-chance flows within these HEC-HMS models. The final calibration of the model is only valid for the HEC-HMS/unsteady HEC-RAS model linkage, and as such, the final hydrologic model calibration is only valid for the discharges predicted along the 41.2 Passaic River study reach using the unsteady state HEC-RAS model.

In addition, the New Jersey Flood Hazard Area Design Flood (NJFHADF) was computed for the USGS gaging stations and the additional flow locations. The NJFHADF is equal to the 1-percent-annual-chance flood plus an additional 25 percent in flow, not to exceed the 0.2-percent-annual-chance flood. The NJFHADF

boundary is intended to regulate disturbance to the land and vegetation within the flood hazard area of a water body. This regulation is set forth by the State of New Jersey Flood Hazard Area Control Act Rules N.J.A.C. 7:13.

A summary of the drainage area-peak discharge relationships for all the streams studied by detailed methods is shown in Table 6, "Summary of Discharges."

TABLE 6 – SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
ACID BROOK					
At mouth	0.91	200	337	407/508[1]	588
2,300 feet upstream of I-287	0.83	199	339	410/513[1]	598
BELCHER CREEK					
At mouth	14.30	1,290	2,110	2,590	4,610
At confluence with Cooley Brook	10.60	970	1,590	1,950	3,470
At confluence with Morsetown Brook	8.0	740	1,230	1,510	2,700
At Pinecliff Lake spillway	7.0	640	1,060	1,310	2,330
At Pinecliff Lake	5.3	750	1,240	1,540	2,740
At confluence with Belcher Creek Branch 2	3.0	480	820	1,030	1,830
At Madison Avenue	2.6	430	730	920	1,630
At Morris Avenue	1.8	330	560	710	1,260
BELCHER CREEK BRANCH 1					
At mouth	0.30	100	140	160	280
BELCHER CREEK BRANCH 2					
At mouth	2.50	370	630	790	1,380
At confluence with Belcher Creek Branch 1	0.50	170	220	260	460

[1] 1-percent-annual-chance discharge / New Jersey Flood Hazard Area Design Flood (NJFHADF) discharge; the NJFHADF discharge is equal to the 1-percent—annual-chance flow plus an additional 25 percent in flow, and not to exceed the 0.2-percent-annual-chance flow.

TABLE 6 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
BRANCH, WEASEL BROOK					
Upstream of confluence with Weasel Brook	1.05	385	610	745	1,180
Approximately 1,500 feet downstream of Circle Avenue	0.59	250	395	485	765
BRANCH 3-5-2, WEASEL BROOK					
Upstream of confluence with Weasel Brook	0.66	299	481	568	789
BURNT MEADOW BROOK					
At mouth	4.05	520	880	1,110	1,670
At Magee Road	3.54	510	860	1,080	1,610
At confluence with Burnt Meadow Brook Branch 3	2.65	360	620	790	1,180
BURNT MEADOW BROOK BRANCH 5					
At mouth	0.22	50	80	90	180
Entering Harrison Mt. Lake	0.10	45	70	80	165
BUTTERMILK FALLS (FALLS BROOK)					
At confluence of Molly Ann Brook	0.43	201	307	355/444[1]	475
COLD SPRING BROOK					
At its confluence with Pequannock River	1.49	128	224	279	421
COOLEY BROOK					
At mouth	3.70	560	950	1,210	2,120
At confluence with Green Brook	1.60	260	460	590	1,030

[1] 1-percent-annual-chance discharge / New Jersey Flood Hazard Area Design Flood (NJFHADF) discharge; the NJFHADF discharge is equal to the 1-percent-annual-chance flow plus an additional 25 percent in flow, and not to exceed the 0.2-percent-annual-chance flow.

TABLE 6 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
CUPSAW BROOK					
Approximately 2,250 feet downstream of Greenwood Lake Turnpike	4.65	638	1,020	1,210/1,510[1]	1,680
Just downstream of Greenwood Lake Turnpike	4.38	626	1,010	1,190/1,490[1]	1,670
Approximately 1,790 feet downstream of Cupsaw Drive	4.24	524	845	1,010/1,260[1]	1,410
Approximately 4,690 feet upstream of Cupsaw Lake Dam	1.62	249	406	484/605[1]	685
Approximately 5,120 feet upstream of Cupsaw Lake Dam	1.60	240	392	467/584[1]	660
CUPSAW BROOK BRANCH 1					
At mouth	0.26	42	54	60	170
At lower lake spillway	0.21	37	47	52	150
Entering lower lake	0.18	48	62	67	190
At upper lake spillway	0.16	40	52	56	170
Entering upper lake	0.05	35	45	52	88
CUPSAW BROOK BRANCH 2					
At mouth	0.11	50	70	80	140
CUPSAW BROOK BRANCH 3					
At mouth	1.13	200	360	450	790
CUPSAW BROOK BRANCH 4					
At mouth	0.52	180	250	290	510
DEEP BROOK					
At mouth	1.90	460	780	1,050	1,700
At upstream Hawthorne corporate limits	1.60	415	690	940	1,530

[1] 1-percent-annual-chance discharge / New Jersey Flood Hazard Area Design Flood (NJFHADF) discharge; the NJFHADF discharge is equal to the 1-percent-annual-chance flow plus an additional 25 percent in flow, and not to exceed the 0.2-percent-annual-chance flow.

TABLE 6 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
DOWLING BROOK					
Near confluence with Passaic River, south of Mcbride Ave	0.74	373	591	694/868[1]	953
At Hromiak Terrace	0.34	210	336	395/494[1]	547
At mouth – 60 feet upstream of Lackawanna Ave	0.13	114	189	225/281[1]	319
ERSKINE BROOK					
At mouth	1.19	100	170	220	350
At lower Erskine Lake spillway	0.76	17	23	29	62
At upper Erskine Lake spillway	0.33	34	51	64	137
GLEN PLACE BROOK					
At confluence with Molly Ann Brook	0.14	165	215	235	320
GOFFLE BROOK					
At mouth	8.90	1,330	2,300	2,800	4,200
Just downstream of Deep Brook	7.20	1,150	1,970	2,400	3,600
Just upstream of Deep Brook	5.30	940	1,600	2,000	3,050
At upstream Hawthorne corporate limits	4.60	850	1,450	1,840	2,840
GREAT NOTCH BROOK					
At mouth	1.05	420	680	800	1,130
Approximately 550 feet downstream of US Highway 46 in Little Falls	0.50	240	390	470	680
GREEN BROOK					
At mouth	2.0	330	570	720	1,270
GREENWOOD LAKE					
At spillway	27.10	907	1,640	2,060	3,350

[1] 1-percent-annual-chance discharge / New Jersey Flood Hazard Area Design Flood (NJFHADF) discharge; the NJFHADF discharge is equal to the 1-percent-annual-chance flow plus an additional 25 percent in flow, and not to exceed the 0.2-percent-annual-chance flow.

TABLE 6 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
HAYCOCK BROOK					
At the confluence with Ramapo River	4.11	448	673	781/976[1]	1,040
Approximately 25 feet downstream of Pines Lake Drive West	3.68	428	643	746/933[1]	987
Approximately 160 feet downstream of Pines Lake Drive	2.73	341	514	596/745[1]	792
Approximately 1,830 feet upstream of Tamarack Road	1.85	261	392	455/569[1]	602
Approximately 50 feet downstream of Berdan Ave	0.23	94.7	162	195/244[1]	284
HIGH MOUNTAIN BROOK (Downstream)					
At mouth	2.05	320	550	680	1,030
At Wanaque corporate limits	0.91	230	330	380	570
At confluence with High Mountain Brook Branch 4	0.11	40	55	60	110
HIGH MOUNTAIN BROOK (Upstream)					
At its confluence with Stephens Lake Brook Branch 2	0.93	167	270	321/401[1]	448
Approximately 350 feet upstream of Conklintown	0.93	169	273	324/405[1]	453
Approximately 640 feet upstream of Conklintown	0.93	170	275	327/409[1]	457
Just upstream of Cannon Ball Drive	0.82	146	235	279/349[1]	389
Just downstream of Cannon Ball Drive	0.85	152	245	291/364[1]	406
Just downstream of Stephens Lake Road	0.73	139	223	265/331[1]	368

[1] 1-percent-annual-chance discharge / New Jersey Flood Hazard Area Design Flood (NJFHADF) discharge; the NJFHADF discharge is equal to the 1-percent-annual-chance flow plus an additional 25 percent in flow, and not to exceed the 0.2-percent-annual-chance flow.

TABLE 6 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
HIGH MOUNTAIN BROOK (Upstream) (continued)					
Just downstream of Stephens Lake Road	0.69	142	228	271/339[1]	377
Approximately 1,370 feet upstream of Stephens Lake Dam	0.46	107	173	206/258[1]	287
Approximately 3,020 feet upstream of Stephens lake Dam	0.32	89	145	172/215[1]	242
HIGH MOUNTAIN BROOK 2					
At mouth	2.16	430	730	920	1,600
At Skyline Drive	1.92	350	600	760	1,340
At James Drive	1.11	170	310	400	700
JONES BROOK					
At its confluence with Ramapo River	4.28	184	313	380	560
At the confluence of Haycock Brook	0.33	79	138	173	263
LONGHOUSE CREEK					
At NY/NJ corporate limits	7.60	280	470	580	940
At upper Mount Laurel Lake spillway	6.90	240	420	520	840
At lower Mount Laurel Lake spillway	1.90	120	220	270	440
At Lake Lookover	1.20	110	200	260	420
MACDONALD BROOK					
At mouth	2.90	560	890	1,070	1,620
At Lake spillway in Ringwood	1.90	400	640	770	1,160
MEADOW BROOK					
At mouth	5.82	751	1,212	1,443/1,804[1]	2,025
Approximately 1,660 feet upstream of Warren Hagstrom Blvd.	5.54	734	1,193	1,424/1,780[1]	2,009

[1] 1-percent-annual-chance discharge / New Jersey Flood Hazard Area Design Flood (NJFHADF) discharge; the NJFHADF discharge is equal to the 1-percent-annual-chance flow plus an additional 25 percent in flow, and not to exceed the 0.2-percent-annual-chance flow.

TABLE 6 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
MEADOW BROOK (continued)					
Approximately 600 feet downstream of meadow Brook Ave	5.3	740	1,207	1,443/1,804[1]	2,042
Approximately 750 feet upstream of Conklintown Road	3.16	501	816	975/1,219[1]	1,378
At Ringwood corporate limits	2.79	430	700	870	1,550
At lower Skyline Lake spillway	2.76	390	660	820	1,460
At upper Skyline Lake spillway	2.52	410	690	870	1,540
MEADOW BROOK BRANCH 2					
At mouth	0.16	50	60	70	130
At Lake spillway in Ringwood	0.09	16	28	35	75
MOLLY ANN BROOK					
At its confluence with the Passaic River	7.94	1,750	2,680	3,210	4,720
Just upstream of Crosby Avenue diversion	7.39	1,680	2,580	3,090	4,560
At West Broadway	6.82	1,620	2,500	3,010	4,460
At Haledon Street	6.16	1,510	2,350	2,840	4,230
Approximately 1,800 feet downstream of Overlook Ave	5.99	1,239	1,923	2,247/2,809[1]	3,057
Approximately 940 feet downstream of Squaw Brook Road	4.71	1,052	1,622	1,890/2,363[1]	2,556
Approximately 230 feet upstream of High Mountain Road	2.75	819	1,322	1,565/1,956[1]	2,190
Approximately 1,000 feet upstream of Sicomac Road	2.26	669	1,079	1,276/1,595[1]	1,786
Approximately 2,800 feet upstream of Sicomac Road	1.64	443	670	776/970[1]	1,034

[1] 1-percent-annual-chance discharge / New Jersey Flood Hazard Area Design Flood (NJFHADF) discharge; the NJFHADF discharge is equal to the 1-percent-annual-chance flow plus an additional 25 percent in flow, and not to exceed the 0.2-percent-annual-chance flow.

TABLE 6 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
MOLLY ANN BROOK TRIBUTARY 3					
At its confluence with Molly Ann Brook	0.31	225	295	320	430
MOLLY ANN BROOK TRIBUTARY 4					
At its confluence with Molly Ann Brook	0.18	165	215	235	320
At Mead Avenue	0.02	90	120	130	190
MOLLY ANN BROOK TRIBUTARY 6					
At its confluence with Molly Ann Brook	0.17	125	160	180	250
MORSETOWN BROOK					
At mouth	1.40	250	410	520	930
At Marshall Hill Road	1.10	180	310	390	700
At confluence with Belcher Creek Branch 1	0.60	123	178	205	350
At confluence with Belcher Creek Branch 2	0.30	42	66	80	165
At Capri Lake spillway	0.30	38	60	72	150
NAACHTPUNKT BROOK					
At confluence with Singac Brook	1.71	300	460	552	855
NAACHTPUNKT BROOK (UPPER REACH)					
Upstream of Totowa Road	0.72	142	244	306	459
PACKANACK BROOK					
Approximately 420 feet downstream of US 202	3.53	520	1,069	1,400/1,750[1]	2,891
3,840 feet downstream of Packanack Lake Dam	3.20	479	1,006	1,324/1,655[1]	2,800

[1] 1-percent-annual-chance discharge / New Jersey Flood Hazard Area Design Flood (NJFHADF) discharge; the NJFHADF discharge is equal to the 1-percent-annual-chance flow plus an additional 25 percent in flow, and not to exceed the 0.2-percent-annual-chance flow.

TABLE 6 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
PACKANACK BROOK (continued)					
2,950 feet downstream of Packanack Lake Dam	2.95	518	1,098	1,429/1,786[1]	2,798
Packanack Lake Dam	2.48	247	615	1,043/1,304[1]	2,479
3,430 feet upstream of Packanack Lake Dam	2.07	520	1,069	1,400/1,750[1]	2,891
PASSAIC RIVER[2]					
At downstream Passaic corporate limit	910	17,746	26,401	30,772	43,185
Above Third River	889	14,945	21,718	25,184	35,952
At USGS Gage (No. 3895) at Little Falls	762	11,437	17,903	21,469	30,008
PEARL BROOK					
At confluence with Passaic River	0.24	246	320	345	460
At Borrego Drive	0.17	61	81	101	156
PECKMAN RIVER					
At confluence with Passaic River	9.70	1,220	1,800	2,200	3,400
At downstream Little Falls corporate limits	9.55	1,180	1,780	2,160	3,350
PEQUANNOCK RIVER					
At downstream Pompton Lakes corporate limits	204.86	7,355	11,227	13,374	18,364
At confluence of Wanaque River	94.12	3,854	6,036	7,264	10,165
At confluence of Van Dam Brook	81.10	3,230	5,168	7,456	7,711
At confluence of Stone House Brook	73.50	3,048	4,877	7,036	7,276
At confluence of Oakwood Lake Brook	72.70	3,028	4,845	6,990	7,229

[1] 1-percent-annual-chance discharge / New Jersey Flood Hazard Area Design Flood (NJFHADF) discharge; the NJFHADF discharge is equal to the 1-percent-annual-chance flow plus an additional 25 percent in flow, and not to exceed the 0.2-percent-annual-chance flow.

[2] Upstream of Dundee Dam to the upstream Passaic Corporate Limit the discharges are based on an unsteady state HEC-RAS Model for which maximum water surface elevation and maximum discharge do not always occur at the same time. This modeling needs to be referenced for discharges along this portion of the Passaic.

TABLE 6 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
PEQUANNOCK RIVER (continued)					
At confluence of Cold Spring Brook	70.70	2,979	4,690	6,766	6,998
At downstream West Milford corporate limits	68.80	2,931	4,690	6,766	6,998
At Rockaway-Kinnelon corporate limits	50.90	2,040	3,200	4,725	5,240
At confluence of Charlotteburg Reservoir	50.20	2,030	3,190	4,725	5,240
Just below confluence with Kanouse Brook	47.50	1,950	3,070	4,538	5,040
Upstream of confluence with Kanouse Brook	43.50	1,830	2,890	4,275	4,750
At Rockaway-Jefferson corporate limits	43.20	1,840	2,890	4,288	4,760
Upstream of confluence with Clinton Brook	31.90	1,490	2,350	3,475	3,860
Upstream of confluence with Walloce Pond Brook	28.20	1,390	2,190	2,600/3,250[1]	3,610
Outlet of Oak Ridge Reservoir	27.0	1,410	2,230	2,640/3,300[1]	3,670
POMPTON RIVER					
At mouth – confluence with Passaic River	355	18,094	31,231	387,639/48,300[1]	60,668
POMPTON RIVER UNNAMED TRIBUTARY					
At mouth	0.28	80	178	239/299[1]	60,668
Approximately 110 feet upstream of railroad	0.26	78	175	235/294[1]	425
Approximately 1,970 feet upstream of railroad	0.23	74	172	229/287[1]	402
POST BROOK					
At Wanaque corporate limits	*	395	680	820	1,370
At Union Avenue	*	295	525	630	1,050
At First Avenue	*	285	490	590	985

*Data Not Available

[1] 1-percent-annual-chance discharge / New Jersey Flood Hazard Area Design Flood (NJFHADF) discharge; the NJFHADF discharge is equal to the 1-percent-annual-chance flow plus an additional 25 percent in flow, and not to exceed the 0.2-percent-annual-chance flow.

TABLE 6 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
POST BROOK (continued)					
At confluence with Post Brook Branch 2	*	220	350	425	710
At Doty Road	*	215	290	330	550
POST BROOK (WEST MILFORD)					
At West Milford corporate limits	2.00	130	220	280	460
At confluence with Post Brook Branch 3	1.20	90	160	200	340
At Gordon Lake spillway	1.10	90	160	200	340
At Algonquin Waters spillway	0.60	41	65	77	182
At Algonquin Waters	0.30	100	140	170	300
POST BROOK BRANCH 1					
At mouth	*	130	205	250	420
At Union Avenue	*	90	130	155	260
POST BROOK BRANCH 2					
At mouth	0.32	100	140	160	280
At Thomas Lake Spillway	0.16	50	70	85	150
POST BROOK BRANCH 3					
At mouth	0.50	150	210	250	440
At Weaver Road	0.40	120	170	200	350
POST BROOK BRANCH 4					
At mouth	0.10	11	17	21	41
At Weaver Road	0.10	5	8	10	14

*Data not available

[1] 1-percent-annual-chance discharge / New Jersey Flood Hazard Area Design Flood (NJFHADF) discharge; the NJFHADF discharge is equal to the 1-percent-annual-chance flow plus an additional 25 percent in flow, and not to exceed the 0.2-percent-annual-chance flow.

TABLE 6 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
RAMAPO RIVER					
At downstream Pompton Lakes corporate limits	160	10,562	17,079	20,574/25,718[1]	32,316
At upstream Pompton Lakes corporate limits	154	4,508	14,075	16,852/21,065[1]	25,141
RINGWOOD CREEK					
Approximately 1,030 feet downstream of Margaret King Road	16.90	1,038	1,948	2,480/3,100[1]	4,184
Approximately 213 feet upstream from Farm Road	16.40	1,020	1,914	2,437/3,046[1]	4,110
RINGWOOD CREEK BRANCH 1					
At mouth	0.26	80	110	130	230
SINGAC BROOK					
At its confluence with Passaic River	11.82	1,475	2,282	2,664/3,330[1]	3,625
Just upstream of railroad bridge	11.45	1,442	2,.231	2,604/3,255[1]	3,542
Approximately 1,070 feet upstream of I-80 interchange	10.71	1,385	2,140	2,496/3,120[1]	3,391
Approximately 890 feet upstream Continental Drive	8.73	1,217	1,880	2,193/2,741[1]	2,977
Approximately 1,210 feet upstream of French Hill Road	7.0	1,192	1,847	2,157/2,696[1]	2,935
Approximately 3,040 feet upstream of French Hill Road	6.96	1,078	1,672	1,953/2,441[1]	2,658
Approximately 1,270 feet upstream of Preakness Ave	4.45	757	1,178	1,376/1,720[1]	1,877
Just downstream of Pike Drive	1.79	371	575	670/838[1]	909
Approximately 200 feet upstream of Valley Road	1.45	258	401	467/584[1]	636

[1] 1-percent-annual-chance discharge / New Jersey Flood Hazard Area Design Flood (NJFHADF) discharge; the NJFHADF discharge is equal to the 1-percent-annual-chance flow plus an additional 25 percent in flow, and not to exceed the 0.2-percent-annual-chance flow.

TABLE 6 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
SLIPPERY ROCK BROOK					
At downstream West Paterson corporate limits	0.80	130	220	300	385
At upstream end of Barbours Pond	0.31	100	180	240	315
At confluence with the Passaic River	0.90	200	300	340	450
SQUAW BROOK					
At its confluence with Molly Ann Brook	1.09	330	545	670	970
At the Lake near Indian Trail	0.44	185	240	260	350
STEPHENS LAKE BROOK					
At Ringwood corporate limits	1.87	320	550	680	1,030
STEPHENS LAKE BROOK BRANCH 1					
At Conklintown Road	0.17	70	95	110	190
STEPHENS LAKE BROOK BRANCH 2					
At mouth	0.41	130	190	210	380
At Ringwood corporate limit	0.26	85	120	140	240
At Green Road	0.25	85	120	140	240
THIRD RIVER					
Upstream of confluence with Passaic River	13.20	2,970	3,780	4,110	5,525
At Joralemon Street	9.00	2,180	2,775	3,020	4,075
At confluence with Third River Tributary 1	5.84	1,275	1,913	2,300	3,080
At Garden State Parkway	3.14	1,010	1,290	1,400	1,880
At the Montclair corporate limits	3.00	630	948	1,295	1,458
Just downstream of Grove Street	1.64	620	790	860	1,155
TRIBUTARY 1 TO POSTS BROOK					
At Twiliger Lake spillway	*	75	110	130	220

*Data not available

TABLE 6 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
TRIBUTARY 1 TO POSTS BROOK (continued)					
At Lower Morse Lake spillway	*	30	50	80	135
At Lake Iosco spillway	*	6	42	76	130
At Glen Wild Lake spillway	*	30	50	60	115
TRIBUTARY 2 TO POSTS BROOK					
At downstream Bloomingdale corporate limits	*	95	130	150	250
At Lake Iosco spillway	*	19	83	136	225
TRIBUTARY 1 TO SINGAC BROOK					
At its confluence with Singac Brook	1.32	204	348	433	646
TRIBUTARY 3 TO SINGAC BROOK					
At its confluence with Singac Brook	1.03	215	363	452	670
At its confluence with Singac Brook	1.03	215	363	452	670
At its confluence with Pequannock River	*	5,570	8,760	10,710	15,600
At Ringwood corporate limits	*	5,570	8,760	10,710	15,600
At the confluence with the Pequannock River	97.70	5,984	12,107	15,569	25,007
At downstream Wanaque corporate limits	97.70	5,570	8,760	10,710	15,600
At Raymond Dam spillway	90.40	5,570	8,760	10,710	15,600
At USGS Gage No. 01384000 at Monks	40.40	2,380	4,470	5,670	9,460
TRIBUTARY TO VAN DAM BROOK					
At its confluence with Van Dam Brook	0.27	82	141	177	267
VAN DAM BROOK					
At its confluence with the Pequannock River	0.70	215	359	446	656

*Data not available

TABLE 6 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
VAN DAM BROOK (Continued)					
At the confluence of Tributary to Van Dam Brook	0.36	139	235	294	438
WABASH BROOK					
Upstream of Confluence with Passaic River	1.20	400	635	770	1,200
WANAQUE RIVER					
Approximately 1,113 feet downstream of Corning Avenue		5,984	12,107	15,569/19,461[1]	25,007
Approximately 88 feet upstream of Route 511		5,570	8,760	10,710/13,388[1]	15,600
WEASEL BROOK					
At mouth	7.10	1,140	1,810	2,190	3,300
At downstream Clifton corporate limits	5.25	945	1,505	1,820	2,745
At USGS Gage No. 013920000 at Jewett Avenue	4.10	785	1,250	1,510	2,280
At Clifton Avenue	2.85	748	1,160	1,350	1,840
Just above confluence with Plog Brook	2.89	605	960	1,160	1,755
Just above confluence with Weasel Brook Branch 3-5-2	1.97	594	929	1,090	1,480
Just above confluence with Weasel Brook Branch	0.42	140	225	275	415
WEST BROOK					
Approximately 2,440 feet upstream of West Brook Road	11.72	1,225	1,992	2,380/2,975[1]	3,426
Approximately 220 feet downstream of Magee Road	7.39	933	1,517	1,813/2,283[1]	2,610
Approximately 2,500 feet upstream of Magee Road	5.91	818	1,33.	1,589/2,000[1]	2,287

[1] 1-percent-annual-chance discharge / New Jersey Flood Hazard Area Design Flood (NJFHADF) discharge; the NJFHADF discharge is equal to the 1-percent-annual-chance flow plus an additional 25 percent in flow, and not to exceed the 0.2-percent-annual-chance flow.

TABLE 6 – SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs)			
		10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
WEST BROOK BRANCH 7					
At Upper Mountain Glen Lake	0.10	28	40	95	89
At Lindy Lake spillway	0.10	26	37	42	82

The stillwater elevations have been determined for the 10-, 2-, 1-, and 0.2-percent-annual-chance floods for the flooding sources studied by detailed methods and are summarized in Table 7, "Summary of Stillwater Elevations."

TABLE 7 - SUMMARY OF STILLWATER ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (feet NAVD88)			
	10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
LOWER TWIN LAKE				
Entire shoreline within the Borough of Pompton Lakes	207.9	209.1	209.8	212.6
PACKANACK LAKE				
Entire shoreline within the Township of Wayne	177.2	*	179.2	*
GREENWOOD LAKE				
Entire shoreline within the Township of West Milford	619.8	620.6	621.0	622.1

*Data not available

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM

Prior to the September 27, 2007, FIS, the following hydraulic analyses were performed:

For streams studied by detailed methods within Passaic County, water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (USACE, 1973 and USACE, 1974), with the exception of Haledon Reservoir's outlet structures. The computer

program was judged inappropriate for this application and was replaced by a hand calculation. The locations of all cross sections were taken at close intervals above and below bridges and culverts in order to compute the significant backwater effects of these structures in urbanized areas.

In the Borough of Bloomingdale, cross-section data for the backwater analyses were obtained from aerial photographs (Quinn and Associates, Aerial Photographs, Borough of Bloomingdale, 1972), and below-water sections were obtained by field measurement. All bridges and culverts were field-surveyed to obtain elevation data and structural geometry.

For the hydraulic analyses, starting water-surface elevations for Posts Tributary 1 and Posts Tributary 2 were obtained from the FIS for the Borough of Wanaque. Starting water-surface elevations for the remaining streams studied by detailed methods were determined by the slope/area method.

In the City of Clifton, streams studied by detailed methods, channel cross sections and partial overbank cross sections were obtained through field surveys. The overbanks were extended using topographic maps. In areas where the topographic maps did not indicate the recent development, full cross sections of the streams were taken. All bridges were field surveyed to obtain elevation data and structural geometry.

The starting water-surface elevations for Wabash Brook were determined by normal depth for the floodway analysis, and concurrent peaks were assumed with the Passaic River for multiple runs. Concurrent peaks were assumed to yield the highest logical water-surface elevations for use as a planning tool. Starting water-surface elevations for Weasel Brook Branch were taken at their confluence with Weasel Brook.

For areas studied by approximate methods, the depth-discharge frequency relationship developed by the State of New Jersey and USGS (New Jersey Department of Conservation and Economic Development, 1964) was used to determine the approximate 1-percent-annual-chance flood elevations.

The hydraulic analysis for the Borough of Haledon has been revised for this Countywide FIS and can be found at the end of this section.

In the Borough of Hawthorne, the cross sections for the backwater analyses of Goffle Brook and Deep Brook were determined by a field-survey of the channel data supplemented with overbank data obtained from the topographic survey (Geod Aerial Mapping, Field Brook for Topographic Maps of the Borough of Hawthorne, 1976).

The starting elevations for Goffle Brook were taken from the Passaic River profiles, while the starting elevations for Deep Brook were taken from the Goffle Brook profiles.

In the Township of Little Falls, cross sections for the Passaic River were taken from the 1938 USACE survey. This information was field-checked and supplemented where appropriate with the 1935 WPA Survey and a 1976 topographic survey (Geod

Corporation, Topographic Maps, Borough of Little Falls, New Jersey, 1976). Cross sections for the Peckman River and Great Notch Brook were determined by field surveys.

The starting elevations for the Peckman River were taken from the profiles of the Passaic River and the starting elevations for Great Notch Brook were taken from the profiles of the Peckman River.

In the Borough of North Haledon, channel cross sections and required dimensions of hydraulic structures were obtained through field surveys. The overbanks were extended using topographic maps (Geod Corporation, Topographic Maps, Borough of North Haledon, December 1976).

Starting water-surface elevations for Molly Ann Brook were obtained from the mean annual flood level in the Passaic River at the confluence. Starting water-surface elevations for all other tributaries of Molly Ann Brook were taken at their confluence with Molly Ann Brook.

For Molly Ann Brook Tributary 1, studied by approximate methods, depth; discharge; frequency relationships for non-coastal plain sites in New Jersey, based upon the mean annual flood; and field investigations, along with information supplied by borough officials were used to establish flows and boundaries.

In the City of Passaic, cross sections of MacDonald Brook were taken from the 1976 topographic survey and field checked by the study contractor. In this study, a tidal elevation of 11 feet (NGVD29) was used as the minimum base flood to establish the 1-percent-annual-chance flood elevations. The mean annual tide was assumed to coincide with the 10-, 2-, 1- and 0.2-percent-annual-chance peak discharges. The starting water-surface elevations for MacDonald Brook were taken from their respective confluence with the Passaic River.

In the City of Paterson, cross sections for backwater analysis for Slippery Rock Brook were taken from the 1938 USACE Survey. This information was field-checked and supplemented where appropriate with the 1935 WPA Survey and data obtained from the County Engineer.

Starting water-surface for Slippery Rock Brook was the mean annual flood level in the Passaic River at its confluence.

In the Borough of Pompton Lakes, cross-section data for the backwater analyses were obtained from aerial photographs (Quinn and Associates, Aerial Photographs, Borough of Pompton Lakes, 1972); below-water sections were obtained by field measurement.

Starting water-surface elevations for Posts Brook were calculated by the slope/area method.

In the Borough of Ringwood, cross sections were field surveyed for backwater analyses. Starting water-surface elevations in the Wanaque Reservoir were based on a rating curve developed for Raymond Dam Spillway. Coincidental elevations in the Ringwood Creek Branch 1 and West Brook were used as starting water-surface elevations for the various branches of Ringwood Creek Branch 1. Starting water-surface elevations on Stephens Lake Brook were obtained from a study for the Borough of Wanaque. Coincidental water-surface elevations in the Wanaque Reservoir were used as starting water-surface elevations on Erskine Brook. Based on the analysis of downstream conditions and due to steep channel slopes, the starting water-surface elevation on Stephens Lake Brook Branch 1 was based on critical depth.

For streams studied by approximate methods in the Boroughs of Ringwood, Totowa, and Wanaque, the 1-percent-annual-chance flood was determined by the method described in Water Resources Circular No. 14 (New Jersey Department of Conservation and Economic Development, 1964).

In the Borough of Totowa, channel cross sections and partial overbank cross sections for Naachtpunkt Brook were obtained through field survey. The survey data and cross sections were obtained from the FIS for the Township of Wayne. The data were supplemented with information from the topographic maps referenced above. In areas where the topographic maps did not indicate the most recent developments, full cross sections of the streams were taken.

Starting water-surface elevations for Naachtpunkt Brook were taken at its confluence with Singac Brook.

In the Borough of Wanaque, starting water-surface elevations on Lake Washington (formerly Rainbow Valley Lake) were obtained from a study for the Borough of Ringwood. Coincidental water-surface elevations on Lake Washington and Wanaque River were then used as starting elevations on Post Brook, Post Brook Branch 1, Post Brook Branch 2, High Mountain Brook and High Mountain Brook Branch 2. Starting water-surface elevations on the Wanaque Reservoir were based on a rating curve developed for the Raymond Dam spillway.

In the Township of Wayne, cross sections for the Passaic River were taken from the 1938 USACE Study, supplemented where appropriate by the 1935 WPA Survey and subsequently checked against topographic maps dated 1976 (Geod Corporation, Topographic Maps, Borough of Little Falls, 1976). Cross sections for the remaining streams studied by detailed methods were obtained from topographic maps compiled from aerial photographs and below-water sections obtained by field measurements.

Starting water-surface elevations for Jones Brook, Naachtpunkt Brook and Naachtpunkt Brook (Upper Reach), Singac Brook Tributary 1 and Singac Brook Tributary 3 were determined assuming coincident peak flows.

For streams studied by approximate methods, the extent of the 1-percent-annual-chance flood was determined using Special Report 38.

In the Township of West Milford, most cross sections for backwater analyses were field surveyed.

Starting water-surface elevations for Greenwood Lake were based on a rating curve developed for the Greenwood Lake spillway. Coincidental elevations in the lake were used as starting water-surface elevations for Belcher Creek, which were in turn used to develop water-surface elevations for Belcher Creek Branches 1 and 2, Cooley Brook, Green Brook and Morsetown Brook. Due to steep channel slopes, starting water-surface elevations for Longhouse Creek and Post Brook were based on critical depth. Coincidental elevations on Post Brook were used as starting elevations on their respective branches, all located in the Township of West Milford.

For the FIS dated September 28, 2007, the following analyses were performed:

Information on the methods used to determine peak discharge-frequency relationships for Molly Ann Brook, restudied as part of this countywide FIS, is shown below.

The Molly Ann Brook study area extends upstream from its confluence with the Passaic River to Church Street, a distance of approximately 2.8 miles. This section contains 16 distinct bridge crossings as it traverses an urban area. Using aerial photographs, 83 cross-section locations were identified for use in the modeling program. These locations were then surveyed to obtain accurate information on the river channel and bank configurations. The overbanks were extended using a topographic survey dated 2006. The surveyors also obtained the necessary dimensions of the bridge structures and overlying streets.

In addition to the bridges, there is also one small low-head dam near the top of the study area, and a flood-control diversion structure located approximately 0.63 miles upstream of the confluence. The purpose of this diversion is to carry water from Molly Ann Brook directly to the base of the Great Falls on the Passaic River, which is substantially lower than the mouth of Molly Ann Brook above the Great Falls. Constructed around 1960, the diversion was intended to control flooding in low-lying areas and thus to allow for development. The land in the study area is now effectively completely built out.

The study area for the September 28, 2007 FIS has been the subject of a joint USACE/NJDEP bank and channel stabilization project, which is due for completion in 2006. The bulkheads and bridge improvements of that project have been incorporated in this hydraulic analysis.

The backwater analysis was conducted using the USACE HEC-RAS program to develop water-surface profiles (USACE, May 2005). Starting water-surface elevations were computed using normal depth. Channel and overbank geometry, as well as roughness coefficients, expansion and contraction coefficients, and bridge and culvert geometry were input into the program following the guidelines of the HEC-RAS Users Manual (USACE, November 2002).

The flood diversion mentioned above is modeled in HEC-RAS as a lateral structure, consisting of an ogee weir and a sluice gate. A rating table was developed for the weir. The gate was modeled within HEC-RAS. This diversion has a substantial effect on water-surface elevations both above and below it, as intended.

For the [*date*] FIS, the following analyses were performed:

The following flooding sources were studied by detailed methods: Acid Brook, Branch 3-5-2 Weasel Brook, Buttermilk Falls, Cupsaw Brook, Dowling Brook, Haycock Brook, High Mountain Brook (Upstream Reach), Meadow Brook, Molly Ann Brook, Packanack Brook, Passaic River, Pequannock River, Pompton River, Pompton River (Unnamed Tributary), , Ramapo River, Ringwood Creek, , Ramapo River, Ringwood Creek, Singac Brook, Third River, Wanaque River, Weasel Brook, and West Brook Reach 1. For Pompton Lake and the Ramapo River, an unsteady flow analysis was performed from the upstream county boundary to the downstream end at its confluence with the Pequannock River. For the Pompton River, an unsteady flow analysis was performed from the upstream end at the confluence of the Ramapo and Pequannock Rivers to approximately 750 feet downstream to County Road 680. The rest of the flooding sources and the Pompton River from County Road 680 to the downstream county boundary at its confluence with the Passaic River, were studied using a steady flow analysis. For the above streams studied by detailed methods within Passaic County, water-surface elevations of floods of the selected percent-annual-chance were computed using the USACE HEC-RAS (River Analysis System) Version 4.1.0 computer program (USACE, 2010). Channel information was obtained from the surveys of the natural valley and overbank information was obtained from Light Detection and Ranging (LiDAR) data. Both of these data were combined and used for the cross-section information for HEC-RAS for each of the modeled reaches.

For the unsteady flow analysis, the USACE Hydrologic Engineering Center's River Analysis System computer model (HEC-RAS) was used. The unsteady option within HEC-RAS was chosen for its ability to solve the full dynamic, Saint-Venant equations using the implicit finite difference method. Under unsteady flow, a discharge hydrograph is applied at the upstream boundary, and a discharge-stage rating (rating curve) at the downstream boundary. The unsteady methodology allows the program to calculate both stages and discharges throughout the studied reach. Due to the operation of the Pompton Lake Dam floodgates, the water-surface elevation and flow both upstream and downstream of the dam have the potential to change. Therefore, the use of the dynamic wave (discharge and stage vary over time) approach allows for the attenuation of the water as it moves downstream. For the Pompton Lake Dam, construction plans were supplied by the USACE. In order to capture the inline structure and service bridge, a combination of HEC-RAS inline structure data, blocked obstructions and lidded cross sections were used. Currently HEC-RAS does not have the ability to perform a multiple opening analysis for a bridge-inline weir combination.

Within the unsteady HEC-RAS model, inflow hydrographs were used as inputs to the model. The hydrographs were obtained from a calibrated HEC-HMS model

(described in detail under Section 3.1, Hydrologic Analyses). For Pompton unsteady model runs, a downstream boundary condition of a rating curve was used. The rating curve was constructed for USGS Gage No. 01388500 near County Road 680 from the USGS Water Watch website Custom Rating Curve Builder toolkit (U.S. Department of the Interior). All stage versus discharge data was converted from the National Geodetic Vertical Datum of 1929 (NGVD29) to the North American Vertical Datum of 1988 (NAVD88) and then the stage value was converted to water-surface elevation using the localized datum of the gage.

The rule curve data for Pompton Lake Dam was extracted from the Pompton Lake Dam, NJ, Appendix C, NY OMRR and R Manual document (USACE, 2008) as supplied by the USACE – NY District and coded into the HEC-RAS as a user-defined Rule Operation boundary condition. The rule curve operation was coded in such a way as to determine the simulated water-surface elevation for each unsteady simulation at every 15-minute interval. The water-surface elevation reading was taken at the first cross section just upstream of Pompton Lake Dam. This elevation was then used to calculate the difference in relation to the set point (target) elevation, which in turn determined the gate opening so as to mimic the rule curve data.

The goal of the hydraulic calibration was to maintain as close as possible duplication of the routed inflow hydrograph data to that of the observed hydrograph at the following USGS gages: No. 1388500 near County Road 680, No. 1388000 just upstream of Pompton Lake Dam, and the stages at gage No. 0138810 Dawes Highway Bridge. Minor modifications were made to two of the inflow hydrographs by the use of a multiplier. Various multipliers were tested for the Hurricane Irene plan because numerous high water marks were available for this event. A multiplier of 0.9 was applied to the inflow hydrograph for the Ramapo River, and 0.4 for the Pequannock River. These values yielded the best comparison between the routed hydrology and observed hydrographs as well as the observed high water marks. For calibration of the unsteady HEC-RAS model, high water marks were acquired from three different sources for the Hurricane Irene event: the USGS Water Website and field measurements from both the USACE and the USGS.

For those detailed study streams which used a steady flow analysis, water-surface elevations of the selected recurrence intervals were computed using HEC-RAS, version 4.1.0. The hydraulic analyses were based on unobstructed flow. The computed flood elevations are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail. Models were developed by extracting cross-section topographic data directly from a digital elevation model, and supplemented with field measurements for the structures. Starting water-surface elevations were based on normal depth using channel invert slopes, or where applicable (where limited detail studies extend effective detailed studies), known water-surface elevations.

The Passaic River discharges from above Dundee Dam to the upstream Corporate Limit for Passaic County are based on a calibrated (both discharge and stage) unsteady state HEC-RAS Model (RAMPP, 2013). The hydraulic model below Dundee Dam to the downstream Corporate Limit is based on a calibrated Steady State HEC-RAS

Model. All modeling geometry was based on a field survey of natural cross sections and structures completed between January 1 and May 25, 2010. Final model cross-section geometries, approximately 2,500 feet apart, were obtained by blending a field surveyed main channel with the overbank geometry developed from LiDAR data collected in 2007.

Roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the streams and floodplain areas, examination of previous studies, and contact with local engineers and officials. Roughness factors for all streams studied by detailed methods are shown in Table 8, "Manning's "n" Values."

TABLE 8 - MANNING'S "n" VALUES

Stream	Channel "n"	Overbank "n"
Acid Brook	0.024-0.035	0.024-0.150
Belcher Creek	0.024-0.045	0.050-0.100
Belcher Creek Branch 1	0.024-0.045	0.050-0.100
Belcher Creek Branch 2	0.023-0.045	0.060-0.100
Branch, Weasel Brook	0.015-0.048	0.060-0.150
Branch 3-5-2, Weasel Brook	0.015-0.048	0.060-0.150
Burnt Meadow Brook	0.024-0.050	0.030-0.100
Burnt Meadow Brook Branch 5	0.024-0.050	0.030-0.100

TABLE 8 - MANNING'S "n" VALUES (continued)

Stream	Channel "n"	Overbank "n"
Buttermilk Falls (Falls Brook)	0.024-0.035	0.024-0.150
Cold Spring Brook	0.020-0.090	0.020-0.200
Cooley Brook	0.023-0.045	0.060-0.100
Cupsaw Brook	0.024-0.035	0.024-0.150
Cupsaw Brook Branch 1	0.024-0.050	0.030-0.100
Cupsaw Brook Branch 2	0.024-0.050	0.030-0.100
Cupsaw Brook Branch 3	0.024-0.050	0.030-0.100
Cupsaw Brook Branch 4	0.024-0.050	0.030-0.100
Deep Brook	0.045	0.070
Dowling Brook	0.024-0.035	0.024-0.150
Erskine Brook	0.024-0.050	0.030-0.100
Glen Place Brook	0.025-0.045	0.070-0.150
Goffle Brook	0.040-0.045	0.040-0.070
Great Notch Brook	0.025-0.045	0.040-0.610
Green Brook	0.029-0.045	0.060-0.100
Haycock Brook	0.024-0.035	0.024-0.150
High Mountain Brook (Downstream Reach)	0.024-0.035	0.024-0.150
High Mountain Brook (Upstream Reach)	0.015-0.040	0.024-0.150
High Mountain Brook #2	0.024-0.050	0.030-0.100
Jones Brook	0.035-0.070	0.200
Longhouse Creek	0.024-09.050	0.050-0.100
MacDonald Brook	0.035	0.050
Meadow Brook	0.024-0.035	0.024-0.150
Meadow Brook Branch 2	0.024-0.050	0.030-0.100
Molly Ann Brook	0.024-0.035	0.024-0.150
Molly Ann Brook Tributary 3	0.025-0.045	0.070-0.150
Molly Ann Brook Tributary 4	0.025-0.045	0.070-0.150
Molly Ann Brook Tributary 6	0.025-0.045	0.070-0.150
Morsetown Brook	0.024-0.060	0.050-0.100
Naachtpunkt Brook	0.012-0.080	0.050-0.200
Naachtpunkt Brook (Upper Reach)	0.012-0.080	0.050-0.200
Oakwood Lake Brook	0.020-0.050	0.130-0.200
Packanack Brook	0.024-0.035	0.024-0.150
Passaic River	0.015-0.102	0.014-0.150
Pearl Brook	0.025-0.045	0.070-0.150
Peckman River	0.025-0.045	0.052-0.150
Pequannock River	0.024-0.035	0.024-0.150
Post Brook	0.024-0.060	0.045-0.200
Post Brook Branch 1	0.025-0.045	0.050-0.100
Post Brook Branch 2	0.024-0.050	0.040-0.100
Post Brook Branch 3	0.024-0.050	0.070-0.100
Post Brook Branch 4	0.024-0.050	0.070-0.100
Rainbow Valley Lake	0.024-0.050	0.045-0.100
Ramapo River	0.024-0.035	0.024-0.150

TABLE 8 - MANNING'S "n" VALUES (continued)

Stream	Channel "n"	Overbank "n"
Ringwood Creek	0.024-0.035	0.024-0.150
Ringwood Creek Branch 1	0.024-0.050	0.030-0.100
Singac Brook	0.024-0.035	0.024-0.150
Slippery Rock Brook	0.025-0.045	0.070-0.150
Squaw Brook	0.025-0.045	0.070-0.150
Stephens Lake Brook	0.024-0.050	0.030-0.100
Stephens Lake Brook Branch 1	0.024-0.050	0.030-0.100
Stephens Lake Brook Branch 2	0.024-0.050	0.030-0.100
Third River	0.024-0.035	0.024-0.150
Tributary 1 to Posts Brook	0.020-0.080	0.100-0.200
Tributary 2 to Posts Brook	0.060	0.100
Tributary 1 to Signac Brook	0.012-0.070	0.070-0.150
Tributary 3 to Signac Brook	0.015-0.080	0.050-0.200
Tributary to Van Dam Brook	0.020-0.060	0.040-0.200
Van Dam Brook	0.040-0.080	0.020-0.050
Wabash Brook	0.015-0.048	0.060-0.150
Wanaque River	0.024-0.035	0.024-0.150
Weasel Brook	0.024-0.035	0.024-0.150
Weasel Brook Tributary	0.012-0.040	0.060-0.120
West Brook	0.024-0.035	0.024-0.150
West Brook Branch 7	0.015-0.045	0.050-0.100

As discussed previously, certain flooding sources were studied using limited detailed and approximate methods. These methods are discussed below.

Also, a portion of this [*date*] FIS includes ***"Limited Detail* "Enhanced Approximate Floodplains":*** - This category is assigned to certain areas previously designated as approximate Zone A flood zones where communities have requested upgraded flood hazard analyses or no flood hazard analyses existed, but due to the low level of projected development or budget limitations, a detailed study was not performed. It is also applied to lakes that do not have level gage data. These enhanced zones were created using the following data and methodologies: digital orthophotos, LIDAR, limited survey of structures, nomination of flow rates, and the development of HEC-RAS hydraulic models.

The term "limited survey" refers to the survey of manmade hydraulic obstructions, such as dams, bridges and culverts, and to the survey of outlet channels of lakes with natural outlet controls. The purpose of collecting limited survey is to enhance the accuracy of the hydraulic model thus allowing the development of Advisory Base Flood Elevations (BFEs) at selected cross sections. Engineering drawing plans and Department of Transportation (DOT) hydraulic studies may have been substituted for limited survey, where appropriate and available.

Floodways and flood profiles were not developed for streams studied using limited detail methods; however, the 1-percent-annual-chance advisory base flood elevations for selected modeled cross-sections are provided in Table 9, "Limited

Detailed Flood Hazard Data Table." These cross-section locations will also be shown on the FIRM. Because the base flood elevations are advisory, the published values need not be used to enforce floodplain management ordinances as outlined in 44 CFR 60.3(c)(10), but should be used as base flood elevation data according to 44 CFR 60.3(b)(4). Development in Special Flood Hazard Areas that are designated as Zone A but which have advisory flood elevations should comply with the elevation standards, but may not have to develop an analysis of increases in water surface elevations, unless required by the local community.

The following flooding sources were studied by limited detail methods: Hewitt Brook, Hewitt Brook Tributary 2, Kanouse Brook, Lenox Brook, Pompton River – UNT, Preakness Brook, Preakness Brook Tributary 6, Preakness Brook 6B, West Brook, West Brook Tributary 11, West Brook Tributary 11A, West Brook Tributary 12, West Brook Tributary 13, West Brook Tributary 13A, and West Brook Tributary 14. Water-surface elevations of the 1-percent-annual-chance flood were computed using HEC-RAS, version 4.1.0 with the exception of Haledon Reservoir, for which HEC-HMS Version 3.4 was used for reservoir routing. LiDAR data was used for model cross-sections.

TABLE 9 - LIMITED DETAILED (ENHANCED A-ZONES) FLOOD HAZARD DATA

Cross Section Number & Stream Distance from Confluence with Wanaque River	**Flood Discharge (cfs)**	**1% Annual Chance Advisory Base Flood Elevation (Feet NAVD88)**	**FIRM Panel Number**
HEWITT BROOK			
1 (589 ft)	1,010	412.1	0039/0043
2 (869 ft)	1,010	419.6	0039
3 (1,369 ft)	1,010	429.4	0039
4 (1,869 ft)	1,010	436.4	0039
5 (2,868 ft)	1,010	445.3	0039
6 (3,369 ft)	1,010	446.7	0039
7 (3,869 ft)	1,010	451.7	0039
8 (4,369 ft)	1,010	457.8	0039
9 (5,257 ft)	1,010	471.6	0039
Cross Section Number & Stream Distance from Confluence with Hewitt Brook			
HEWITT BROOK TRIBUTARY 2			
1 (16 ft)	682	471.8	0039
2 (500 ft)	682	478.6	0039
3 (1,000 ft)	682	486.7	0039
4 (1,500 ft)	682	500.3	0039

TABLE 9 - LIMITED DETAILED (ENHANCED A-ZONES) FLOOD HAZARD DATA –cont'd

Cross Section Number & Stream Distance from Confluence with Hewitt Brook	**Flood Discharge (cfs)**	**1% Annual Chance Advisory Base Flood Elevation (Feet NAVD88)**	**FIRM Panel Number**
HEWITT BROOK TRIBUTARY 2 (continued)			
5 (2,000 ft)	682	517.7	0039
6 (2,500 ft)	682	522.6	0039
7 (3,000 ft)	560	524	0039
8 (3,500ft)	560	524.7	0039
9 (4,000 ft)	512	532.2	0039
10 (4,500 ft)	237	540.3	0039
11 (4,756 ft)	201	545.2	0039
Cross Section Number & Stream Distance from Limit of Detailed Study			
LAYHAM BROOK			
1 (144 ft)	257	179	0184
2 (1,000 ft)	257	194.7	0184
3 (2,000 ft)	257	205.1	0184
4 (3,000 ft)	247	213.4	0184
5 (4,000 ft)	253	219.3	0184
6 (5,000 ft)	242	234.4	0184
7 (5,391 ft)	161	234.4	0184
Cross Section Number & Stream Distance from Limit of Detailed Study			
LENOX BROOK			
1 (23 ft)	56	254	0184
2 (500 ft)	56	255.8	0184
3 (1,000 ft)	56	258	0184
4 (1,439 ft)	56	260	0184
Cross Section Number & Stream Distance from Confluence with Pequannock River			
KANOUSE BROOK			
1 (1,000 ft)	612	749.6	0116
2 (2,000 ft)	612	750.4	0116
3 (3,000 ft)	612	750.8	0116

TABLE 9 - LIMITED DETAILED (ENHANCED A-ZONES) FLOOD HAZARD DATA –cont'd

Cross Section Number & Stream Distance from Confluence with Pequannock River KANOUSE BROOK (continued)	**Flood Discharge (cfs)**	**1% Annual Chance Advisory Base Flood Elevation (Feet NAVD88)**	**FIRM Panel Number**
4 (4,000 ft)	612	751.1	0116
5 (5,000 ft)	612	753.5	0116
6 (6,000 ft)	612	759.5	0116
7 (7,000 ft)	612	772.2	0116
8 (8,000 ft)	612	773.2	0116
9 (9,000 ft)	612	774.5	0116
10 (10,000 ft)	454	779.7	0116
11 (11,000 ft)	454	778.5	0116
12 (12,000 ft)	454	792.3	0116
13 (13,000 ft)	454	795.4	0116
14 (14,000 ft)	454	796.5	0110
15 (15,000 ft)	454	797.8	0110
16 (16,000 ft)	454	798.8	0110
17 (17,000 ft)	454	799.2	0110
18 (18,000 ft)	454	799.5	0110
19 (19,000 ft)	454	800.4	0110
20 (20,000 ft)	454	803.1	0110
21 (21,000 ft)	454	804.4	0110
22 (22,000 ft)	454	805.7	0110
23 (23,000 ft)	454	808	0110
24 (24,000 ft)	454	810.7	0110
25 (25,000 ft)	428	815.3	0110
Cross Section Number & Stream Distance from Limit of Detailed Study PREAKNESS BROOK			
1 (368 ft)	327	318	0201
2 (891 ft)	252	319.5	0201
3 (1,380 ft)	252	340.2	0201
4 (1,856 ft)	252	391	0201
5 (2,356 ft)	252	402.9	0201
6 (2,856 ft)	252	405.9	0201
7 (3,120 ft)	160	406.4	0201

TABLE 9 - LIMITED DETAILED (ENHANCED A-ZONES) FLOOD HAZARD DATA –cont'd

Cross Section Number & Stream Distance from Confluence with Singac Brook	**Flood Discharge (cfs)**	**1% Annual Chance Advisory Base Flood Elevation (Feet NAVD88)**	**FIRM Panel Number**
PREAKNESS BROOK TRIBUTARY 6			
1 (1,500 ft)	724	218.9	0203
2 (2,000 ft)	724	223	0203
3 (2,841 ft)	721	227.9	0203
4 (3,462 ft)	721	234.8	0203
5 (4,000 ft)	721	237.4	0203
6 (4,467 ft)	721	239.5	0203
7 (5,092 ft)	653	248.7	0203
8 (5,751 ft)	653	258.1	0203
9 (6,175 ft)	653	272.2	0203
10 (6,623 ft)	653	287.8	0203
11 (6,988 ft)	653	288	0203
12 (7, 988 ft)	442	296.4	0203
13 (8, 488 ft)	396	307.6	0203
14 (8, 988 ft)	396	307.7	0203
15 (9, 488 ft)	336	309.9	0203
16 (9, 988 ft)	336	315	0203
17 (10,358 ft)	336	322	0203
18 (10, 752 ft)	289	323.3	0203
Cross Section Number & Stream Distance from Confluence with Preakness Brook Tributary 6			
PREAKNESS BROOK TRIBUTARY 6B			
1 (9 ft)	161	287.7	0203
2 (500 ft)	161	296.7	0203
3 (878 ft)	161	303.7	0203
4 (1,347 ft)	161	318.8	0203
5 (1,755 ft)	161	326.7	0203
Cross Section Number & Stream Distance from Limit of Detailed Study			
WEST BROOK REACH 1			
1 (1,000 ft)	1,410	581.4	0129
2 (1,752 ft)	1,410	608.6	0129
3 (2,236 ft)	1,320	623.2	0129
4 (2,972 ft)	1,320	653.6	0129

TABLE 9 - LIMITED DETAILED (ENHANCED A-ZONES) FLOOD HAZARD DATA –cont'd

Cross Section Number & Stream Distance from Limit of Detailed Study	Flood Discharge (cfs)	1% Annual Chance Advisory Base Flood Elevation (Feet NAVD88)	FIRM Panel Number
WEST BROOK REACH 1 (continued)			
5 (3,472 ft)	1,320	668	0129
6 (3,748 ft)	1,320	678.7	0128/0129
7 (4,472 ft)	1,290	697.9	0128
8 (5,472 ft)	1,290	723.3	0128
9 (6,275 ft)	1,040	746.4	0128
10 (6,908 ft)	1,040	765	0128
11 (7,972 ft)	984	794	0128
12 (8,472 ft)	984	813.6	0128
13 (8,972 ft)	984	836.2	0128
14 (9,472 ft)	984	847.8	0128
15 (10,063 ft)	511	868.3	0128
16 (10,472 ft)	508	869.1	0128
17 (10,963 ft)	508	883.2	0128
18 (11,473 ft)	497	894.1	0128
19 (20,003 ft)	497	310.8	0128
20 (12,473 ft)	497	919.5	0128
21 (12,955 ft)	497	932.2	0128
22 (13,244 ft)	497	932.6	0128
Cross Section Number & Stream Distance from Confluence with West Brook Reach 1			
WEST BROOK REACH 1 TRIBUTARY 11			
1 (109 ft)	445	673.5	0129
2 (533 ft)	445	691.8	0129
3 (1,029 ft)	445	707.1	0128/0129
4 (1,706 ft)	445	737.5	0128
5 (2,445 ft)	445	817.9	0128
6 (3,024 ft)	445	861	0128
7 (3,524 ft)	445	873.5	0128
8 (4,522 ft)	405	884.1	0128
9 (5,314 ft)	366	885.8	0128

TABLE 9 - LIMITED DETAILED (ENHANCED A-ZONES) FLOOD HAZARD DATA – cont'd

Cross Section Number & Stream Distance from Confluence with West Brook Reach 1 WEST BROOK REACH 1 TRIBUTARY 12	**Flood Discharge (cfs)**	**1% Annual Chance Advisory Base Flood Elevation (Feet NAVD88)**	**FIRM Panel Number**
1 (15 ft)	386	773.1	0128
2 (200 ft)	376	785.3	0128
Cross Section Number & Stream Distance from Confluence with West Brook Reach 1 WEST BROOK REACH 1 TRIBUTARY 13			
1 (31 ft)	362	852.7	0128
2 (601 ft)	362	865.6	0128
3 (1,000 ft)	347	871.3	0128
4 (1,438 ft)	347	881.5	0128
5 (2,017 ft)	347	884.7	0128
6 (2,311 ft)	347	889.8	0128
Cross Section Number & Stream Distance from Confluence with West Brook Reach 1 WEST BROOK REACH 1 TRIBUTARY 13A			
1 (200 ft)	95	892.4	0128
2 (379 ft)	95	902.8	0128
Cross Section Number & Stream Distance from Confluence with West Brook Reach 1 WEST BROOK REACH 1 TRIBUTARY 14			
1 (8 ft)	261	926.2	0128
2 (290 ft)	261	934.4	0128

All qualifying benchmarks within a given jurisdiction that are cataloged by the National Geodetic Survey (NGS) and entered into the National Spatial Reference System (NSRS) as First or Second Order Vertical and have a vertical stability classification of A, B, or C are shown and labeled on the FIRM with their 6-character NSRS Permanent Identifier.

Bench marks cataloged by the NGS and entered into the NSRS vary widely in vertical stability classification. The NSRS vertical stability classifications are as follows:

- Stability A: Monuments of the most reliable nature, expected to hold position/elevation well (e.g., mounted in bedrock)

- Stability B: Monuments that generally hold their position/elevation well (e.g., concrete bridge abutment)

- Stability C: Monuments that may be affected by surface ground movements (e.g., concrete monument below frost line)

- Stability D: Mark of questionable or unknown vertical stability (e.g., concrete monument above frost line, or steel witness post)

In addition to NSRS bench marks, the FIRM may also show vertical control monuments established by a local jurisdiction; these monuments will be shown on the FIRM with the appropriate designations. Local monuments will only be placed on the FIRM if the community has requested that they be included, and if the monuments meet the aforementioned NSRS inclusion criteria.

To obtain current elevation, description, and/or location information for bench marks shown on the FIRM for this jurisdiction, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their Web site at www.ngs.noaa.gov.

It is important to note that temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with this FIS and FIRM. Interested individuals may contact FEMA to access this data.

3.3 Vertical Datum

All FISs and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FISs and FIRMs was NGVD29. With the finalization of NAVD88, many FIS reports and FIRMs are being prepared using NAVD88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD88. Structure and ground elevations in the county must, therefore, be referenced to NAVD88. It is important to note that adjacent communities may be referenced to NGVD29. This may result in differences in Base Flood Elevations (BFEs) across the corporate limits between communities.

Prior versions of the FIS reports and FIRMS were referenced to NGVD29. When a datum conversion is effected for an FIS report and FIRM, the Flood profiles, and BFEs reflect the new datum values. To compare structure and ground elevations to

BFEs shown in the FIS and on the FIRM, the structure and ground elevations must be referenced to the new datum values.

As noted above, the elevations shown in this FIS report and on the FIRM for Passaic County are referenced to NAVD88. Ground, structure, and flood elevations may be compared and/or referenced to NGVD29 by applying a standard conversion factor. The conversion factor to NGVD29 is +0.796. The BFEs shown on the FIRM represent whole-foot rounded values. For example, a BFE of 102.4 will appear as 102 on the FIRM and 102.6 will appear as 103. Therefore, users who wish to convert elevations in this FIS to NGVD29 should apply the stated conversion factor(s) to elevations shown on the Flood Profiles and supporting data tables in the FIS report, which are shown at a minimum to the nearest 0.1 foot.

$$NGVD29 = NAVD88 + 0.796$$

For more information on NAVD88, see Converting the National Flood Insurance Program to the North American Vertical Datum of 1988, FEMA Publication FIA-20/June 1992, or contact the Spatial Reference System Division, NGS, NOAA, Silver Spring Metro Center, 1315 East-West Highway, Silver Spring, Maryland 20910 (Internet address http://www.ngs.noaa.gov).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS provides 1-percent-annual-chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent-annual-chance flood elevations; delineations of the 1- and 0.2-percent-annual-chance floodplains; and 1-percent-annual-chance floodway. This information is presented on the FIRM and in many components of the FIS, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the county. For the streams studied in detail, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section.

For the September 28, 2007, FIS and FIRMs, between cross sections the floodplain boundaries including Molly Ann Brook were interpolated using topographic maps at scales of 1"=200' with a contour interval of 2 feet (Robinson Aerial Surveys, 2006).

For the [*date*] FIS and FIRMs, LiDAR was flown with a Root Mean Square Error (RMSE) of 18.5 centimeters vertically and a 95-percent confidence level. The

LiDAR was flown during leaf-off, no snow on the ground, and water levels in streams that were at normal or below base level. This data set met the 2-foot contour interval. (NJDEP2007)

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations, but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM (Exhibit 2).

New Jersey Flood Hazard Area Design Flood

For the Delaware River, the NJFHADF floodplain boundary was delineated in addition to the 1- and 0.2-percent-annual-chance boundaries. The NJDEP is mandated to delineate and regulate flood hazard areas pursuant to N.J.S.A. 58:16A-50 et seq., the Flood Hazard Area Control Act. This Act authorizes the NJDEP to adopt land use regulations for development within the flood hazard areas, to control stream encroachments, and to integrate the flood control activities of the municipal, county, State and Federal Governments.

The State's Flood Hazard Area delineations are defined by the NJFHADF. In 1974, the Water Policy and Supply Council passed a resolution stating that the NJFHADF shall be equal to a design flood discharge 25 percent greater in flow than the 1-percent-annual-chance flood.

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this FIS are presented to local agencies as minimum standards that can be adopted directly or used as a basis for additional floodway studies. However, the State of New Jersey has established

criteria limiting the increase in flood heights to 0.2 foot. Thus, floodways having no more than a 0.2-foot surcharge have been delineated for this study.

The floodways presented in this FIS were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain.

Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 10). The computed floodways are shown on the FIRM (Exhibit 2). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

Portions of the floodways for the Passaic, Pequannock, Pompton, Ramapo and Third Rivers extend beyond the county boundary.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "Without Floodway" elevations presented in Table 10 for certain downstream cross sections of Branch 3-5-2 - Weasel Brook, Dowling Brook, Goffle Brook, Jones Brook, Molly Ann Brook, Morsetown Brook, Peckman River, Post Brook, Singac Brook, Slippery Rock Brook, Third River, Tributary to Van Dam Brook, Van Dam Brook, and the Wanaque River are lower than the regulatory flood elevations in that area, which must take into account the 1-percent-annual-chance flooding due to backwater from other sources.

Encroachment into areas subject to inundation by floodwaters having hazardous velocities aggravates the risk of flood damage and heightens potential flood hazards by increasing velocities. A listing of stream velocities at selected cross sections is provided in Table 10, "Floodway Data." In order to reduce the risk of property damage in areas where the stream velocities are high, the community may wish to restrict development in areas outside the floodway.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood by more than 1.0 foot at any point. However, the State of New Jersey has established criteria limiting the increase in flood heights to 0.2 foot. Thus, floodways having no more than a 0.2-foot surcharge have been delineated for this study. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Acid Brook								
A	1,858	39	160	2.5	209.0	209.0	209.0	0.0
B	2,756	64	197	2.1	214.1	214.1	214.1	0.0
C	3,582	170	162	2.5	216.6	216.6	216.6	0.0
D	4,447	159	346	1.2	220.0	220.0	220.2	0.2
E	5,313	34	103	4.0	221.0	221.0	221.1	0.1
F	6,367	80	429	1.0	226.4	226.4	226.5	0.1
G	7,289	67	170	2.4	227.9	227.9	228.1	0.2
H	8,575	14	42	9.7	231.9	231.9	231.9	0.0
I	9,347	115	344	1.2	245.6	245.6	245.8	0.2
J	10,151	26	65	6.3	247.5	247.5	247.6	0.1
K	10,933	19	51	8.0	287.9	287.9	287.9	0.0
L	11,945	80	212	1.9	321.8	321.8	321.8	0.0
M	12,631	103	185	2.2	333.4	333.4	333.4	0.0
N	13,052	37	96	4.3	335.4	335.4	335.5	0.1
O	13,790	38	71	5.8	360.9	360.0	360.1	0.1
P	14,639	48	70	5.9	451.0	451.0	451.0	0.0
Q	15,372	18	54	7.6	487.9	487.9	488.1	0.2
R	15,741	44	86	4.8	502.5	502.5	502.6	0.1

[1] Feet above confluence with the Ramapo River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

ACID BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Belcher Creek								
A	920	103	730	3.5	621.0	621.0	621.2	0.2
B	1,296	115	1,291	2.0	622.8	622.8	622.9	0.1
C	2,705	250	1,414	1.4	623.0	623.0	623.1	0.1
D	4,675	338	2,068	0.9	623.2	623.2	623.3	0.1
E	5,520	1,164	5,318	0.4	623.3	623.3	623.4	0.1
F	6,500	849	3,372	0.6	623.4	623.4	623.5	0.1
G	7,680	776	3,239	0.5	623.5	623.5	623.6	0.1
H	8,670	274	738	2.0	623.6	623.6	623.7	0.1
I	9,430	55	272	5.6	624.9	624.9	625.1	0.2
J	9,670	56	290	5.2	625.8	625.8	625.9	0.1
K	9,770	470	1,833	0.7	634.6	634.6	634.6	0.0
L	15,610	78	350	4.4	634.6	634.6	634.6	0.0
M	15,706	199	688	2.2	637.3	637.3	637.3	0.0
N	15,771	335	1,554	1.0	643.5	643.5	643.5	0.0
O	16,905	294	1,038	1.5	644.1	644.1	644.2	0.1
P	18,040	596	1,553	0.7	644.8	644.8	645.0	0.2
Q	19,265	304	337	3.1	646.3	646.3	646.3	0.0
R	20,416	142	363	2.8	653.8	653.8	654.0	0.2
S	20,515	470	2,094	0.4	661.7	661.7	661.7	0.0
T	21,455	126	272	3.4	663.0	663.0	663.0	0.0
U	22,610	148	186	4.9	672.7	672.7	672.9	0.2
V	22,708	141	338	2.7	675.4	675.4	675.4	0.0
W	23,000	157	180	5.1	678.8	678.8	678.8	0.0
X	23,110	157	688	1.3	684.9	684.9	685.1	0.2
Y	23,690	111	176	5.2	688.5	688.5	688.5	0.0
Z	23,810	115	348	2.6	700.2	700.2	700.3	0.1
AA	24,335	97	265	3.5	700.4	700.4	700.5	0.1

[1] Feet above mouth

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

BELCHER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Belcher Creek (continued)								
AB	24,900[1]	46	153	6.0	706.0	706.0	706.2	0.2
AC	24,967[1]	151	638	1.4	709.9	709.9	709.9	0.0
AD	25,720[1]	34	95	9.6	715.4	715.4	715.4	0.0
AE	25,877[1]	45	228	3.1	720.0	720.0	720.1	0.1
AF	26,690[1]	25	73	9.8	731.4	731.4	731.4	0.0
AG	26,815[1]	59	409	1.7	739.8	739.8	740.0	0.2
AH	27,040[1]	43	93	7.7	740.9	740.9	740.9	0.0
AI	27,250[1]	120	338	2.1	751.2	751.2	751.2	0.0
AJ	27,470[1]	63	119	5.9	753.2	753.2	753.2	0.0
AK	27,620[1]	182	956	0.7	779.7	779.7	779.7	0.0
AL	28,075[1]	174	188	3.8	780.0	780.0	780.0	0.0
AM	28,180[1]	67	227	3.1	785.8	785.8	786.0	0.2
Belcher Creek Branch 1								
A	320[2]	61	215	0.7	623.5	623.5	623.6	0.1
B	455[2]	39	120	1.3	625.3	625.3	625.4	0.1
C	1,085[2]	18	23	6.8	635.4	635.4	635.5	0.1
D	1,175[2]	53	211	0.8	642.3	642.3	642.5	0.2
E	1,340[2]	210	704	0.2	647.6	647.6	647.8	0.2
F	1,631[2]	41	180	0.9	652.7	652.7	652.7	0.0

[1] Feet above mouth

[2] Feet above confluence with Belcher Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

BELCHER CREEK – BELCHER CREEK BRANCH 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Belcher Creek Branch 2								
A	200[1]	295	759	1.0	644.8	644.8	645.0	0.2
B	328[1]	117	671	1.2	649.1	649.1	649.3	0.2
C	358[1]	224	1,013	0.8	649.4	649.4	649.6	0.2
D	1,700[1]	284	298	2.7	651.0	651.0	651.1	0.1
E	2,375[1]	320	265	3.0	663.9	663.9	664.0	0.1
F	2,447[1]	28	93	8.5	666.7	666.7	666.7	0.0
G	3,270[1]	20	78	9.9	719.8	719.8	719.9	0.1
H	4,315[1]	65	197	3.9	725.7	725.7	725.9	0.2
I	5,090[1]	23	73	10.5	730.7	730.7	730.7	0.0
J	5,890[1]	105	211	1.2	738.6	738.6	738.8	0.2
K	6,880[1]	25	38	6.9	756.6	756.6	756.6	0.0
L	6,966[1]	26	103	2.5	762.0	762.0	762.2	0.2
Branch Weasel Brook								
A	100[2]	85	405	1.8	132.7	132.7	132.9	0.2
B	320[2]	42	322	2.3	132.7	132.7	132.9	0.2
C	580[2]	110	571	1.3	132.8	132.8	133.0	0.2
D	990[2]	108	336	2.2	132.8	132.8	133.0	0.2
E	1,235[2]	42	232	3.2	133.0	133.0	133.2	0.2
Branch 3-5-2, Weasel Brook								
A	112[3]	175	1,088	0.5	119.8	119.0[4]	119.0	0.0
B	462[3]	29	59	9.7	119.8	119.0[4]	119.1	0.1
C	1,009[3]	85	119	4.8	130.1	130.1	130.1	0.0
D	1,554[3]	12	45	12.6	137.1	137.1	137.1	0.0
E	1,907[3]	19	49	11.5	143.7	143.7	143.8	0.1

[1] Feet above confluence with Belcher Creek
[2] Feet above confluence with Weasel Brook Junction Box
[3] Feet above confluence with Weasel Brook
[4] Elevation computed without consideration of backwater effects from Weasel Brook

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

BELCHER CREEK BRANCH 2 – BRANCH, WEASEL BROOK – BRANCH 3-5-2, WEASEL BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Burnt Meadow Brook								
A	660[1]	156	230	4.8	351.9	351.9	351.9	0.0
B	1,970[1]	236	341	3.3	366.9	366.9	367.1	0.2
C	3,340[1]	281	600	1.8	370.4	370.4	370.6	0.2
D	4,770[1]	216	458	2.4	372.3	372.3	372.4	0.1
E	4,940[1]	138	518	2.1	373.9	373.9	373.9	0.0
F	5,800[1]	180	228	4.7	379.5	379.5	379.5	0.0
G	6,670[1]	133	384	2.8	384.8	384.8	384.9	0.1
H	8,265[1]	150	415	2.6	388.6	388.6	388.8	0.2
I	9,470[1]	62	92	7.3	412.6	412.6	412.6	0.0
J	10,575[1]	97	116	5.8	435.9	435.9	435.9	0.0
K	11,940[1]	68	113	5.9	536.2	536.2	536.2	0.0
L	13,310[1]	94	120	5.6	589.0	589.0	589.0	0.0
M	14,550[1]	62	110	5.0	612.6	612.6	612.8	0.2
N	15,700[1]	258	194	2.8	636.2	636.2	636.2	0.0
Burnt Meadow Brook Branch 5								
A	194[2]	19	17	5.4	601.0	601.0	601.0	0.0
B	612[2]	21	17	5.2	617.8	617.8	617.8	0.0
C	760[2]	753	5,671	0.0	636.2	636.2	636.2	0.0
D	1,825[2]	70	26	2.7	659.0	659.0	659.0	0.0
E	1,914[2]	50	34	2.1	663.8	663.8	664.0	0.2
F	2,025[2]	12	13	5.2	671.0	671.0	671.0	0.0
G	2,175[2]	13	18	3.8	688.1	688.1	688.1	0.0
Buttermilk Falls								
A	10[3]	55	89	4.0	203.4	202.3[4]	202.5	0.2
B	646[3]	40	58	6.1	218.9	218.9	218.9	0.0

[1] Feet above confluence with West Brook
[2] Feet above confluence with Burnt Meadow Brook
[3] Feet above confluence with Molly Ann's Brook
[4] Elevation computed without consideration of backwater effects from Molly Ann's Brook

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

BURNT MEADOW BROOK – BURNT MEADOW BROOK BRANCH 5 – BUTTERMILK FALLS

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Buttermilk Falls (continued)								
C	1,432[1]	9	36	9.8	252.0	252.0	252.1	0.1
D	2,068[1]	10	34	10.6	287.8	287.8	288.0	0.2
E	2,432[1]	19	42	8.4	309.4	309.4	309.5	0.1
F	2,732[1]	13	37	9.6	329.4	329.4	329.4	0.0
G	3,136[1]	23	48	7.3	347.3	347.3	347.5	0.2
H	3,666[1]	30	51	7.0	413.6	413.6	413.6	0.0
Cold Spring Brook								
A	230[2]	19	36	7.8	392.9	392.9	392.9	0.0
B	410[2]	37	83	3.4	397.9	397.9	397.9	0.0
C	2,875[2]	98	45	6.2	448.0	448.0	448.0	0.0
D	3,755[2]	21	46	6.1	499.7	499.7	499.7	0.0
E	3,855[2]	113	47	5.9	509.5	509.5	509.5	0.0
F	4,293[2]	196	1,167	0.2	523.2	523.2	523.2	0.0
G	5,202[2]	563	5,571	0.1	526.2	526.2	526.2	0.0
H	6,062[2]	243	1,328	0.2	526.2	526.2	526.2	0.0
I	9,289[2]	21	67	4.1	542.4	542.4	542.4	0.0
J	9,419[2]	73	329	0.5	550.9	550.9	550.9	0.0
Cooley Brook								
A	455[3]	262	699	1.7	623.1	623.1	623.2	0.1
B	1,470[3]	77	240	5.0	624.8	624.8	625.0	0.2
C	1,800[3]	70	161	3.2	626.8	626.8	627.0	0.2
D	2,190[3]	25	74	7.1	628.5	628.5	628.6	0.1
E	2,344[3]	28	106	4.9	630.3	630.3	630.4	0.1
F	2,495[3]	49	237	2.2	632.2	632.2	632.2	0.0
G	3,325[3]	100	117	4.5	636.4	636.4	636.4	0.0
H	4,080[3]	26	94	5.5	642.1	642.1	642.2	0.1

[1] Feet above confluence with Molly Ann's Brook
[2] Feet above confluence with the Pequannock River
[3] Feet above confluence with Belcher Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

BUTTERMILK FALLS – COLD SPRING BROOK – COOLEY BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cupsaw Brook								
A	1,178[1]	1,839	41,915	0.03	305.7	305.7	305.7	0.0
B	2,502[1]	316	7,670	0.2	309.2	309.2	309.2	0.0
C	4,017[1]	454	9,077	0.1	309.2	309.2	309.2	0.0
D	5,385[1]	385	2,915	0.4	309.2	309.2	309.2	0.0
E	7,053[1]	76	110	9.2	326.2	326.2	326.2	0.0
F	9,384[1]	701	7,299	0.1	388.7	388.7	388.8	0.1
G	10,808[1]	600	7,127	0.1	388.7	388.7	388.8	0.1
H	12,123[1]	387	6,677	0.2	388.7	388.7	388.8	0.1
I	13,271[1]	29	90	5.2	403.8	403.8	403.8	0.0
Cupsaw Brook Branch 1								
A	700[2]	10	10	5.8	309.2	306.2[3]	306.2	0.0
B	780[2]	46	322	0.2	315.2	315.2	315.2	0.0
C	1,165[2]	14	12	5.5	316.3	316.3	316.3	0.0
D	1,355[2]	33	61	1.1	320.1	320.1	320.1	0.0
E	2,450[2]	5	7	7.0	350.7	350.7	350.8	0.1
F	3,220[2]	16	11	4.8	390.0	390.0	390.0	0.0
Cupsaw Brook Branch 2								
A	245[2]	10	13	6.0	407.7	407.7	407.7	0.0
B	856[2]	10	35	2.3	444.0	444.0	444.0	0.0
Cupsaw Brook Branch 3								
A	100[2]	48	78	5.7	392.1	392.1	392.3	0.2
B	610[2]	14	44	10.2	442.0	442.0	442.0	0.0

[1] Feet above main body of Wanaque Reservoir
[2] Feet above confluence with Cupsaw Brook
[3] Elevation computed without consideration of backwater effects from Molly Ann's Brook

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

CUPSAW BROOK– CUPSAW BROOK BRANCH 1 – CUPSAW BROOK BRANCH 2 – CUPSAW BROOK BRANCH 3

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cupsaw Brook Branch 3 (continued)								
C	1,015[1]	46	193	2.3	468.9	468.9	468.9	0.0
D	1,780[1]	44	76	5.9	497.2	497.2	497.2	0.0
E	1,929[1]	29	92	4.9	504.2	504.2	504.2	0.0
Cupsaw Brook Branch 4								
A	0[1]	52	118	2.5	388.8	388.8	388.8	0.0
B	315[1]	41	110	2.6	397.1	397.1	397.1	0.0
C	427[1]	14	49	5.9	398.5	398.5	398.7	0.2
D	550[1]	17	59	4.9	401.9	401.9	401.9	0.0
E	830[1]	17	35	8.3	427.3	427.3	427.3	0.0
F	952[1]	18	51	5.7	435.5	435.5	435.5	0.0
G	1,410[1]	17	34	8.5	456.6	456.6	456.6	0.0
Deep Brook								
A	170[2]	40	40	6.5	105.3	105.3	105.5	0.2
B	310[2]	46	46	6.4	108.9	108.9	108.9	0.0
C	685[2]	46	46	6.0	115.3	115.3	115.5	0.2
D	950[2]	46	46	6.0	119.4	119.4	119.4	0.0
Dowling Brook								
A	1.029[3]	33	195	3.6	129.1	123.9[5]	124.1	0.2
B	2.414[3]	62	250	1.6	130.8[4]	127.3	127.4	0.1
C	3.262[3]	50	185	2.1	131.0[4]	129.3	129.4	0.1
D	4.469[3]	50	87	4.5	156.4	156.4	156.5	0.1
E	5.034[3]	22	53	7.5	211.6	211.6	211.6	0.0
F	5.574[3]	11	43	9.1	256.9	256.9	257.0	0.1

[1] Feet above confluence with Cupsaw Brook
[2] Feet above confluence with Goffle Brook
[3] Feet above confluence with the Passaic River
[4] Flooding controlled by the Passaic River
[5] Elevation computed without consideration of backwater effects from the Passaic River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

CUPSAW BROOK BRANCH 3 - CUPSAW BROOK BRANCH 4 – DEEP BROOK – DOWLING BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Erskine Brook								
A	720[1]	20	32	7.0	305.4	305.4	305.4	0.0
B	740[1]	25	39	5.7	309.6	309.6	309.6	0.0
C	1,350[1]	54	56	3.9	328.4	328.4	328.4	0.0
D	1,526[1]	29	35	6.4	332.9	332.9	333.0	0.1
E	2,515[1]	54	53	4.2	397.0	397.0	397.0	0.0
F	3,390[1]	79	63	3.5	432.7	432.7	432.7	0.0
G	4,370[1]	35	37	5.9	466.3	466.3	466.3	0.0
H	4,516[1]	12	7	4.2	474.2	474.2	474.2	0.0
I	4,600[1]	20	8	3.6	484.6	484.6	484.6	0.0
J	7,430[1]	13	7	4.2	488.4	488.4	488.4	0.0
Glen Place Brook								
A	100[2]	42	94	2.5	302.9	302.9	303.1	0.2
B	680[2]	4	19	12.4	364.7	364.7	364.7	0.0
C	1,640[2]	8	54	4.4	470.4	470.4	470.6	0.2
D	1,850[2]	11	27	8.8	490.3	490.3	490.3	0.0
E	2,170[2]	18	40	5.9	537.6	537.6	537.7	0.1
F	2,540[2]	10	26	9.2	610.8	610.8	610.8	0.0
Goffle Brook								
A	400[3]	52	363	7.7	42.2	40.2[4]	40.4	0.2
B	875[3]	63	358	7.8	43.2	43.2	43.4	0.2
C	955[3]	68	486	5.8	46.2	46.2	46.4	0.2
D	1,500[3]	294	1,716	1.5	49.4	49.4	49.6	0.2
E	1,640[3]	297	1,684	1.6	49.4	49.4	49.6	0.2
F	2,270[3]	51	353	7.4	49.4	49.4	49.6	0.2

[1] Feet above confluence with Wanaque Reservoir
[2] Feet above confluence with Molly Ann Brook
[3] Feet above confluence with the Passaic River
[4] Elevation computed without consideration of backwater effects from the Passaic River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

ERSKINE BROOK – GLEN PLACE BROOK – GOFFLE BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Goffle Brook (continued)								
G	2,660	70	327	8.0	50.8	50.8	50.9	0.1
H	3,010	55	395	6.6	52.7	52.7	52.9	0.2
I	3,125	70	325	8.1	53.2	53.2	53.2	0.0
J	3,600	200	1,030	2.5	54.5	54.5	54.5	0.0
K	3,970	95	303	8.7	54.5	54.5	54.5	0.0
L	4,700	62	333	7.9	59.3	59.3	59.4	0.1
M	4,800	35	253	10.4	60.3	60.3	60.3	0.0
N	5,520	105	313	8.4	62.7	62.7	62.7	0.0
O	6,180	105	434	6.0	67.8	67.8	68.0	0.2
P	6,280	40	240	10.9	68.0	68.0	68.2	0.2
Q	6,900	195	584	4.5	71.5	71.5	71.6	0.1
R	7,350	258	758	3.5	72.7	72.7	72.9	0.2
S	7,800	80	345	7.6	76.9	76.9	76.9	0.0
T	8,550	170	685	3.8	84.7	84.7	84.7	0.0
U	8,600	164	781	3.4	84.8	84.8	84.8	0.0
V	9,670	35	208	12.6	89.7	89.7	89.7	0.0
W	9,900	37	303	8.7	91.7	91.7	91.8	0.1
X	10,250	64	256	10.3	94.9	94.9	94.9	0.0
Y	10,340	125	399	6.6	99.5	99.5	99.5	0.0
Z	10,415	97	755	3.5	100.6	100.6	100.6	0.0
AA	11,065	100	282	9.3	102.3	102.3	102.3	0.0
AB	11,160	100	260	10.1	103.1	103.1	103.3	0.2
AC	11,990	221	620	4.2	112.1	112.1	112.3	0.2
AD	12,580	145	476	4.0	116.8	116.8	116.8	0.0
AE	12,880	68	348	5.5	117.4	117.4	117.5	0.1

[1] Feet above confluence with the Passaic River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

GOFFLE BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Goffle Brook (continued)								
AF	13,165[1]	31	31	10.1	118.2	118.2	118.3	0.1
AG	13,850[1]	43	43	7.8	123.2	123.2	123.2	0.0
AH	14,240[1]	200	200	4.4	125.1	125.1	125.3	0.2
AI	14,540[1]	285	285	6.4	130.2	130.2	130.4	0.2
AJ	14,930[1]	192	192	4.0	132.4	132.4	132.6	0.2
Great Notch Brook								
A	200[2]	20	456	1.8	135.3	134.1[3]	134.2	0.1
B	620[2]	20	934	0.9	135.3	134.1[3]	134.2	0.1
C	790[2]	20	625	1.3	135.3	134.1[3]	134.2	0.1
D	1,200[2]	20	991	0.5	135.3	134.1[3]	134.2	0.1
E	1,600[2]	20	52	9.1	135.5	135.5	135.5	0.0
F	1,900[2]	81	259	1.8	138.8	138.8	138.8	0.0
G	2,200[2]	67	76	6.2	142.5	142.5	142.5	0.0
H	2,822[2]	27	57	8.2	159.9	159.9	159.9	0.0
I	3,420[2]	15	47	10.1	197.2	197.2	197.3	0.1
J	3,985[2]	13	45	10.5	223.8	223.8	223.8	0.0
K	4,520[2]	19	73	6.5	235.6	235.6	235.6	0.0
L	5,410[2]	15	55	8.5	250.8	250.8	250.9	0.1
M	5,950[2]	26	56	8.4	259.9	259.9	259.9	0.0

[1]Feet above confluence with the Passaic River
[2]Feet above the Peckman River
[3]Elevation computed without consideration of backwater effects from the Peckman River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

GOFFLE BROOK – GREAT NOTCH BROOK – GREEN BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Green Brook								
A	395[1]	223	217	3.3	627.9	627.9	628.0	0.1
B	1,170[1]	35	129	5.6	633.6	633.6	633.8	0.2
C	1,310[1]	237	679	1.1	635.4	635.4	635.5	0.1
D	2,000[1]	126	154	4.7	646.2	646.2	646.2	0.0
E	2,260[1]	175	199	3.6	670.7	670.7	670.7	0.0
Haycock Brook								
A	882[2]	29	119	6.6	204.2	204.2	204.4	0.2
B	1,688[2]	69	117	6.7	211.8	211.8	211.9	0.1
C	2,596[2]	34	107	7.3	221.0	221.0	221.0	0.0
D	3,432[2]	62	167	4.7	228.3	228.3	228.4	0.1
E	4,080[2]	28	83	9.5	233.5	233.5	233.5	0.0
F	7,070[2]	214	210	3.6	271.9	271.9	271.9	0.0
G	7,794[2]	78	196	3.0	273.5	273.5	273.5	0.0
H	8,556[2]	102	159	3.8	280.0	280.0	280.0	0.0
I	9,388[2]	95	166	3.6	286.8	286.8	286.9	0.1
J	10,128[2]	102	214	2.8	293.5	293.5	293.6	0.1
K	11,036[2]	40	109	5.4	302.9	302.9	302.9	0.0
L	12,080[2]	85	159	3.7	311.1	311.1	311.3	0.2
M	13,565[2]	181	889	0.7	339.6	339.6	339.6	0.0
N	14,295[2]	79	105	5.7	339.6	339.6	339.6	0.0
O	15,215[2]	144	238	2.5	345.5	345.5	345.5	0.0
P	20,788[2]	22	27	7.3	391.0	391.0	391.0	0.0
Q	21,918[2]	22	39	5.0	408.9	408.9	408.9	0.0
R	22,840[2]	19	33	5.9	458.6	458.6	458.6	0.0
S	23,702[2]	12	27	7.3	513.3	513.3	513.4	0.1
T	24,608[2]	52	98	2.0	536.0	536.0	536.0	0.0

[1]Feet above confluence with Cooley Brook
[2]Feet above confluence with the Ramapo River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

GREEN BROOK – HAYCOCK BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
High Mountain Brook (Downstream Reach)								
A	185	177	956	0.7	249.5	247.1[2]	247.2	0.1
B	433	32	125	5.5	249.5	247.1[2]	247.3	0.2
C	1,510	32	92	7.4	253.1	253.1	253.1	0.0
D	1,778	32	92	7.4	254.2	254.2	254.4	0.2
E	2,498	37	141	4.8	260.4	260.4	260.4	0.0
High Mountain Brook (Upstream Reach)								
A	5,687	27	44	7.4	324.5	324.5	324.5	0.0
B	6,538	96	44	7.4	349.9	349.9	349.9	0.0
C	7,387	82	96	3.0	373.1	373.1	373.1	0.0
D	7,924	34	63	4.2	398.7	398.7	398.7	0.0
E	8,644	164	697	0.4	421.6	421.6	421.6	0.0
F	9,314	92	78	3.5	422.7	422.7	422.7	0.0
G	10,174	60	114	1.8	440.2	440.2	440.3	0.1
H	10,856	100	116	1.8	442.2	442.2	442.3	0.1
I	11,841	34	31	5.6	455.5	455.5	455.5	0.0

[1] Feet Above confluence with Meadow Brook

[2] Elevation computed without consideration of backwater effects from Meadow Brook

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

HIGH MOUNTAIN BROOK (DOWNSTREAM REACH) – HIGH MOUNTAIN BROOK (UPSTREAM REACH)

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
High Mountain Brook 2								
A	175[1]	155	207	4.4	285.9	285.9	285.9	0.0
B	290[1]	29	91	10.2	288.8	288.8	288.8	0.0
C	1,500[1]	182	231	4.0	339.8	339.8	339.8	0.0
D	2,795[1]	109	174	5.3	366.7	366.7	366.7	0.0
E	3,301[1]	30	201	3.8	371.9	371.9	371.9	0.0
F	4,801[1]	128	149	5.1	384.3	384.3	384.3	0.0
G	6,401[1]	125	153	5.0	413.4	413.4	413.4	0.0
H	7,836[1]	212	394	1.9	428.0	428.0	428.2	0.2
I	7,991[1]	66	77	5.2	431.4	431.4	431.4	0.0
J	8,606[1]	181	162	2.5	466.7	466.7	466.7	0.0
K	9,341[1]	84	74	5.4	519.9	519.9	519.9	0.0
L	10,176[1]	94	87	4.6	547.4	547.4	547.4	0.0
M	11,176[1]	106	106	3.8	580.1	580.1	580.1	0.0
N	12,086[1]	64	100	4.0	597.6	597.6	597.8	0.2
Jones Brook								
A	2,800[2]	26	29	6.0	279.3	279.3	279.3	0.0
B	2,890[2]	98	45	3.9	289.3	289.3	289.3	0.0
C	2,970[2]	160	762	0.2	289.5	289.5	289.5	0.0
D	4,130[2]	26	29	6.0	295.7	295.7	295.7	0.0
E	5,090[2]	43	93	1.9	304.5	304.5	304.6	0.1
F	5,280[2]	110	236	0.7	306.3	306.3	306.5	0.2
G	5,760[2]	69	322	0.5	315.1	315.1	315.1	0.0

[1]Feet above mouth
[2]Feet above confluence with the Ramapo River
[3]Elevation computed without consideration of backwater effects from the Ramapo River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

HIGH MOUNTAIN BROOK 2 – JONES BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Longhouse Creek								
A	39,010[1]	33	91	6.4	1,088.0	1,088.0	1,088.0	0.0
B	40,645[1]	340	1,141	0.5	1,089.5	1,089.5	1,089.7	0.2
C	41,560[1]	350	1,341	0.4	1,089.6	1,089.6	1,089.8	0.2
D	43,660[1]	250	830	0.7	1,089.9	1,089.9	1,090.0	0.1
E	44,895[1]	165	667	0.9	1,090.3	1,090.3	1,090.4	0.1
F	45,100[1]	36	72	8.1	1,092.3	1,092.3	1,092.3	0.0
G	45,250[1]	50	147	3.5	1,099.8	1,099.8	1,099.8	0.0
H	54,285[1]	150	1,223	0.2	1,101.2	1,101.2	1,101.2	0.0
I	57,020[1]	166	690	0.4	1,101.4	1,101.4	1,101.5	0.1
J	57,750[1]	55	50	54.0	1,101.8	1,101.8	1,101.8	0.0
K	57,875[1]	75	341	0.8	1,104.8	1,104.8	1,104.8	0.0
L	58,154[1]	23	37	7.2	1,104.9	1,104.9	1,104.9	0.0
M	58,262[1]	70	244	1.1	1,107.5	1,107.5	1,107.5	0.0
N	58,700[1]	76	161	1.7	1,107.8	1,107.8	1,107.9	0.1
O	59,415[1]	127	99	2.7	1,112.6	1,112.6	1,112.6	0.0
P	59,588[1]	93	256	1.0	1,122.4	1,122.4	1,122.4	0.0
Q	61,510[1]	42	49	5.3	1,122.5	1,122.5	1,122.5	0.0
R	61,588[1]	172	1,023	0.3	1,133.9	1,133.9	1,133.9	0.0
MacDonald Brook								
A	2,950[2]	51	202	4.8	45.3	45.3	45.5	0.2
B	3,150[2]	186	562	1.7	46.1	46.1	46.3	0.2
C	3,475[2]	163	363	2.6	46.4	46.4	46.6	0.2
D	3,495[2]	158	222	4.3	47.3	47.3	47.3	0.0
E	3,850[2]	155	269	3.6	48.8	48.8	49.0	0.2
F	3,930[2]	213	399	2.4	49.2	49.2	49.4	0.2
G	4,040[2]	188	449	2.1	49.4	49.4	49.6	0.2

[1]Feet above mouth
[2]Feet above confluence with the Passaic River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

LONGHOUSE CREEK – MACDONALD BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
MacDonald Brook (continued)								
H	4,400[1]	85	166	5.8	54.2	54.2	54.3	0.1
I	4,785[1]	14	140	6.9	58.8	58.8	58.8	0.0
J	5,160[1]	40	114	8.4	62.4	62.4	62.4	0.0
K	5,260[1]	40	209	5.1	63.0	63.0	63.1	0.1
L	5,415[1]	30	108	8.9	63.7	63.7	63.7	0.0
M	5,460[1]	30	103	8.0	63.9	63.9	64.1	0.2
N	5,600[1]	30	103	8.0	67.6	67.6	67.6	0.0
O	5,785[1]	73	418	2.0	70.0	70.0	70.0	0.0
P	5,840[1]	160	806	1.0	73.0	73.0	73.2	0.2
Q	6,275[1]	119	574	1.4	73.0	73.0	73.2	0.2
R	6,690[1]	182	426	1.9	73.1	73.1	73.3	0.2
S	6,913[1]	28	157	5.3	74.5	74.5	74.7	0.2
T	6,985[1]	19	140	5.9	75.3	75.3	75.5	0.2
U	7,000[1]	104	302	2.7	76.1	76.1	76.3	0.2
V	7,575[1]	83	215	3.9	79.0	79.0	79.0	0.0
W	7,630[1]	71	218	3.8	79.4	79.4	79.4	0.0
X	7,749[1]	127	331	2.5	80.4	80.4	80.6	0.2
Y	8,100[1]	14	82	10.1	82.3	82.3	82.3	0.0
Z	8,160[1]	11	62	13.4	84.4	84.4	84.4	0.0
Meadow Brook								
A	808[2]	383	1,282	1.1	218.2	217.2[3]	217.4	0.2
B	1,772[2]	49	321	4.5	220.8	220.8	220.8	0.0
C	3,247[2]	69	204	7.0	228.0	228.0	228.0	0.0
D	4,483[2]	55	165	8.7	238.5	238.5	238.6	0.1
E	5,558[2]	71	453	3.1	247.0	247.0	247.0	0.0
F	6,789[2]	173	597	2.4	248.4	248.4	248.5	0.1

[1]Feet above confluence with Passaic River
[2]Feet above confluence with Wanaque River
[3]Elevation computed without consideration of backwater effects from Wanaque River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

MACDONALD BROOK – MEADOW BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Meadow Brook (continued)								
G	7,744[1]	535	3,178	0.5	249.5	249.5	249.7	0.2
H	8,739[1]	89	261	5.5	252.9	252.9	253.0	0.1
I	10,083[1]	262	2,531	0.4	262.7	262.7	262.7	0.0
J	10,993[1]	662	4,658	0.2	262.7	262.7	262.7	0.0
K	12,294[1]	82	383	2.3	263.1	263.1	263.1	0.0
L	12,354[1]	74	215	3.8	270.3	270.3	270.3	0.0
M	14,000[1]	145	609	1.4	282.8	282.8	282.8	0.0
Meadow Brook Branch 2								
A	276[2]	21	49	1.4	279.0	279.0	279.0	0.0
B	566[2]	9	11	6.2	279.9	279.9	279.9	0.0
C	1,645[2]	14	27	2.6	286.3	286.3	286.5	0.2
Molly Ann Brook								
A	889[3]	55	350	5.2	125.8	120.7[4]	120.7	0.0
B	1,466[3]	80	377	4.9	125.8	121.3[4]	121.3	0.0
C	1,817[3]	43	386	4.7	125.8	121.6[4]	121.7	0.1
D	1,989[3]	39	368	5.0	125.8	122.6[4]	122.6	0.0
E	2,186[3]	41	402	4.6	125.8	122.8[4]	122.8	0.0
F	2,306[3]	85	425	4.3	125.8	123.3[4]	123.3	0.0
G	2,776[3]	160	511	3.6	125.8	123.6[4]	123.6	0.0
H	3,039[3]	71	479	3.8	125.8	123.8[4]	123.8	0.0
I	3,283[3]	113	638	2.9	125.8	124.6[4]	124.6	0.0
J	3,361[3]	130	707	4.4	125.8	124.6[4]	124.6	0.0
K	3,595[3]	164	508	5.9	125.8	124.6[4]	124.6	0.0

[1]Feet above confluence with the Wanaque River
[2]Feet above mouth
[3]Feet above confluence with the Passaic River
[4]Elevation computed without consideration of backwater effects from the Passaic River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

MEADOW BROOK – MEADOW BROOK BRANCH 2 – MOLLY ANN BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Molly Ann Brook (continued)								
L	4,498	58	461	6.5	126.9	126.9	127.0	0.1
M	4,586	66	475	6.3	127.5	127.5	127.6	0.1
N	5,290	52	252	11.9	128.9	128.9	129.0	0.1
O	5,343	55	319	9.4	130.8	130.8	130.8	0.0
P	5,835	47	285	10.6	133.6	133.6	133.6	0.0
Q	6,567	72	528	5.7	137.3	137.3	137.3	0.0
R	6,691	67	532	5.7	137.7	137.7	137.7	0.0
S	7,431	55	397	7.6	139.0	139.0	139.0	0.0
T	7,574	110	519	5.5	139.8	139.8	139.8	0.0
U	8,108	92	408	7.0	140.9	140.9	140.9	0.0
V	8,803	60	458	6.2	142.7	142.7	142.7	0.0
W	8,975	65	493	5.8	143.2	143.2	143.2	0.0
X	9,453	61	469	6.1	143.8	143.8	143.8	0.0
Y	9,619	33	433	6.6	145.3	145.3	145.4	0.1
Z	10,016	31	292	9.7	145.6	145.6	145.7	0.1
AA	10,160	28	278	10.2	146.6	146.6	146.7	0.1
AB	10,459	42	356	8.0	148.3	148.3	148.5	0.2
AC	10,677	74	613	4.6	152.3	152.3	152.3	0.0
AD	10,882	52	358	7.9	152.0	152.0	152.0	0.0
AE	11,109	34	312	9.1	152.9	152.9	152.9	0.0
AF	11,155	29	310	9.2	153.8	153.8	153.8	0.0
AG	11,291	72	451	6.3	154.8	154.8	154.8	0.0
AH	11,420	43	336	8.5	156.7	156.7	156.8	0.1
AI	11,675	46	505	5.6	158.3	158.3	158.4	0.1
AJ	11,787	44	333	8.0	158.2	158.2	158.3	0.1
AK	12,008	73	298	8.9	159.2	159.2	159.4	0.2

[1]Feet above confluence with the Passaic River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

MOLLY ANN BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Molly Ann Brook (continued)								
AL	12,637	41	208	12.8	166.4	166.4	166.4	0.0
AM	12,867	61	402	6.6	169.7	169.7	169.7	0.0
AN	13,110	52	339	7.9	170.3	170.3	170.3	0.0
AO	13,644	60	282	7.2	174.7	174.7	174.9	0.2
AP	14,482	78	306	6.6	181.6	181.6	181.7	0.1
AQ	15,979	655	3,803	0.5	203.5	203.5	203.5	0.0
AR	17,004	35	147	11.6	205.9	205.9	205.9	0.0
AS	17,856	34	159	10.7	212.8	212.8	212.8	0.0
AT	18,482	248	935	1.8	222.9	222.9	222.9	0.0
AU	19,698	39	191	5.9	232.7	232.7	232.7	0.0
AV	20,721	50	175	6.5	244.1	244.1	244.1	0.0
AW	21,551	40	129	8.8	257.9	257.9	257.9	0.0
AX	22,164	37	120	9.4	268.9	268.9	268.9	0.0
AY	22,959	71	237	4.8	281.1	281.1	281.1	0.0
AZ	23,537	140	191	5.1	289.9	289.9	289.9	0.0
BA	24,129	99	352	2.8	302.5	302.5	302.5	0.0
BB	24,888	30	95	10.2	317.6	317.6	317.6	0.0
BC	25,891	60	145	6.7	345.3	345.3	345.3	0.0
BD	26,673	38	104	9.3	364.1	364.1	364.1	0.0
BE	27,555[1]	64	119	6.5	380.6	380.6	380.6	0.0
BF	28,852[1]	285	997	0.8	397.9	397.9	398.0	0.1

[1] Feet above confluence with the Passaic River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

MOLLY ANN BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Molly Ann Brook Tributary 3								
A	170	27	65	4.9	209.5	209.5	209.7	0.2
B	630	30	83	3.9	219.4	219.4	219.6	0.2
C	805	58	74	4.3	222.8	222.8	223.0	0.2
D	1,166	78	146	2.2	233.4	233.4	233.6	0.2
E	1,320	24	81	3.9	233.6	233.6	233.8	0.2
F	2,160	34	75	4.2	260.9	260.9	261.0	0.1
Molly Ann Brook Tributary 4								
A	130	23	50	4.7	216.0	216.0	216.1	0.1
B	270	105	153	1.5	220.0	220.0	220.2	0.2
C	675	10	29	8.1	225.9	225.9	226.1	0.2
D	1,230	20	45	5.2	237.6	237.6	237.7	0.1
E	2,045	20	66	3.5	281.1	281.1	281.3	0.2
F	2,455	27	116	2.0	302.3	302.3	302.4	0.1
G	2,740	20	69	3.4	306.5	306.5	306.6	0.1
H	3,140	5	14	9.3	333.6	333.6	333.6	0.0
I	3,585	8	24	5.5	370.6	370.6	370.8	0.2
J	3,900	60	168	0.8	377.1	377.1	377.2	0.1
K	4,076	45	47	2.8	380.3	380.3	380.4	0.1
Molly Ann Brook Tributary 6								
A	350	34	53	3.4	342.6	342.6	342.8	0.2
B	680	30	68	2.7	355.6	355.6	355.8	0.2
C	830	23	42	4.3	365.7	365.7	365.9	0.2
D	961	23	57	3.1	378.8	378.8	379.0	0.2
E	1,775	51	111	1.6	403.0	403.0	403.1	0.1
F	1,835	77	163	1.1	403.4	403.4	403.6	0.2
G	2,081	37	57	3.1	407.8	407.8	407.8	0.0

[1]Feet above confluence with Molly Ann Brook

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

MOLLY ANN BROOK TRIBUTARY 3 – MOLLY ANN BROOK TRIBUTARY 4 – MOLLY ANN BROOK TRIBUTARY 6

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Morsetown Brook								
A	1,045	24	59	8.9	623.4	622.7[2]	622.7	0.0
B	1,880	28	83	6.3	630.6	630.6	630.6	0.0
C	1,900	73	176	2.9	636.1	636.1	636.1	0.0
D	2,255	31	73	7.1	636.9	636.9	637.1	0.2
E	2,424	77	265	2.0	641.7	641.7	641.7	0.0
F	3,338	187	155	3.4	653.2	653.2	653.2	0.0
G	3,500	56	126	3.1	656.5	656.5	656.5	0.0
H	4,520	94	99	3.9	677.2	677.2	677.3	0.0
I	5,455	52	66	6.0	704.7	704.7	704.7	0.0
J	7,265	195	143	2.7	754.2	754.2	754.2	0.0
K	9,155[1]	41	72	5.4	803.3	803.3	803.3	0.0
L	10,275[1]	15	27	7.8	863.2	863.2	863.2	0.0
M	10,453[1]	18	29	7.3	870.2	870.2	870.2	0.0
N	10,600[1]	15	27	7.7	878.2	878.2	878.2	0.0
O	10,970[1]	32	35	6.0	884.2	884.2	884.2	0.0
P	11,086[1]	24	70	3.0	893.6	893.6	893.7	0.1
Q	11,500[1]	9	12	6.7	905.2	905.2	905.2	0.0
R	11,535[1]	100	214	0.4	911.2	911.2	911.2	0.0
S	11,880[1]	170	446	0.2	914.8	914.8	914.8	0.0
T	12,650[1]	26	22	3.2	914.8	914.8	914.8	0.0
U	12,756[1]	26	16	4.5	922.0	922.0	922.0	0.0

[1]Feet above mouth
[2]Elevation computed without consideration of backwater effects from Belcher Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

MORSETOWN BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Naachtpunkt Brook								
A	840[1]	50	232	2.4	174.8	174.8	174.9	0.1
B	1,680[1]	60	182	3.0	175.4	175.4	175.5	0.1
C	2,950[1]	60	89	6.2	176.2	176.2	176.2	0.0
D	4,870[1]	40	174	3.2	181.7	181.7	181.9	0.2
E	5,100[1]	53	166	1.8	182.6	182.6	182.6	0.0
F	5,700[1]	50	148	2.1	182.9	182.9	183.0	0.1
G	6,400[1]	64	261	1.2	186.8	186.8	186.9	0.1
H	7,400[1]	44	51	5.9	188.1	188.1	188.2	0.1
I	8,650[1]	22	40	7.7	193.9	193.9	193.9	0.0
J	9,150[1]	30	80	3.8	200.0	200.0	200.0	0.0
Naachtpunkt Brook (Upper Reach)								
A	-100[2]	30	140	2.2	255.0	255.0	255.2	0.2
B	150[2]	18	37	8.2	268.1	268.1	268.1	0.0
C	950[2]	50	109	2.8	332.4	332.4	332.5	0.1
D	1,557[2]	17	37	8.2	368.7	368.7	368.7	0.0
E	1,734[2]	70	365	0.8	379.9	379.9	379.9	0.0
F	1,925[2]	50	151	2.0	379.9	379.9	379.9	0.0

[1]Feet from confluence with Singac Brook
[2]Feet from Chadwick Road

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

NAACHTPUNKT BROOK – NAACHTPUNKT BROOK (UPPER REACH)

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Packanack Brook								
A	3.860[1]	500	2,747	0.5	175.7	174.9[4]	175.0	0.1
B	5.354[1]	700	7,464	0.2	175.7	174.9[4]	175.1	0.2
C	7.041[1]	700	6,782	0.2	175.7	174.9[4]	175.1	0.2
D	8.452[1]	1,600	4,057	0.3	175.7	174.9[4]	175.1	0.2
E	9.901[1]	1,725	17,901	0.1	181.4	181.4	181.4	0.0
F	11.345[1]	812	6,194	0.2	181.4	181.4	181.4	0.0
G	12.629[1]	272	1,471	0.6	181.4	181.4	181.4	0.0
Passaic River								
A	2,442[2]	430[3]	8,029	3.1	9.7	9.7	9.8	0.1
B	7,493[2]	277[3]	5,792	4.4	10.4	10.4	10.5	0.1
C	11,006[2]	282[3]	6,006	4.2	11.0	11.0	11.0	0.0
D	16,620[2]	269[3]	5,838	4.3	11.9	11.9	12.0	0.1
E	19,946[2]	342[3]	5,876	4.3	13.4	13.4	13.6	0.2
F	24,180[2]	543[3]	6,775	3.2	16.0	16.0	16.2	0.2
G	26,479[2]	403[3]	7,323	2.9	18.3	18.3	18.5	0.2
H	30,376[2]	458[3]	7,502	2.9	19.0	19.0	19.2	0.2
I	33,874[2]	853[3]	9,602	2.2	30.2	30.2	30.2	0.0
J	36,105[2]	804[3]	7,393	2.9	31.2	31.2	31.2	0.0
K	40,661[2]	400[3]	5,411	4.0	32.5	32.5	32.5	0.0
L	43,169[2]	413[3]	4,278	5.0	33.2	33.2	33.3	0.1
M	46,706[2]	421[3]	4,902	4.4	34.6	34.6	34.7	0.1
N	50,258[2]	328[3]	4,076	5.3	35.5	35.5	35.6	0.1
O	52,650[2]	290[3]	3,709	5.8	36.8	36.8	36.8	0.0
P	55,449[2]	333[3]	4,163	5.2	38.3	38.3	38.4	0.1
Q	58,031[2]	283[3]	3,322	6.5	39.5	39.5	39.6	0.1
R	60,631[2]	315	4,139	5.2	41.0	41.0	41.1	0.1

[1]Feet above confluence with Pompton River
[2]Feet above County boundary
[3]Width extends beyond County boundary
[4]Elevation computed without consideration of backwater effects from the Pompton River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

PACKANACK BROOK — PASSAIC RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Passaic River (continued)								
S	62,088	363	4,377	4.9	41.9	41.9	42.1	0.2
T	65,092	233	3,502	6.1	43.8	43.8	43.9	0.1
U	68,332	269	4,509	4.8	46.7	46.7	46.9	0.2
V	71,194	527	3,598	6.0	49.2	49.2	49.3	0.1
W	73,245	170	1,983	10.8	53.0	53.0	53.1	0.1
X	74,102	315	5,161	4.2	61.0	61.0	61.1	0.1
Y	75,984	277	4,564	4.7	125.2	125.2	125.2	0.0
Z	80,607	432	6,252	3.4	126.3	126.3	126.3	0.0
AA	84,761	586	6,524	3.3	127.8	127.8	128.0	0.2
AB	86,876	234	3,875	5.5	129.1	129.1	129.1	0.0
AC	91,422	333	4,755	4.5	131.0	131.0	131.2	0.2
AD	93,290	434	5,866	3.7	131.8	131.8	132.0	0.2
AE	96,876	205	4,121	6.9	135.9	135.9	136.0	0.1
AF	98,842	296	3,481	6.2	165.0	165.0	165.0	0.0
AG	100,585	1,236	7,709	2.9	166.6	166.6	166.8	0.2
AH	104,440	2,356	8,209	3.7	168.8	168.8	169.0	0.2
AI	106,817	2,877	7,997	4.2	169.8	169.8	169.9	0.1
AJ	111,085	2,607[2]	8,663	3.6	170.9	170.9	171.0	0.1
AK	113,208	1,337[2]	8,159	3.5	171.5	171.5	171.6	0.1
AL	114,296	533[2]	6,369	3.6	173.2	173.2	173.4	0.2

[1] Feet above County boundary
[2]Width extends beyond County boundary

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

PASSAIC RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pearl Brook								
A	155	153	319	1.1	128.7	128.7	128.8	0.1
B	367	20	187	1.8	142.5	142.5	142.5	0.0
C	715	26	82	4.2	173.5	173.5	173.6	0.1
D	1,050	25	45	7.7	178.5	178.5	178.6	0.1
E	1,485	12	36	9.6	202.0	202.0	202.1	0.1
F	1,790	15	38	9.2	215.7	215.7	215.7	0.0
G	3,730	18	21	4.8	308.5	308.5	308.5	0.0
H	3,950	17	15	6.5	316.3	316.3	316.3	0.0
I	4,275	90	304	0.3	324.2	324.2	324.2	0.0
Peckman River								
A	450	322	1,194	3.5	130.6	124.4[2]	124.4	0.0
B	1,000	91	465	9.0	130.6	124.4[2]	124.4	0.0
C	1,500	228	1,349	3.1	130.6	129.6[2]	129.8	0.3
D	2,300	293	1,401	3.0	130.6	130.3[2]	130.5	0.2
E	3,100	93	529	7.9	132.4	132.4	132.5	0.1
F	3,850	173	501	8.3	133.7	133.7	133.7	0.0
G	4,850	114	700	5.0	138.2	138.2	138.2	0.0
H	5,480	315	1,443	4.3	141.0	141.0	141.2	0.2
I	6,100	430	1,217	5.1	143.0	143.0	143.0	0.0
J	6,850	485	1,282	4.9	146.8	146.8	147.0	0.2
K	7,250	383	893	7.0	150.2	150.2	150.4	0.2
L	8,050	368	1,255	5.0	156.7	156.7	156.7	0.0
M	8,560	107	968	6.5	160.1	160.1	160.1	0.0
N	9,000	127	588	10.7	163.8	163.8	163.8	0.0
O	9,400	83	709	8.8	167.5	167.5	167.7	0.2
P	9,850	118	514	11.2	169.7	169.7	169.7	0.0
Q	10,750	75	456	12.7	178.2	178.2	178.3	0.1

[1]Feet above confluence with the Passaic River

[2] Elevation computed without consideration of backwater effects from the Pompton River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

PEARL BROOK – PECKMAN RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pequannock River								
A	5,013[1]	1,854	15,036	0.2	187.6	187.6	187.8	0.2
B	7,434[1]	1,950	15,478	0.2	187.6	187.6	187.8	0.2
C	8,827[1]	1,354	7,119	0.3	187.7	187.7	187.8	0.1
D	10,642[1]	291	2,280	1.1	187.7	187.7	187.9	0.2
E	12,851	880[2]	6,044	1.0	192.3	192.3	192.5	0.2
F	13,892	321[2]	1,491	4.1	193.2	193.2	193.4	0.2
G	14,171	253[2]	1,331	4.6	193.7	193.7	193.8	0.1
H	14,693	129[2]	937	6.6	194.4	194.4	194.6	0.2
I	15,248	121[2]	939	6.6	195.9	195.9	196.0	0.1
J	17,281	106[2]	950	6.5	199.9	199.9	200.0	0.1
K	17,412	75[2]	751	8.2	200.2	200.2	200.3	0.1
L	19,251	264[2]	841	7.3	207.7	207.7	207.9	0.2
M	22,406	230[2]	1,682	3.7	225.6	225.6	225.8	0.2
N	24,347	207[2]	860	7.2	233.6	233.6	233.7	0.1
O	24,521	134[2]	811	7.6	235.0	235.0	235.0	0.0
P	27,083	66[2]	520	11.8	250.6	250.6	250.8	0.2
Q	27,363	160[2]	1,128	5.5	254.9	254.9	254.9	0.0
R	27,905	103[2]	837	7.4	256.6	256.6	256.6	0.0
S	28,261	167[2]	623	9.9	257.7	257.7	257.8	0.1
T	29,161	100[2]	718	8.3	266.4	266.4	266.6	0.2
U	29,805	215[2]	610	9.8	272.9	272.9	273.1	0.2
V	30,373	77[2]	489	12.2	280.2	280.2	280.3	0.1
W	30,659	90[2]	730	8.2	285.2	285.2	285.2	0.0
X	31,036	84[2]	465	12.8	287.0	287.0	287.0	0.0
Y	31,381	69[2]	517	10.9	291.5	291.5	291.6	0.1
Z	31,628	70[2]	601	9.4	293.9	293.9	293.9	0.0

[1]Feet above confluence with the Pompton River

[2]Width extends beyond County boundary

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

PEQUANNOCK RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pequannock River (continued)								
AA	32,536	80	472	11.9	301.1	301.1	301.2	0.1
AB	32,997	132	735	7.7	305.4	305.4	305.6	0.2
AC	33,842	79	572	9.8	310.3	310.3	310.4	0.1
AD	33,941	118	1,215	4.6	322.1	322.1	322.1	0.0
AE	34,392	98	958	5.8	322.5	322.5	322.5	0.0
AF	34,716	78	601	9.3	323.1	323.1	323.1	0.0
AG	34,767	65	655	8.5	326.4	326.4	326.5	0.1
AH	34,823	75	842	7.2	328.0	328.0	328.0	0.0
AI	35,342	111	553	10.1	329.2	329.2	329.4	0.2
AJ	35,445	91	1,029	5.4	331.5	331.5	331.6	0.1
AK	35,555	81	750	7.5	334.0	334.0	334.1	0.1
AL	36,175	54	464	12.1	337.4	337.4	337.5	0.1
AM	36,196	46	430	13.0	337.6	337.6	337.6	0.0
AN	36,353	131	1,258	4.4	341.0	341.0	341.1	0.1
AO	38,149	123	507	11.0	352.0	352.0	352.1	0.1
AP	38,453	155	917	6.1	360.6	360.6	360.6	0.0
AQ	38,820	120	595	9.4	362.1	362.1	362.3	0.2
AR	39,147	84	557	10.0	364.8	364.8	364.8	0.0
AS	40,154	218	692	8.1	372.8	372.8	372.8	0.0
AT	42,330	105	658	8.4	398.4	398.4	398.5	0.1
AU	42,706	55	407	13.5	402.2	402.2	402.3	0.1
AV	43,355	64	402	13.7	410.2	410.2	410.2	0.0
AW	44,431	94	846	6.4	427.2	427.2	427.2	0.0
AX	45,791	161	938	5.8	438.8	438.8	438.9	0.1
AY	46,384	95	452	12.1	446.6	446.6	446.6	0.0
AZ	47,190	171	948	5.8	457.4	457.4	457.5	0.1

[1]Feet above confluence with the Pompton River
[2]Width extends beyond County boundary
*Data not available

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

PEQUANNOCK RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pequannock River (continued)								
BA	47,724	99	609	9.0	463.0	463.0	463.0	0.0
BB	49,824	101	587	9.3	488.4	488.4	488.5	0.1
BC	51,594	102	569	9.3	505.3	505.3	505.4	0.1
BD	53,012	131	521	10.1	513.6	513.6	513.6	0.0
BE	53,801	97	1,228	4.3	521.7	521.7	521.7	0.0
BF	54,567	122	772	6.8	526.4	526.4	526.4	0.0
BG	57,349	188	569	9.1	555.3	555.3	555.3	0.0
BH	57,600	130	1,263	4.1	565.8	565.8	565.8	0.0
BI	58,396	413	2,641	3.0	580.9	580.9	580.9	0.0
BJ	60,379	161	661	7.8	591.8	591.8	591.8	0.0
BK	61,456	84	432	12.0	604.8	604.8	604.8	0.0
BL	61,995	83	488	10.6	613.8	613.8	614.0	0.2
BM	63,047	74	399	13.0	627.1	627.1	627.1	0.0
BN	64,007	164	837	6.2	642.8	642.8	642.8	0.0
BO	65,138	158	464	11.2	664.2	664.2	664.2	0.0
BP	65,472	79	404	12.8	667.3	667.3	667.3	0.0
BQ	66,621	511	2,593	2.0	741.9	741.9	741.9	0.0
BR	68,110	829	4,495	1.2	742.4	742.4	742.4	0.0
BS	77,354	309	1,108	3.4	742.4	742.4	742.4	0.0
BT	83,665	260	963	3.6	753.1	753.1	753.2	0.1
BU	84,429	199	1,032	3.3	755.5	755.5	755.5	0.0
BV	84,598	137	1,028	3.3	756.1	756.1	756.1	0.0
BW	86,113	96	517	5.4	759.0	759.0	759.2	0.2
BX	87,038	70	453	6.1	762.8	762.8	762.9	0.1

[1] Feet above confluence with the Pompton
[2] Width extends beyond County boundary

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

PEQUANNOCK RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pequannock River (continued)								
BY	88,124	80	334	8.3	767.2	767.2	767.3	0.1
BZ	88,303	66	351	7.9	768.5	768.5	768.5	0.0
CA	88,675	48	361	7.7	770.0	770.0	770.0	0.0
CB	91,384	100	583	4.8	776.1	776.1	776.3	0.2
CC	91,522	66	424	6.6	776.9	776.9	777.1	0.2
CD	92,164	89	611	4.6	778.7	778.7	778.8	0.1
CE	94,813	252	1,380	2.0	781.8	781.8	782.0	0.2
CF	106,738	575	2,204	1.2	787.7	787.7	787.7	0.0
CG	109,974	96	323	8.2	791.2	791.2	791.4	0.2

[1] Feet above confluence with the Pompton
[2] Width extends beyond County boundary

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

PEQUANNOCK RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pompton River								
A	2.290[1]	2.504[3]	23.197	1.7	173.7	172.0[4]	172.2	0.2
B	4.889[1]	2.079[3]	19.668	2.0	173.7	172.6[4]	172.8	0.2
C	6.834[1]	1.193[3]	9.780	4.0	173.7	172.9[4]	173.1	0.2
D	7.828[1]	957[3]	9.646	4.0	173.8	173.8	173.9	0.1
E	12.546[1]	1.555[3]	18.282	2.1	175.3	175.3	175.4	0.1
F	16.764[1]	5.250[3]	43.388	0.9	175.7	175.7	175.9	0.2
G	19.194[1]	3.269[3]	26.456	1.5	175.8	175.8	175.9	0.1
H	21.158[1]	3.810[3]	16.991	2.3	175.8	175.8	176.0	0.2
I	23.889[1]	2.553[3]	10.914	3.5	176.4	176.4	176.5	0.1
J	25.628[1]	2.217[3]	17.792	2.2	179.4	179.4	179.6	0.2
K	28.610[1]	1.308[3]	10.058	3.8	182.6	182.6	182.7	0.1
L	30.712[1]	1.500[3]	19.380	2.0	183.1	183.1	183.2	0.1
M	32.519[1]	1.409[3]	15.531	2.5	183.3	183.3	183.5	0.2
N	34.569[1]	1.790[3]	14.250	2.7	183.5	183.5	183.6	0.1
O	35.232[1]	889[3]	13.324	2.9	186.9	186.9	187.0	0.1
Pompton River Unnamed Tributary								
A	2.004[2]	51	122	1.9	175.7	165.7[5]	165.9	0.2
B	2.923[2]	55	158	1.5	175.7	166.5[5]	166.6	0.1

[1] Feet above confluence with the Pompton River
[2] Feet above confluence with the Passaic River
[3] Width extends beyond County boundary
[4] Elevation determined without consideration of backwater effects from the Passaic River
[5] Elevation determined without consideration of control effects from the Pompton River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

POMPTON RIVER – POMPTON RIVER UNIT

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Post Brook								
A	32,680	113	95	3.0	863.0	863.0	863.0	0.0
B	32,760	138	220	1.3	868.9	868.9	868.9	0.0
C	33,500	205	184	1.5	871.1	871.1	871.1	0.0
D	33,920	15	79	3.6	871.4	871.4	871.6	0.2
E	34,006	32	159	1.8	872.6	872.6	872.8	0.2
F	34,695	289	1,107	0.3	872.7	872.7	872.9	0.2
G	35,250	132	364	0.5	872.8	872.8	873.0	0.2
H	36,430	61	161	1.2	877.4	877.4	877.4	0.0
I	36,560	73	161	1.2	879.0	879.0	879.1	0.1
J	36,610	67	49	3.9	882.1	882.1	882.1	0.0
K	37,675	89	142	1.3	882.6	882.6	882.6	0.0
L	37,750	39	42	4.7	891.3	891.3	891.3	0.0
M	39,151	19	16	5.3	893.9	893.9	893.9	0.0
N	40,200	80	31	2.8	940.0	940.0	940.0	0.0
O	40,360	157	1,398	0.1	959.0	959.0	959.0	0.0
P	43,260	83	63	2.7	973.7	973.7	973.7	0.0
Post Brook Branch 1								
A	455	46	133	1.9	212.7	212.7	212.9	0.2
B	850	48	206	1.2	213.7	213.7	213.8	0.1
C	1,055	151	1,213	0.2	219.1	219.1	219.2	0.1
D	2,720	38	141	1.8	219.1	219.1	219.2	0.1
E	2,960	12	62	2.5	219.6	219.6	219.8	0.2

[1]Feet above mouth

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

POST BROOK – POST BROOK BRANCH 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Post Book Branch 2								
A	550[1]	15	64	2.5	221.2	221.2	221.4	0.2
B	1,030[1]	17	77	2.1	225.4	225.4	225.5	0.1
C	1,360[1]	58	48	3.4	227.3	227.3	227.4	0.1
D	1,615[1]	42	93	1.7	229.4	229.4	229.5	0.1
E	2,170[1]	246	199	0.8	229.8	229.8	230.0	0.2
F	2,780[1]	12	19	4.5	236.4	236.4	236.4	0.0
G	2,870[1]	9	54	1.6	242.1	242.1	242.2	0.1
Post Brook Branch 3								
A	190[2]	133	283	0.9	872.8	872.8	873.0	0.2
B	375[2]	22	70	3.6	874.1	874.1	874.2	0.1
C	1,010[2]	108	180	1.4	876.1	876.1	876.3	0.2
D	1,130[2]	172	914	0.3	884.8	884.8	884.8	0.0
E	2,700[2]	79	470	0.5	901.6	901.6	901.6	0.0
F	2,975[2]	112	143	1.4	904.2	904.2	904.2	0.0
G	3,053[2]	95	337	0.6	908.8	908.8	908.8	0.0
H	3,705[2]	54	44	4.6	909.4	909.4	909.4	0.0
I	3,790[2]	11	24	8.3	911.5	911.5	911.5	0.0
J	3,840[2]	96	380	0.5	912.7	912.7	912.7	0.0
K	4,600[2]	104	54	3.7	914.3	914.3	914.3	0.0
L	5,365[2]	108	64	3.1	960.6	960.6	960.6	0.0
Post Brook Branch 4								
A	130[3]	6	4	4.8	878.1	878.1	878.1	0.0
B	385[3]	41	24	0.9	879.4	879.4	879.4	0.0
C	1,001[3]	58	9	2.3	879.8	879.8	879.8	0.0
D	1,130[3]	12	7	1.5	882.0	882.0	882.0	0.0
E	1,495[3]	10	3	3.3	893.7	893.7	893.7	0.0

[1]Feet above confluence with Posts Brook
[2]Feet above confluence with Post Brook
[3]Feet above confluence with Post Brook Branch 3

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

POST BROOK BRANCH 2 - POST BROOK BRANCH 3 – POST BROOK BRANCH 4

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Posts Brook and Rainbow Valley Lake								
A	30	36	111	7.4	201.3	192.2[2]	192.2	0.0
B	430	44	173	4.7	201.3	197.1[2]	197.1	0.0
C	570	36	91	9.0	201.3	199.5[2]	199.5	0.0
D	860	61	295	2.8	205.9	205.9	205.9	0.0
E	1,921	54	325	2.5	208.3	208.3	208.3	0.0
F	2,192	74	350	2.3	209.4	209.4	209.4	0.0
G	4,565	180	1,145	0.7	211.0	211.0	211.0	0.0
H	4,810	171	1,184	0.7	212.7	212.7	212.9	0.2
I	5,375	49	269	3.0	212.7	212.7	212.9	0.2
J	5,615	140	611	1.0	213.6	213.6	213.8	0.2
K	6,725	216	1,204	0.5	213.7	213.7	213.9	0.2
L	7,520	63	225	2.8	213.7	213.7	213.9	0.2
M	7,645	43	197	3.0	215.2	215.2	215.3	0.1
N	8,415	174	434	1.4	216.4	216.4	216.6	0.2
O	9,310	148	475	1.2	216.9	216.9	217.1	0.2
P	9,910	9	46	12.9	217.2	217.2	217.2	0.0
Q	10,080	76	498	1.2	220.6	220.6	220.7	0.1
R	10,235	76	619	0.7	222.7	222.7	222.9	0.2
S	12,115	52	310	1.4	222.7	222.7	222.9	0.2
T	12,935	96	476	0.9	222.7	222.7	222.9	0.2
U	13,151	50	256	1.3	223.2	223.2	223.4	0.2
V	13,880	36	105	3.2	223.3	223.3	223.5	0.2

[1]Feet above confluence with the Wanaque River
[2]Elevation computed without backwater effects from the Wanaque River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

POSTS BROOK AND RAINBOW VALLEY LAKE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ramapo River								
A	1,780[1]	542[3]	5051	2.1	187.2	187.2	187.3	0.1
B	4,342[1]	2,332[3]	7667	2.0	187.4	187.4	187.6	0.2
C	5,924[1]	2,155	21,103	1.3	187.9	187.9	188.0	0.1
D	7,046[1]	2,294	14,560	1.7	188.1	188.1	188.3	0.2
E	8,614[1]	1,228	6,566	3.2	189.7	189.7	189.9	0.2
F	9,619[1]	668	5,470	3.4	190.3	190.3	190.5	0.2
G	10,664[1]	362	5,275	1.2	202.5	202.5	202.6	0.1
H	12,058[1]	702	6,667	0.9	202.6	202.6	202.6	0.0
I	13,484[1]	383	4,390	1.4	202.6	202.6	202.6	0.0
J	17,345[1]	1,006	9,428	1.5	202.8	202.8	202.8	0.0
K	18,349[1]	1,095	10,994	1.3	202.9	202.9	202.9	0.0
L	19,584[1]	1,381	3,892	3.6	202.9	202.9	202.9	0.0
Ringwood Creek								
A	783[2]	1,411	51,601	0.1	306.7	306.7	306.7	0.0
B	1,972[2]	768	27,342	0.1	306.7	306.7	306.7	0.0
C	3,909[2]	398	11,458	0.2	306.7	306.7	306.7	0.0
D	5,721[2]	710	16,074	0.2	307.6	307.6	307.6	0.0
E	7,586[2]	1,054	14,329	0.2	307.6	307.6	307.6	0.0
F	8,615[2]	359	3,139	0.8	307.6	307.6	307.6	0.0
G	9,828[2]	649	2,000	1.2	308.0	308.0	308.2	0.2
H	11,057[2]	344	2,885	0.8	321.3	321.3	321.3	0.0
I	11,883[2]	431	1,277	1.9	321.7	321.7	321.9	0.2
J	12,560[2]	331	1,241	2.0	328.2	328.2	328.4	0.2
K	13,499[2]	144	1,140	2.1	338.6	338.6	338.6	0.0

[1]Feet above confluence with the Pompton River
[2]Feet above confluence with Wanaque Reservoir
[3]Width extends beyond County boundary

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

RAMAPO RIVER – RINGWOOD CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ringwood Creek Branch 1								
A	1,050[1]	46	38	3.4	334.1	334.1	334.1	0.0
B	1,144[1]	27	52	2.5	338.1	338.1	338.1	0.0
Singac Brook								
A	1,669[2]	196	927	2.9	173.1	165.6[3]	165.7	0.1
B	4,036[2]	165	695	3.8	173.1	168.8[3]	168.8	0.0
C	5,445[2]	793	2,666	0.9	173.1	170.5[3]	170.5	0.0
D	6,909[2]	865	2,184	1.1	173.1	171.5[3]	171.6	0.1
E	8,343[2]	314	1,379	1.8	173.2	173.2	173.3	0.1
F	9,654[2]	510	1,171	1.9	174.6	174.6	174.7	0.1
G	10,931[2]	562	2,169	1.0	175.9	175.9	176.0	0.1
H	11,992[2]	335	988	2.2	179.9	179.9	180.0	0.1
I	13,146[2]	472	1,922	1.1	180.2	180.2	180.2	0.0
J	14,371[2]	415	1,319	1.6	181.0	181.0	181.1	0.1
K	15,347[2]	446	1,726	1.1	181.8	181.8	181.9	0.1
L	16,298[2]	431	930	2.1	182.5	182.5	182.6	0.1
M	17,389[2]	130	367	5.3	184.6	184.6	184.8	0.2
N	18,434[2]	168	430	4.5	187.7	187.7	187.9	0.2
O	19,554[2]	83	328	6.0	191.3	191.3	191.3	0.0
P	20,892[2]	435	661	3.0	196.5	196.5	196.6	0.1
Q	21,888[2]	87	346	5.6	201.2	201.2	201.2	0.0
R	22,955[2]	82	204	6.8	205.0	205.0	205.0	0.0
S	24,032[2]	29	153	9.0	208.7	208.7	208.7	0.0
T	25,250[2]	35	162	7.7	217.7	217.7	217.7	0.0
U	26,522[2]	51	211	5.9	226.5	226.5	226.5	0.0
V	27,774[2]	283	425	2.9	234.2	234.2	234.2	0.0

[1]Feet above confluence with Ringwood Creek
[2]Feet above confluence with the Passaic River
[3]Elevation computed without consideration of backwater effects from the Passaic River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

RINGWOOD CREEK BRANCH 1 – SINGAC BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Singac Brook								
W	28.636	73	143	8.7	237.5	237.5	237.5	0.0
X	29.799	38	127	9.8	247.2	247.2	247.2	0.0
Y	30.795	157	482	1.4	256.1	256.1	256.1	0.0
Z	31.513	53	116	5.8	259.7	259.7	259.7	0.0
AA	32.200	30	142	4.7	264.8	264.8	264.8	0.0
AB	32.832	28	166	4.1	268.6	268.6	268.6	0.0
AC	33.426	40	71	6.6	273.9	273.9	273.9	0.0
AD	34.399	363	3009	0.2	286.0	286.0	286.0	0.0
AE	35.314	550	4976	0.1	286.0	286.0	286.0	0.0
AF	36.176	483	1593	0.3	286.0	286.0	286.0	0.0
AG	37.309	65	110	4.3	290.6	290.6	290.6	0.0
AH	38.277	91	100	4.7	298.3	298.3	298.4	0.1
AI	39.390	44	80	5.9	307.2	307.2	307.2	0.0
Slippery Rock Brook								
A	540	80	39	8.7	125.9	118.8[2]	118.8	0.0
B	720	90	44	7.8	125.9	121.8[2]	121.8	0.0
C	1,000	70	125	2.7	127.1	127.1	127.1	0.0
D	1,130	60	32	10.7	128.0	128.0	128.0	0.0
E	1,360	60	97	3.5	131.0	131.0	131.0	0.0
F	1,660	65	181	1.9	134.9	134.9	134.9	0.0
G	1,870	40	49	6.9	135.5	135.5	135.5	0.0
H	2,000	40	38	8.8	138.1	138.1	138.1	0.0
I	2,370	100	197	1.7	152.7	152.7	152.7	0.0
J	2,465	85	49	6.9	153.6	153.6	153.6	0.0
K	2,515	150	103	3.3	157.4	157.4	157.4	0.0
L	2,690	70	38	9.1	158.0	158.0	158.0	0.0
M	2,904	23	71	4.2	161.4	161.4	161.6	0.2

[1]Feet above confluence with the Passaic River
[2]Elevation computed without consideration of backwater effects from the Passaic River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

SINGAC BROOK – SLIPPERY ROCK BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Slippery Rock Brook (continued)								
N	3,021	6	26	11.8	168.5	168.5	168.5	0.0
O	3,395	6	25	11.8	183.5	183.5	183.5	0.0
P	4,178	26	42	7.2	241.9	241.9	242.0	0.1
Q	4,722	27	85	3.5	246.5	246.5	246.5	0.0
R	4,893	28	42	7.1	249.7	249.7	249.7	0.0
S	5,172	12	45	6.7	262.5	262.5	262.5	0.0
T	5,356	19	63	4.8	264.4	264.4	264.6	0.2
U	5,561	15	35	8.6	300.4	300.4	300.4	0.0
V	5,859	14	44	6.9	305.4	305.4	305.4	0.0
W	6,275	20	61	4.9	308.6	308.6	308.6	0.0
X	6,857	16	36	8.4	319.2	319.2	319.2	0.0
Y	6,911	17	36	8.3	320.6	320.4	320.6	0.0
Z	7,108	173	1,215	0.2	321.7	321.7	321.7	0.0
AA	8,504	230	1,291	0.2	321.7	321.7	321.7	0.0
AB	8,686	13	28	8.5	322.7	322.7	322.7	0.0
AC	9,124	16	32	7.4	328.8	328.8	328.9	0.1
AD	9,406	43	62	3.9	341.0	341.0	341.2	0.2
AE	9,743	23	97	2.5	358.1	358.1	358.1	0.1
AF	10,158	14	41	5.9	369.8	369.8	369.8	0.0
AG	10,384	63	132	1.8	370.8	370.8	370.8	0.0
AH	10,537	69	66	3.6	374.1	374.1	374.3	0.2
AI	10,855	118	463	0.5	375.6	375.6	375.8	0.2
AJ	11,190	37	65	3.7	377.7	377.7	377.7	0.0
AK	11,353	139	563	0.4	381.1	381.1	381.1	0.0

[1]Feet above confluence with the Passaic River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

SLIPPERY ROCK BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Squaw Brook								
A	270[1]	15	72	9.3	246.1	246.1	246.3	0.2
B	586[1]	12	56	12.0	253.5	253.5	253.5	0.0
C	985[1]	40	134	5.0	261.2	261.2	261.4	0.2
D	1,920[1]	26	65	9.1	277.8	277.8	277.8	0.0
E	2,288[1]	23	103	5.7	303.5	303.5	303.7	0.2
F	2,695[1]	19	63	9.4	313.2	313.2	313.2	0.0
G	3,360[1]	34	71	8.3	324.9	324.9	324.9	0.0
H	4,270[1]	22	85	6.9	343.5	343.5	343.7	0.2
I	4,940[1]	24	64	9.3	357.2	357.2	357.2	0.0
J	6,110[1]	63	111	5.3	375.4	375.4	375.5	0.1
K	6,471[1]	27	38	6.8	384.7	384.7	384.7	0.0
L	8,215[1]	16	40	6.5	401.3	401.3	401.3	0.0
M	8,940[1]	21	35	7.4	406.3	406.3	406.3	0.0
N	9,245[1]	14	34	7.7	410.6	410.6	410.7	0.1
Stephens Lake Brook								
A	3,865[2]	117	493	1.4	269.7	269.7	269.7	0.0
B	4,190[2]	199	189	3.6	270.7	270.7	270.7	0.0
C	4,250[2]	179	456	1.5	277.6	277.6	277.6	0.0
D	4,925[2]	38	67	6.5	282.1	282.1	282.3	0.2
E	5,235[2]	20	49	9.0	296.4	296.4	296.4	0.0
Stephens Lake Brook Branch 1								
A	4,620[2]	10	17	6.6	504.6	504.6	504.6	0.0
B	4,735[2]	52	275	0.4	512.4	512.4	512.6	0.2
C	5,148[2]	119	192	0.6	518.0	518.0	518.2	0.2

[1]Feet above confluence with Molly Ann Brook

[2]Feet above mouth

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

SQUAW BROOK – STEPHENS LAKE BROOK – STEPHENS LAKE BROOK BRANCH 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Stephens Lake Brook Branch 2								
A	200[1]	49	50	4.2	322.3	322.3	322.3	0.0
B	460[1]	52	50	4.2	342.7	342.7	342.7	0.0
C	850[1]	69	51	4.1	355.8	355.8	355.8	0.0
D	1,045[1]	23	31	6.7	364.0	364.0	364.0	0.0
E	1,662[1]	12	25	8.3	404.4	404.4	404.4	0.0
F	2,289[1]	21	31	6.7	445.1	445.1	445.1	0.0
G	3,960[1]	59	60	2.3	487.0	487.0	487.2	0.2
Third River								
A	500[2]	167	1,343	3.1	9.1	5.8[4]	5.9	0.1
B	2,500[2]	88	479	8.6	10.7	10.7	10.7	0.0
C	3,500[2]	118	1,028	4.0	16.1	16.1	16.1	0.0
D	4,500[2]	54	377	10.9	16.6	16.6	16.6	0.0
E	5,500[2]	95	541	7.6	23.3	23.3	23.5	0.2
F	6,500[2]	148	770	5.3	31.0	31.0	31.0	0.0
G	7,000[2]	63	494	8.3	32.6	32.6	32.7	0.1
H	49,000[2]	189[3]	530	4.3	178.3	178.3	178.3	0.0
I	50,050[2]	120[3]	717	3.2	186.4	186.4	186.5	0.1
J	51,568[2]	217	687	2.0	194.1	194.1	194.2	0.1
K	57,500[2]	125	230	3.7	230.0	230.0	230.0	0.0
L	59,000[2]	53	118	7.3	236.1	236.1	236.1	0.0
M	61,000[2]	31	89	9.7	246.0	246.0	246.0	0.0
N	63,488[2]	42	325	2.7	270.6	270.6	270.7	0.1

[1]Feet above mouth
[2]Feet above confluence with the Passaic River
[3]Floodway outside county boundary
[4]Elevation computed without consideration of backwater effects from the Passaic River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

STEPHENS LAKE BROOK BRANCH 2 – THIRD RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tributary 1 to Posts Brook								
A	3,620[1]	43	109	1.2	222.7	222.7	222.8	0.1
B	5,010[1]	50	47	227.1	226.3	226.3	226.3	0.0
C	5,780[1]	47	111	227.9	227.1	227.1	227.2	0.1
D	7,440[1]	13	13	240.7	239.9	239.9	239.9	0.0
E	7,680[1]	104	204	244.2	243.4	243.4	243.4	0.0
F	8,100[1]	41	88	244.4	243.6	243.6	243.6	0.0
G	8,475[1]	15	14	249.0	248.2	248.2	248.2	0.0
H	9,270[1]	11	11	265.4	264.6	264.6	264.6	0.0
I	9,670[1]	13	11	278.4	277.6	277.6	277.6	0.0
J	10,400[1]	23	32	288.9	288.1	288.1	288.1	0.0
K	11,380[1]	15	12	325.3	324.5	324.5	324.5	0.0
Tributary 2 to Posts Brook								
A	15,300[2]	45	125	1.2	242.4	242.4	242.4	0.0
B	16,476[2]	44	29	4.7	245.9	245.9	245.9	0.0
C	16,755[2]	30	26	5.3	254.3	254.3	254.3	0.0
Tributary 1 to Singac Brook								
A	280[3]	34	85	5.1	207.4	207.4	207.6	0.2
B	680[3]	67	134	3.2	213.1	213.1	213.1	0.0

[1]Feet above confluence with Posts Brook
[2]Feet above mouth
[3]Feet above confluence with Singac Brook

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

TRIBUTARY 1 TO POSTS BROOK – TRIBUTARY 2 TO POSTS BROOK – TRIBUTARY 1 TO SINGAC BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tributary 3 to Singac Brook								
A	10[1]	165	506	2.9	180.2	180.1[4]	180.3	0.2
B	170[1]	98	246	1.8	180.2	180.2	180.4	0.2
C	540[1]	313	528	1.9	180.6	180.6	180.8	0.2
D	830[1]	35	85	5.3	181.4	181.4	181.5	0.1
E	1,930[1]	78	258	1.7	187.2	187.2	187.4	0.2
F	2,190[1]	80	371	1.2	187.8	187.8	187.8	0.0
G	2,830[1]	84	88	5.2	188.1	188.1	188.3	0.2
H	3,720[1]	58	120	3.8	189.9	189.9	190.0	0.1
I	4,590[1]	73	227	2.0	196.4	196.4	196.6	0.2
J	4,800[1]	97	323	1.4	199.9	199.9	200.1	0.2
K	5,830[1]	23	52	8.7	206.5	206.5	206.5	0.0
L	6,910[1]	52	160	2.8	216.6	216.6	216.6	0.0
Tributary to Van Dam Brook								
A	80[2]	131	235	0.8	250.2	249.0[5]	249.0	0.0
B	533[2]	78	136	1.3	250.4	250.4	250.5	0.1
C	1,358[2]	23	41	4.4	251.4	251.4	251.5	0.1
Van Dam Brook								
A	100[3]	27	59	7.6	248.4	240.8[6]	241.0	0.2
B	938[3]	28	115	3.9	250.2	247.5[5]	247.5	0.0
C	1,632[3]	112	256	1.7	250.2	248.7[5]	248.9	0.2
D	1,959[3]	177	274	1.2	250.2	249.0[5]	249.2	0.2
E	3,827[3]	24	47	6.3	254.4	254.4	254.5	0.1
F	4,379[3]	103	164	1.8	262.5	262.5	262.7	0.2
G	4,549[3]	89	168	1.7	263.2	263.2	263.4	0.2
H	5,389[3]	20	37	7.9	277.5	277.5	277.5	0.0
I	5,981[3]	51	154	1.9	317.9	317.9	318.0	0.1

[1]Feet above confluence with Singac Brook
[2]Feet above confluence with Van Dam Brook
[3]Feet above confluence with Pequannock River
[4]Elevation computed without consideration of backwater effects from Singac Brook
[5]Elevation computed without consideration of backwater effects from Pequannock River
[6]Elevation computed without consideration of flooding controlled by effects from Pequannock River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

TRIBUTARY 3 TO SINGAC BROOK – TRIBUTARY TO VAN DAM BROOK – VAN DAM BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Wabash Brook								
A	340[1]	65	436	1.8	32.6	32.6	32.8	0.2
B	610[1]	30	214	3.6	32.7	32.7	32.9	0.2
C	880[1]	24	172	4.5	40.4	40.4	40.5	0.1
D	1,100[1]	32	264	2.9	40.9	40.9	41.1	0.2
E	1,620[1]	54	384	2.0	41.6	41.6	41.8	0.2
Wanaque River								
A	168[2]	676[3]	6,027	2.6	191.3	191.3	191.4	0.1
B	2,029[2]	853	4,079	2.6	192.5	192.5	192.7	0.2
C	3,252[2]	773	4,213	2.5	193.0	193.0	193.2	0.2
D	4,765[2]	407	1,992	5.4	194.4	194.4	194.6	0.2
E	6,098[2]	516	3,750	2.9	197.6	197.6	197.7	0.1
F	7,074[2]	319	1,463	7.3	197.9	197.9	198.0	0.1
G	7,722[2]	332	2,303	4.7	200.8	200.8	200.9	0.1
H	9,078[2]	129	1,583	6.8	202.5	202.5	202.6	0.1
I	9,571[2]	152	2,014	5.3	205.4	205.4	205.5	0.1
J	10,195[2]	225	2,420	4.4	207.0	207.0	207.1	0.1
K	11,969[2]	279	2,616	4.1	208.5	208.5	208.6	0.1
L	14,389[2]	395	3,882	2.8	211.0	211.0	211.2	0.2
M	16,639[2]	821	6,990	1.5	212.3	212.3	212.5	0.2
N	17,674[2]	1,086	7,045	1.5	212.6	212.6	212.8	0.2
O	19,620[2]	482	3,289	3.3	213.6	213.6	213.8	0.2
P	21,158[2]	575	3,965	2.7	215.4	215.4	215.6	0.2
Q	23,387[2]	975	7,128	1.5	217.0	217.0	217.2	0.2
R	24,950[2]	1,096	5,609	1.9	217.5	217.5	217.7	0.2
S	27,055[2]	170	1,499	7.1	219.2	219.2	219.4	0.2
T	27.294[2]	84	954	11.2	220.0	220.0	220.1	0.1

[1]Feet above mouth
[2]Feet above confluence with the Pequannock River
[3]Floodway outside county boundary

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

WABASH BROOK – WANAQUE RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Weasel Brook								
A	90[1]	20	131	13.9	28.8	28.8	29.0	0.2
B	431[1]	20	175	10.4	32.0	32.0	32.2	0.2
C	900[1]	19	176	10.3	33.7	33.7	33.9	0.2
D	1,140[1]	21	205	8.9	35.0	35.0	35.2	0.2
E	1,989[1]	20	127	14.3	37.0	37.0	37.0	0.0
F	2,390[1]	19	140	13.0	39.9	39.9	40.0	0.1
G	2,510[1]	21	155	11.7	40.8	40.8	40.8	0.0
H	3,580[1]	20	138	13.2	46.0	46.0	46.0	0.0
I	3,940[1]	21	174	10.5	50.1	50.1	50.3	0.2
J	4,030[1]	21	223	8.2	52.8	52.8	53.0	0.2
K	4,560[1]	18	147	12.4	53.9	53.9	54.1	0.2
L	5,910[1]	19	168	10.8	63.7	63.7	63.9	0.2
M	6,740[1]	15	102	14.8	70.4	70.4	70.6	0.2
N	7,230[1]	92	305	5.0	75.2	75.2	75.4	0.2
O	7,630[1]	91	533	2.8	78.6	78.6	78.8	0.2
P	11,271[1]	129	373	3.6	111.1	111.1	111.2	0.1
Q	11,445[1]	375	3,141	0.4	119.8	119.8	119.8	0.0
R	12,122[1]	200	1,051	1.0	119.8	119.8	119.8	0.0
S	12,442[1]	234	981	1.1	120.0	120.0	120.2	0.2
T	12,837[1]	162	265	4.1	120.3	120.3	120.5	0.2
U	13,068[1]	62	180	6.1	123.9	123.9	124.1	0.2
V	13,283[1]	290	1,006	1.1	126.3	126.3	126.5	0.2
W	13,570[1]	21	217	4.0	131.5	131.5	131.7	0.2
X	14,171[1]	15	35	7.8	134.0	134.0	134.2	0.2
Y	14,425[1]	10	31	8.8	140.2	140.2	140.3	0.1
Z	14,820[1]	11	32	8.6	154.6	154.6	154.6	0.0
AA	14,980[1]	16	36	7.6	168.2	168.2	168.3	0.1

[1]Feet above Clifton Corporate Limits

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

WEASEL BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Weasel Brook (continued)								
AB	15,570[1]	12	30	9.1	181.2	181.2	181.2	0.0
AC	16,094[1]	18	38	7.2	189.3	189.3	189.3	0.0
AD	16,640[1]	15	33	8.4	202.0	202.0	202.0	0.0
AE	16,990[1]	13	33	8.4	222.7	222.7	222.8	0.1
AF	17,290[1]	8	32	8.7	228.9	228.9	228.9	0.0
West Brook Reach 1								
A	1,192[2]	151	496	5.0	303.7	303.7	303.8	0.1
B	3,098[2]	532	6,546	0.4	314.8	314.8	314.9	0.1
C	4,746[2]	316	1,231	1.9	335.9	335.9	336.0	0.1
D	6,518[1]	498	554	4.3	343.2	343.2	343.3	0.1
E	7,858[1]	49	183	9.9	353.1	353.1	353.1	0.0
F	9,375[1]	226	411	4.4	371.5	371.5	371.6	0.1
G	10,588[1]	31	134	11.9	400.6	400.6	400.6	0.0
H	11,954[1]	45	156	10.2	457.1	457.1	457.1	0.0
I	13,101[1]	36	135	11.8	518.6	518.6	518.6	0.0

[1]Feet above Clifton corporate limits

[2] Feet above confluence of Wanaque Reservoir

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

WEASEL BROOK – WEST BROOK REACH 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
West Brook Reach 2								
A	19,100[1]	147	126	1.9	900.7	900.7	900.7	0.0
B	20,532[1]	23	35	7.1	909.2	909.2	909.2	0.0
C	20,638[1]	33	67	3.6	915.0	915.0	915.0	0.0
D	21,065[1]	52	48	5.1	920.5	920.5	920.5	0.0
E	21,130[1]	244	877	0.6	929.8	929.8	929.8	0.0
F	22,230[1]	191	132	2.8	932.7	932.7	932.7	0.0
G	22,310[1]	51	238	1.6	934.3	934.3	934.3	0.0
H	22,510[1]	18	43	8.8	935.7	935.7	935.7	0.0
I	23,230[1]	10	19	7.9	956.3	956.3	956.3	0.0
J	23,369[1]	67	162	0.9	957.8	957.8	957.9	0.1
K	23,845[1]	242	628	0.2	957.9	957.9	958.1	0.2
L	25,500[1]	86	11	1.0	970.3	970.3	970.3	0.0
West Brook Branch 7								
A	60[2]	10	8	5.4	930.8	930.8	930.8	0.0
B	264[2]	6	7	6.1	941.4	941.4	941.4	0.0
C	480[2]	11	9	5.2	957.1	957.1	957.1	0.0
D	665[2]	10	9	5.2	980.6	980.6	980.6	0.0
E	737[2]	33	80	0.5	993.5	993.5	993.5	0.0

[1]Feet above confluence of Wanaque Reservoir
[2]Feet above mouth

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

FLOODWAY DATA

WEST BROOK REACH 2 – WEST BROOK BRANCH 7

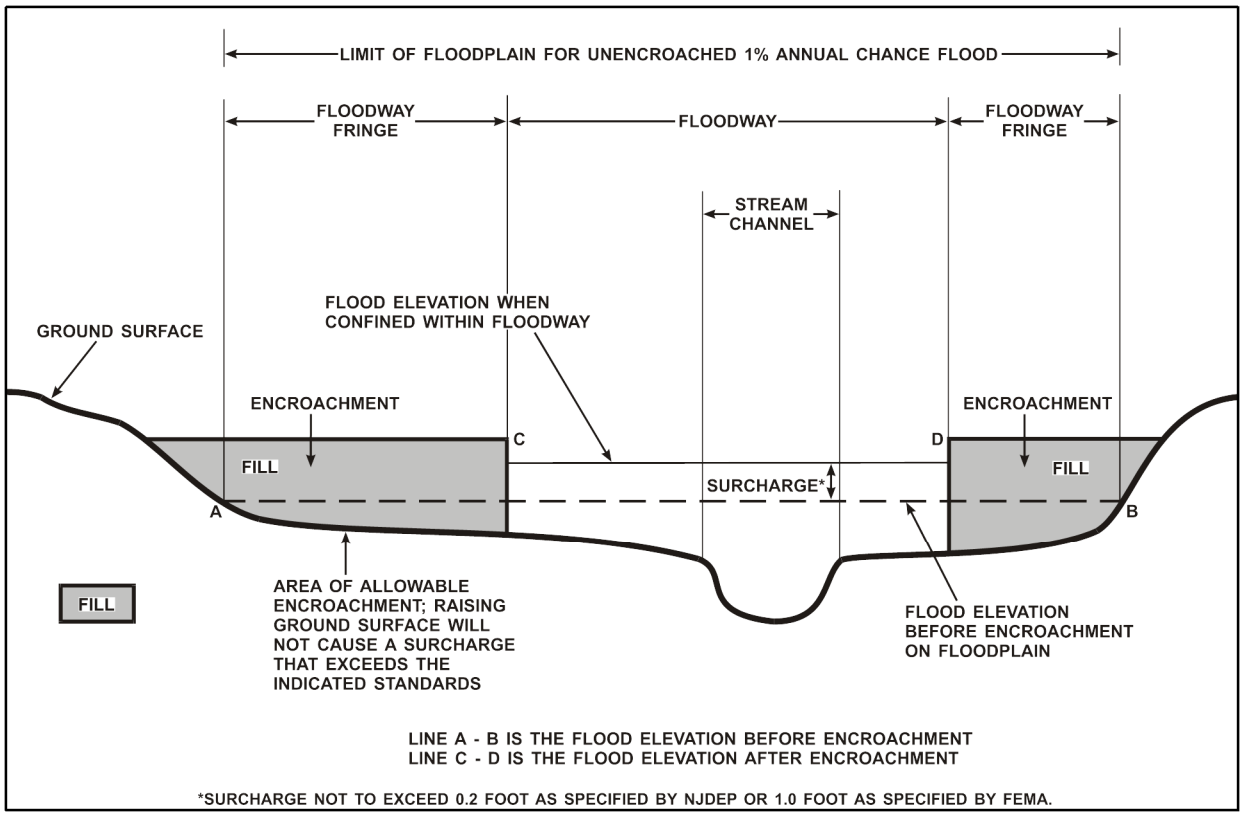

FIGURE 1 – FLOODWAY SCHEMATIC

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. The zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.

Zone AR

Area of special flood hazard formerly protected from the 1-percent-annual-chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1-percent-annual-chance or greater flood event.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 1-percent-annual-chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No BFEs or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm-induced waves. Because detailed coastal analyses have not been performed for such areas, no BFEs are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm-induced velocity wave action. Whole-foot BFEs derived from the detailed coastal hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X (shaded) is the flood insurance rate zone that corresponds to areas within the 0.2-percent-annual-chance floodplain, and areas of 1-percent-annual-chance flooding where average depths are less than 1 foot; areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile; and areas protected from the 1-percent-annual-chance flood by levees. No BFEs or depths are shown within this zone. Zone X (unshaded) represents the areas outside the 1- and the 0.2-percent-annual-chance floodplain. No BFEs or depths are shown within these zones.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplains. Floodways and the locations of selected cross sections used in the hydraulic analyses and floodway computations are shown where applicable.

The current FIRM presents flooding information for the entire geographic area of Passaic County. Historical data relating to the maps prepared for each community, up to and including this countywide FIS, are presented in Table 11, "Community Map History."

7.0 OTHER STUDIES

FISs are being prepared for Bergen County, New Jersey (All Jurisdictions), Essex County, New Jersey (All Jurisdictions) and Morris County, New Jersey (All Jurisdictions). An FIS was prepared for Sussex County, New Jersey (All Jurisdictions) (FEMA, August 29, 2011) and Orange County, New York (All Jurisdictions) (FEMA, August 3, 2009,) and for Rockland County, New York (All Jurisdictions) (FEMA, March 3, 2014).

Information pertaining for each revised and unrevised flood hazard for each jurisdiction within Passaic County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS Reports for Passaic County, NJ.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Bloomingdale, Borough of	March 10, 1972	None	March 10, 1972	July 1, 1974 July 9, 1976 December 4, 1985
Clifton, City of	May 31, 1974	July 2, 1976	June 15, 1982	
Haledon, Borough of	May 10, 1974	February 6, 1976	March 16, 1981	
Hawthorne, Borough of	November 30, 1973	July 16, 1976	September 17, 1980	August 20, 1982
Little Falls, Township of	December 28, 1973	June 18, 1976	August 17, 1981	
North Haledon, Borough of	May 31, 1974	April 2, 1976	July 2, 1981	
Passaic, City of	August 31, 1973	June 11, 1976	September 28, 1979	
Paterson, City of	June 1, 1973	None	February 16, 1977	
Pompton Lakes, Borough of	June 2, 1970	None	June 2, 1970	September 1, 1970 March 24, 1972 July 1, 1974 July 4, 1975 October 15, 1976 December 18, 1985 September 18, 1987

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ (ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Prospect Park, Borough of	May 3, 1974	March 19, 1976	April 3, 1978	
Ringwood, Borough of	June 28, 1974	July 16, 1976	February 3, 1982	
Totowa, Borough of	June 28, 1974	September 10, 1976	August 5, 1985	
Wanaque, Borough of	May 17, 1974	June 4, 1976	January 16, 1981	August 15, 1989
Wayne, Township of	February 16, 1973	None	February 20, 1973	July 1, 1974 November 19, 1976 September 29, 1986 November 18, 1988
West Milford, Township of	July 19, 1974	May 28, 1976	January 16, 1981	February 2, 1989
Woodland Park, Borough of*	June 28, 1974	June 18, 1976	December 15, 1981	

*Formerly known as Borough of West Paterson

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ (ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this FIS can be obtained by contacting FEMA, Federal Insurance and Mitigation Division, 26 Federal Plaza, Room 1337, New York, New York 10278.

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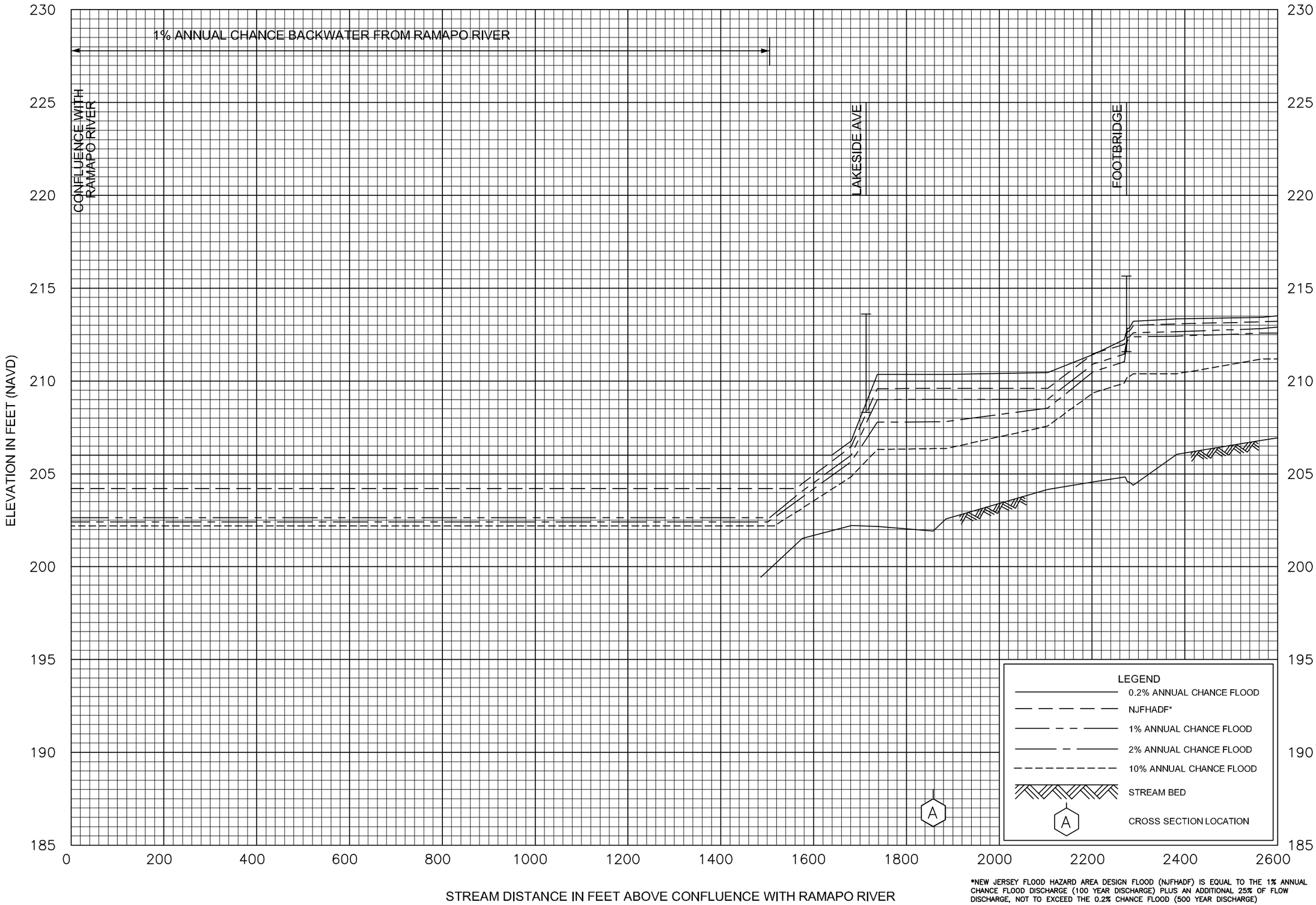


*NEW JERSEY FLOOD HAZARD AREA DESIGN FLOOD (NJFHADF) IS EQUAL TO THE 1% ANNUAL CHANCE FLOOD DISCHARGE (100 YEAR DISCHARGE) PLUS AN ADDITIONAL 25% OF FLOW DISCHARGE, NOT TO EXCEED THE 0.2% CHANCE FLOOD (500 YEAR DISCHARGE)

FLOOD PROFILES

ACID BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

*NEW JERSEY FLOOD HAZARD AREA DESIGN FLOOD (NJFHADF) IS EQUAL TO THE 1% ANNUAL CHANCE FLOOD DISCHARGE (100 YEAR DISCHARGE) PLUS AN ADDITIONAL 25% OF FLOW DISCHARGE, NOT TO EXCEED THE 0.2% CHANCE FLOOD (500 YEAR DISCHARGE)

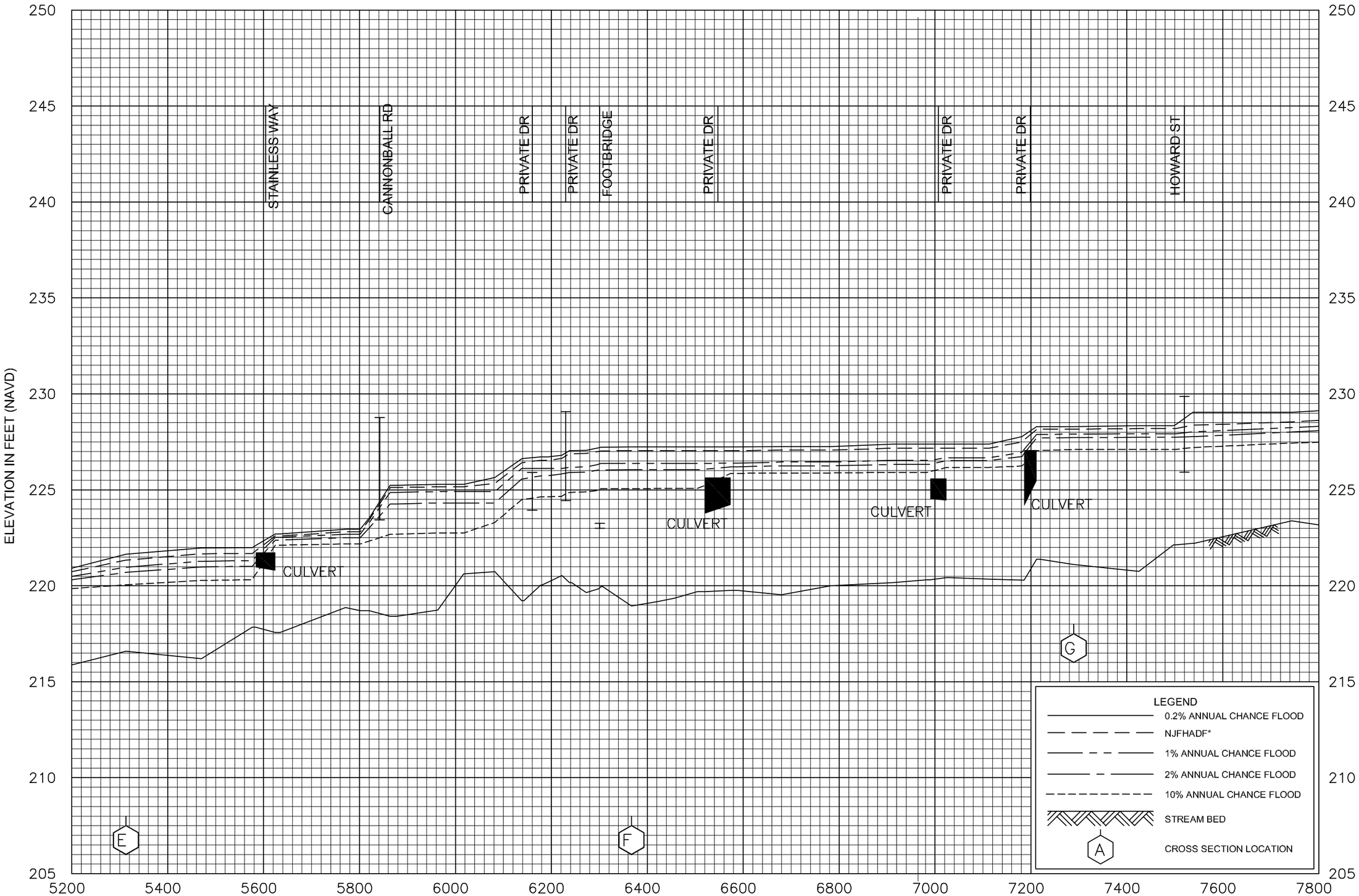
FLOOD PROFILES

ACID BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

02P



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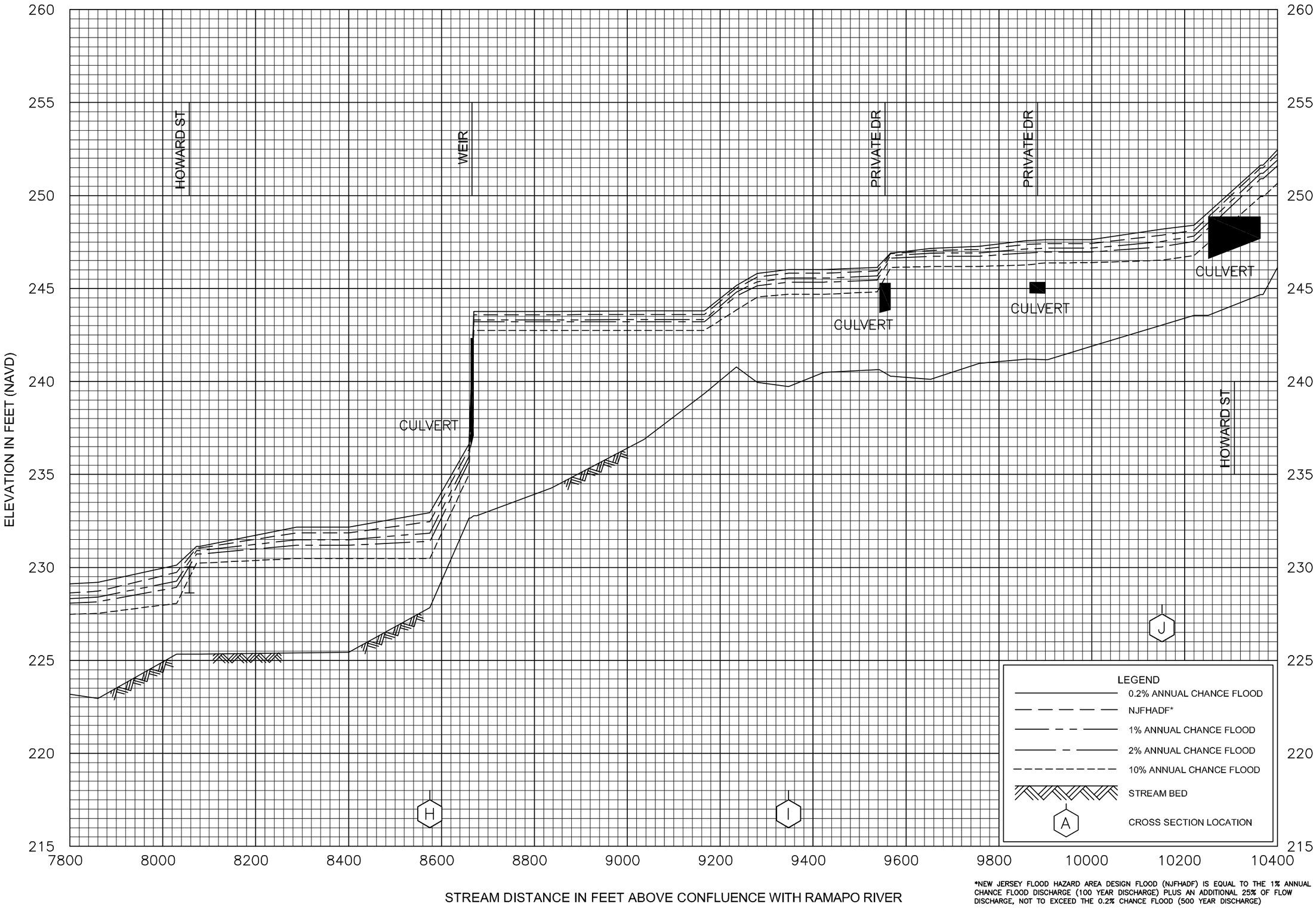
FLOOD PROFILES

ACID BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

03P



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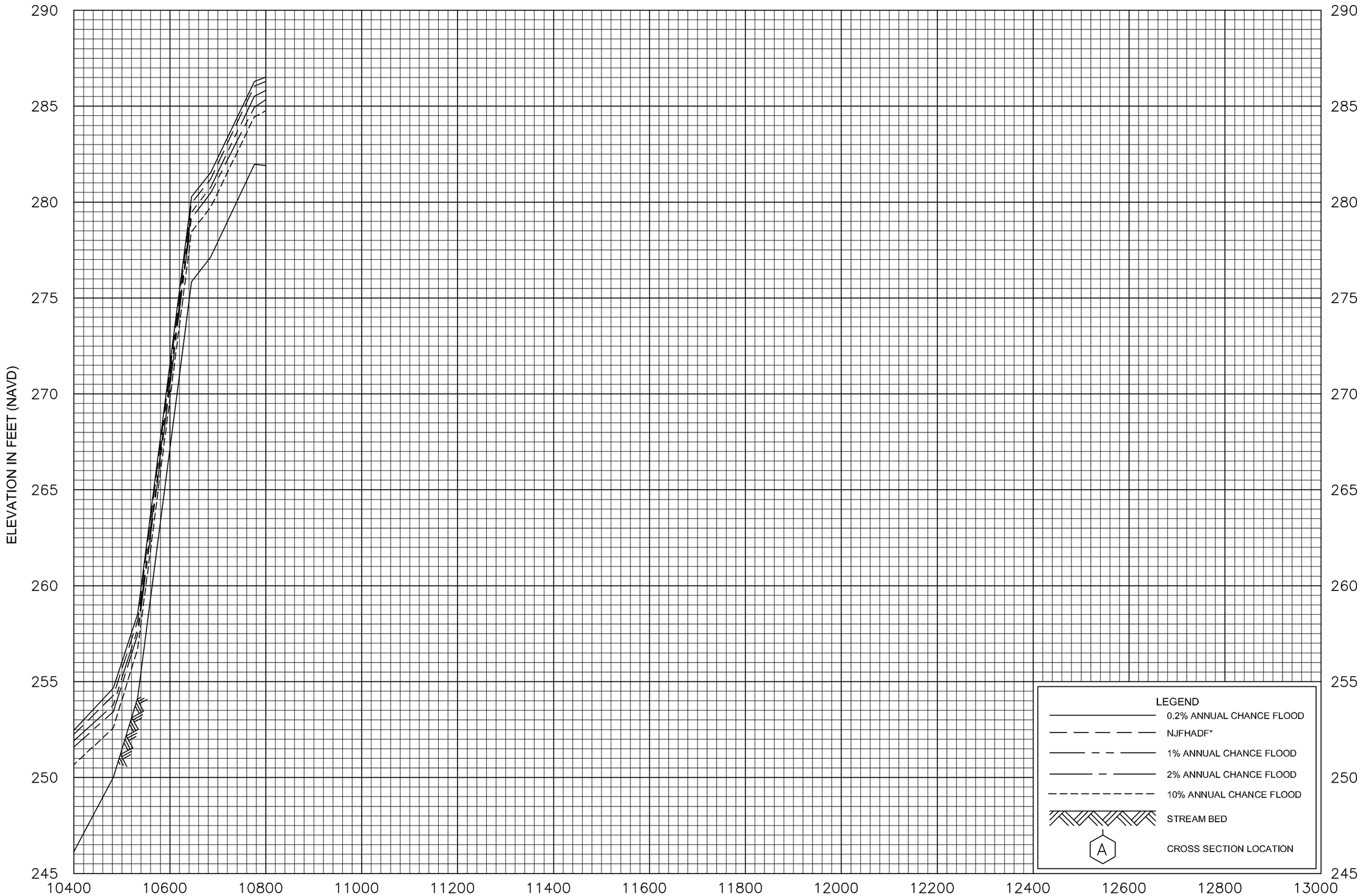
FLOOD PROFILES

ACID BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)



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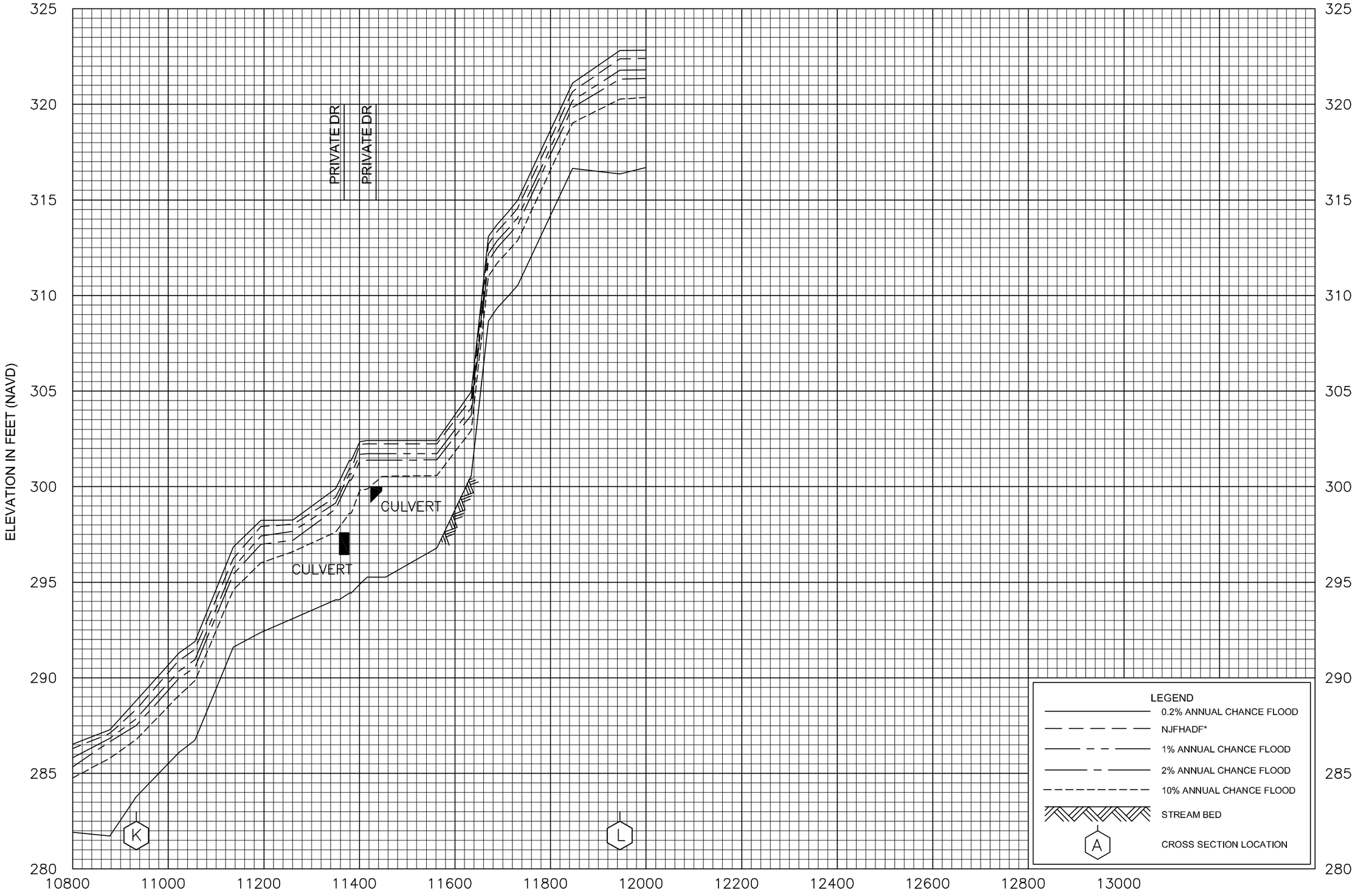
FLOOD PROFILES

ACID BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

05P



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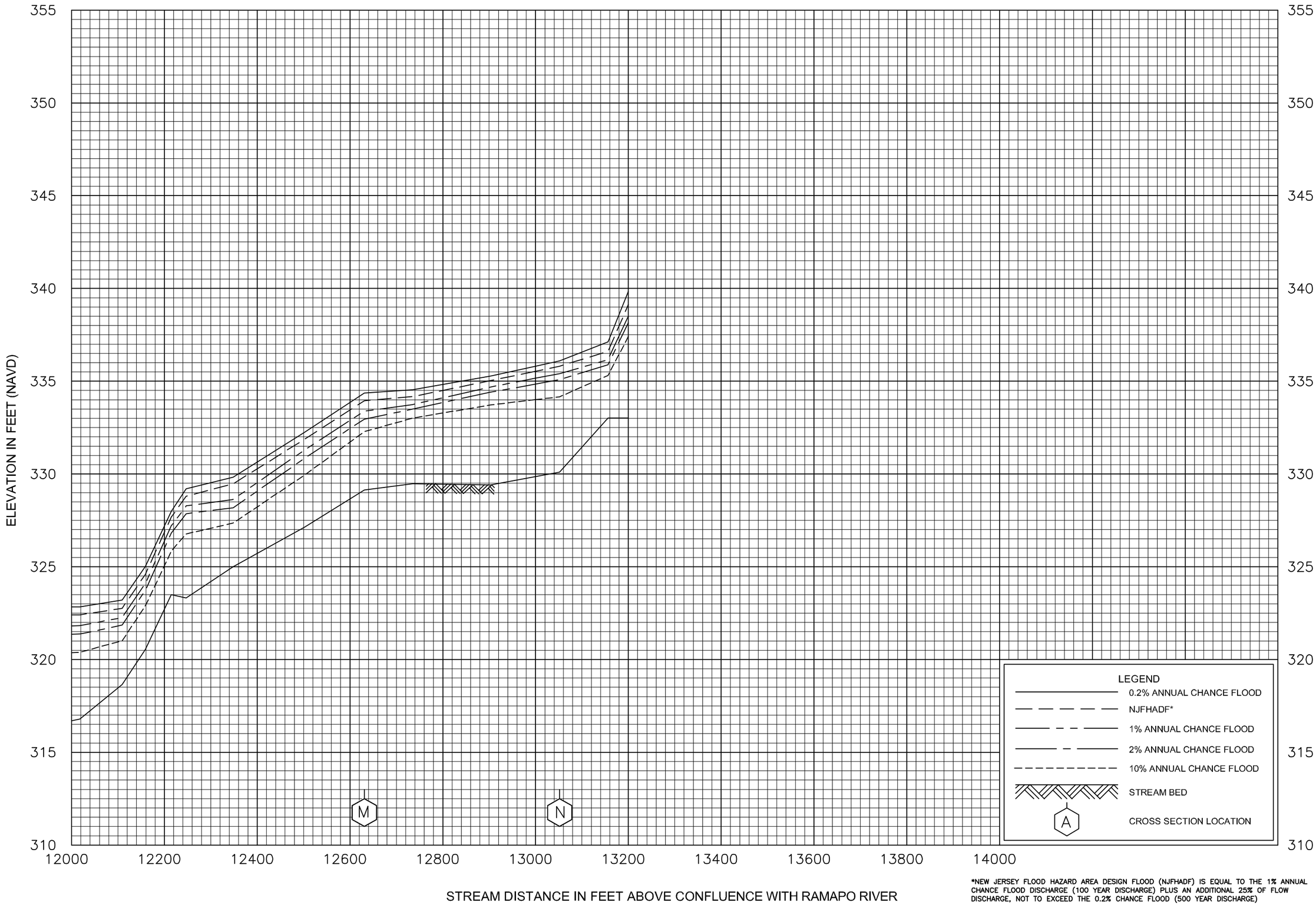
FLOOD PROFILES

ACID BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

06P



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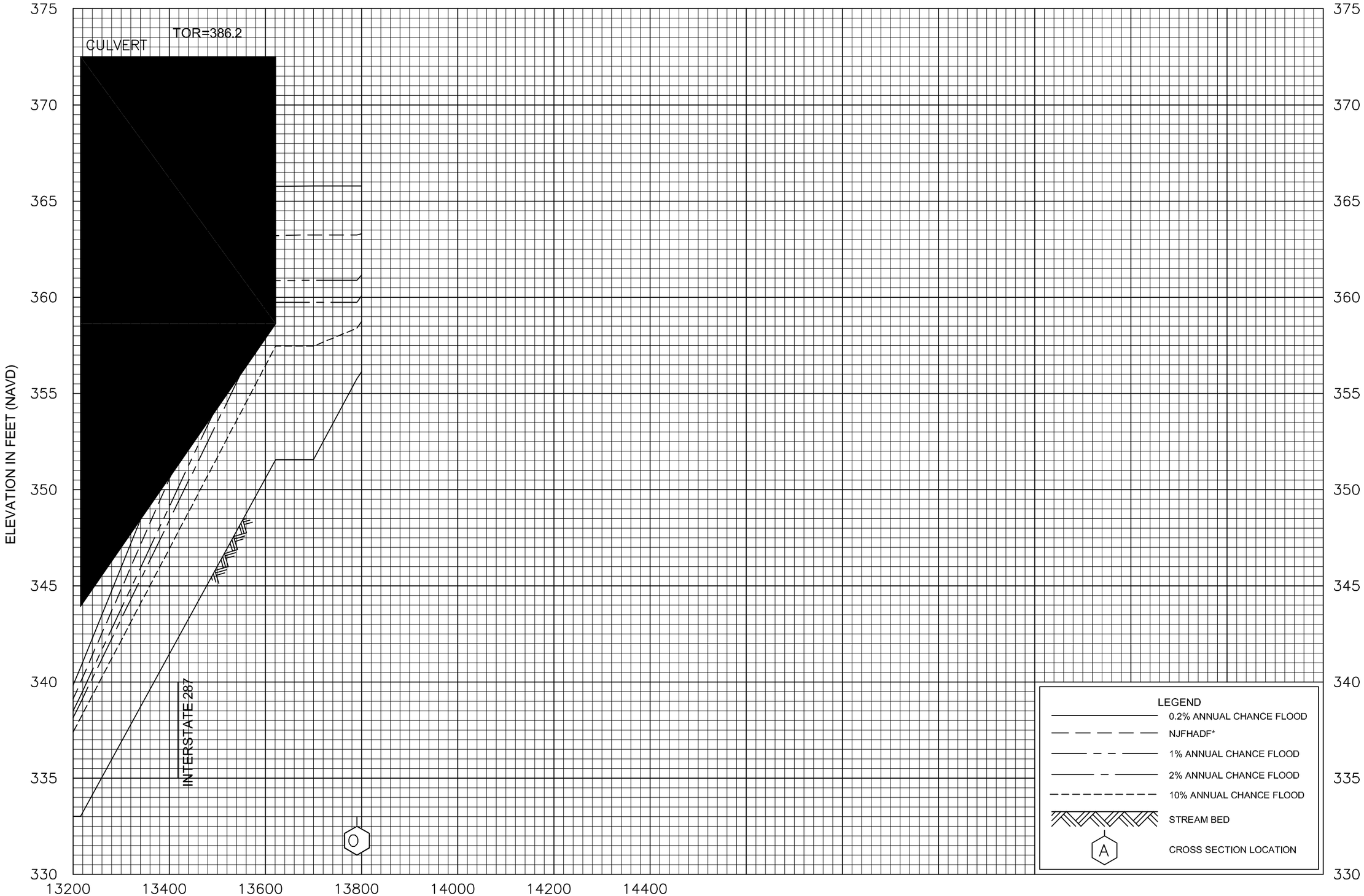
FLOOD PROFILES

ACID BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

07P



*NEW JERSEY FLOOD HAZARD AREA DESIGN FLOOD (NJFHADF) IS EQUAL TO THE 1% ANNUAL CHANCE FLOOD DISCHARGE (100 YEAR DISCHARGE) PLUS AN ADDITIONAL 25% OF FLOW DISCHARGE, NOT TO EXCEED THE 0.2% CHANCE FLOOD (500 YEAR DISCHARGE)

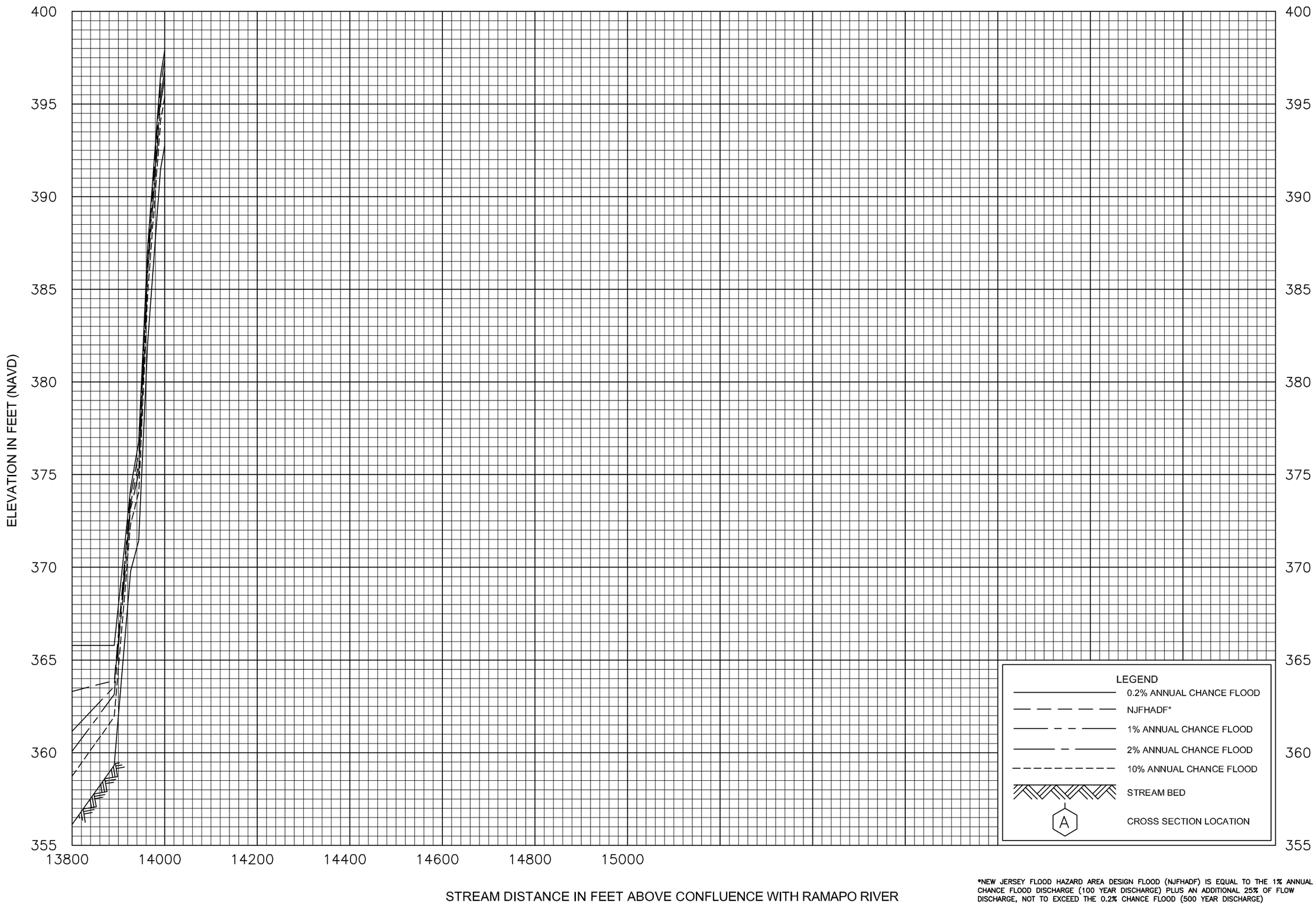
FLOOD PROFILES

ACID BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)

08P



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PASSAIC COUNTY, NJ
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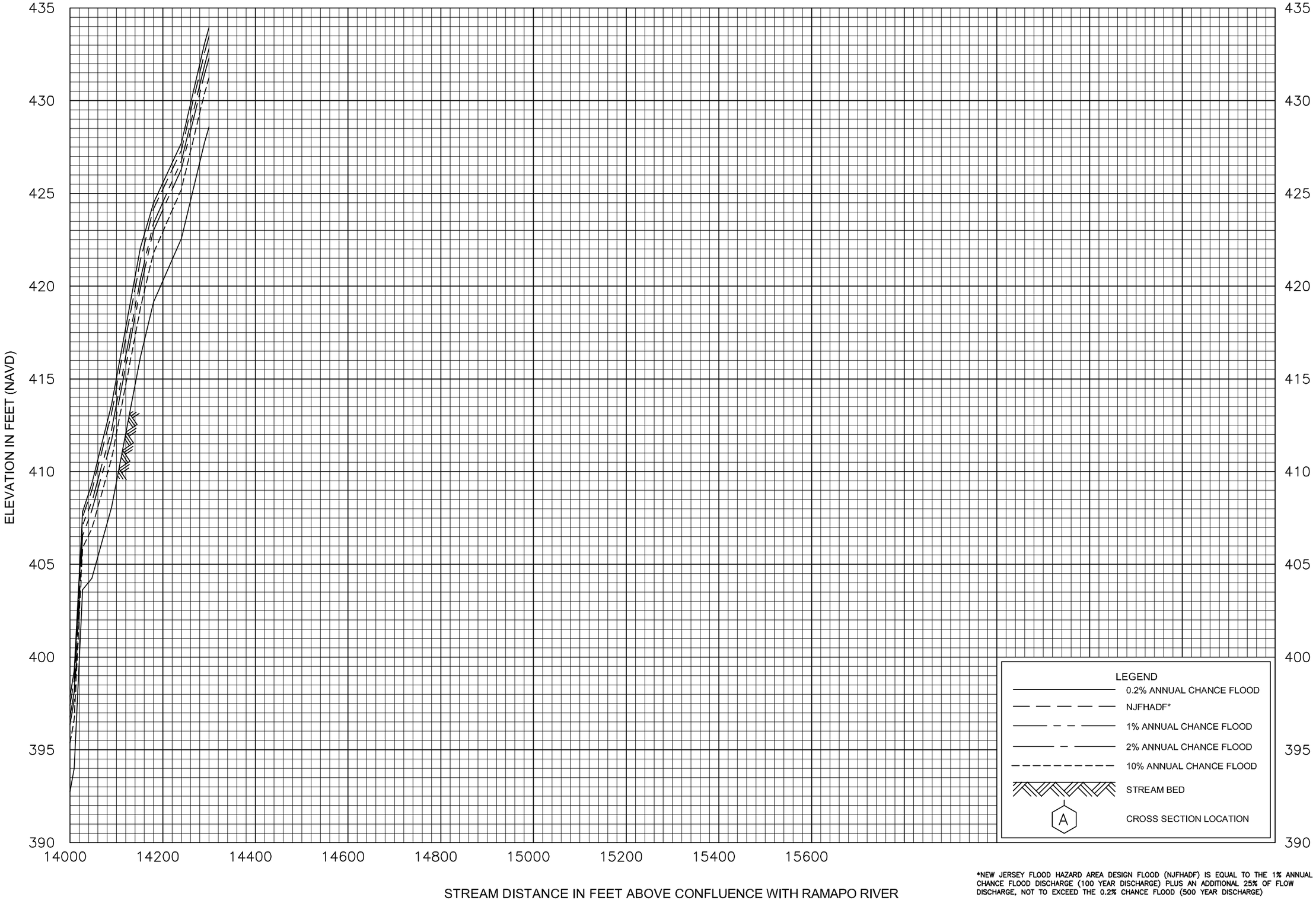
09P



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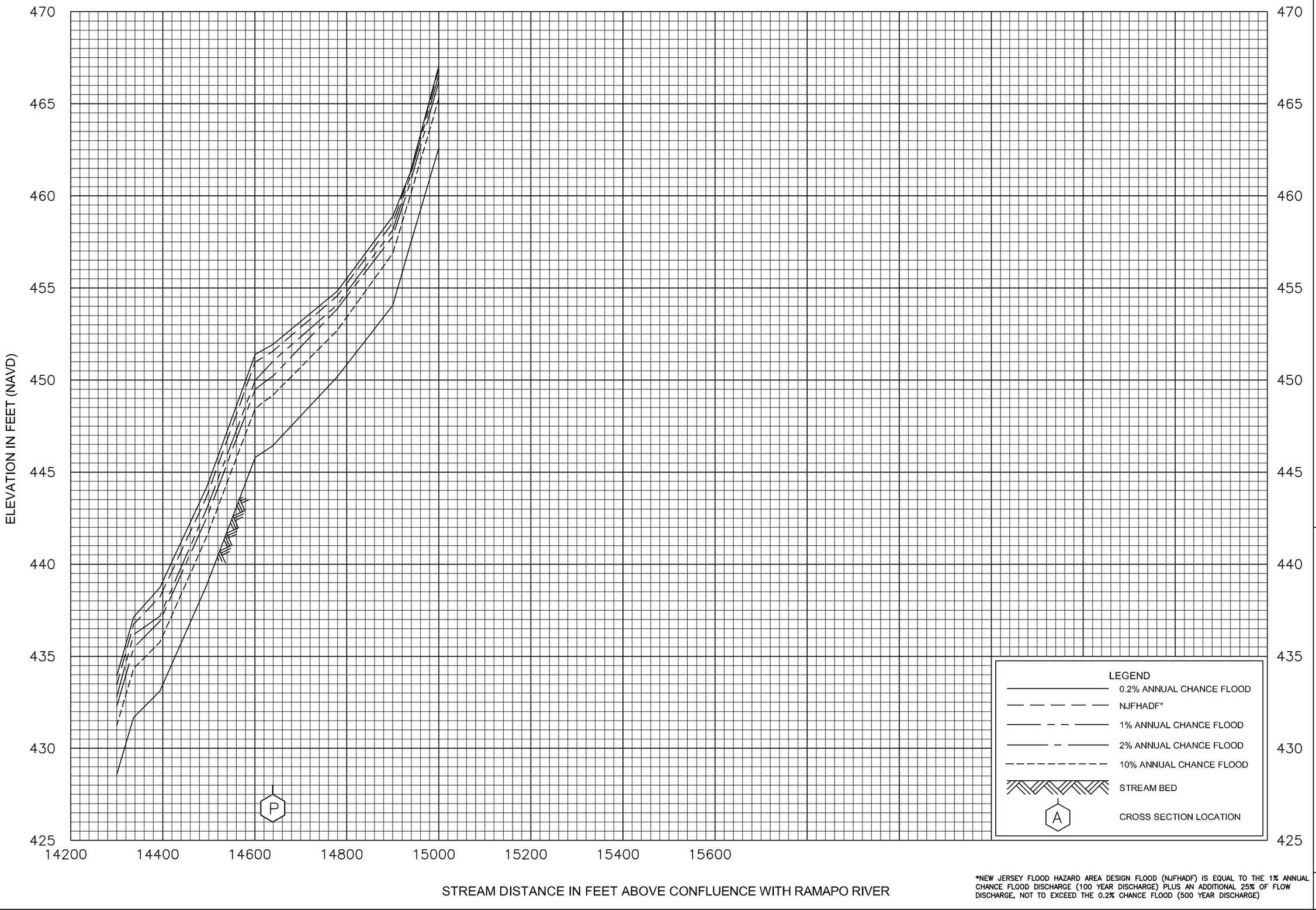

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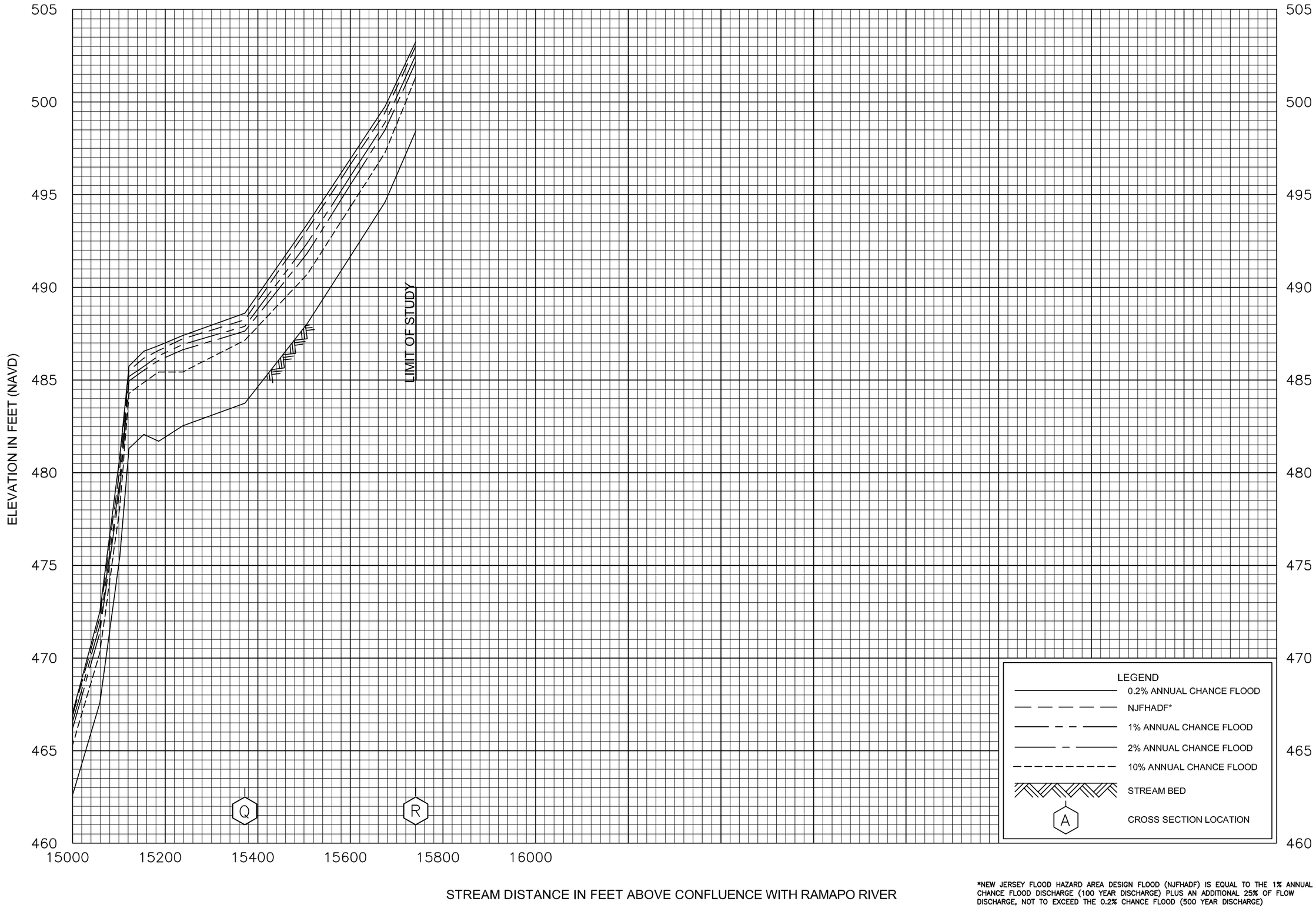

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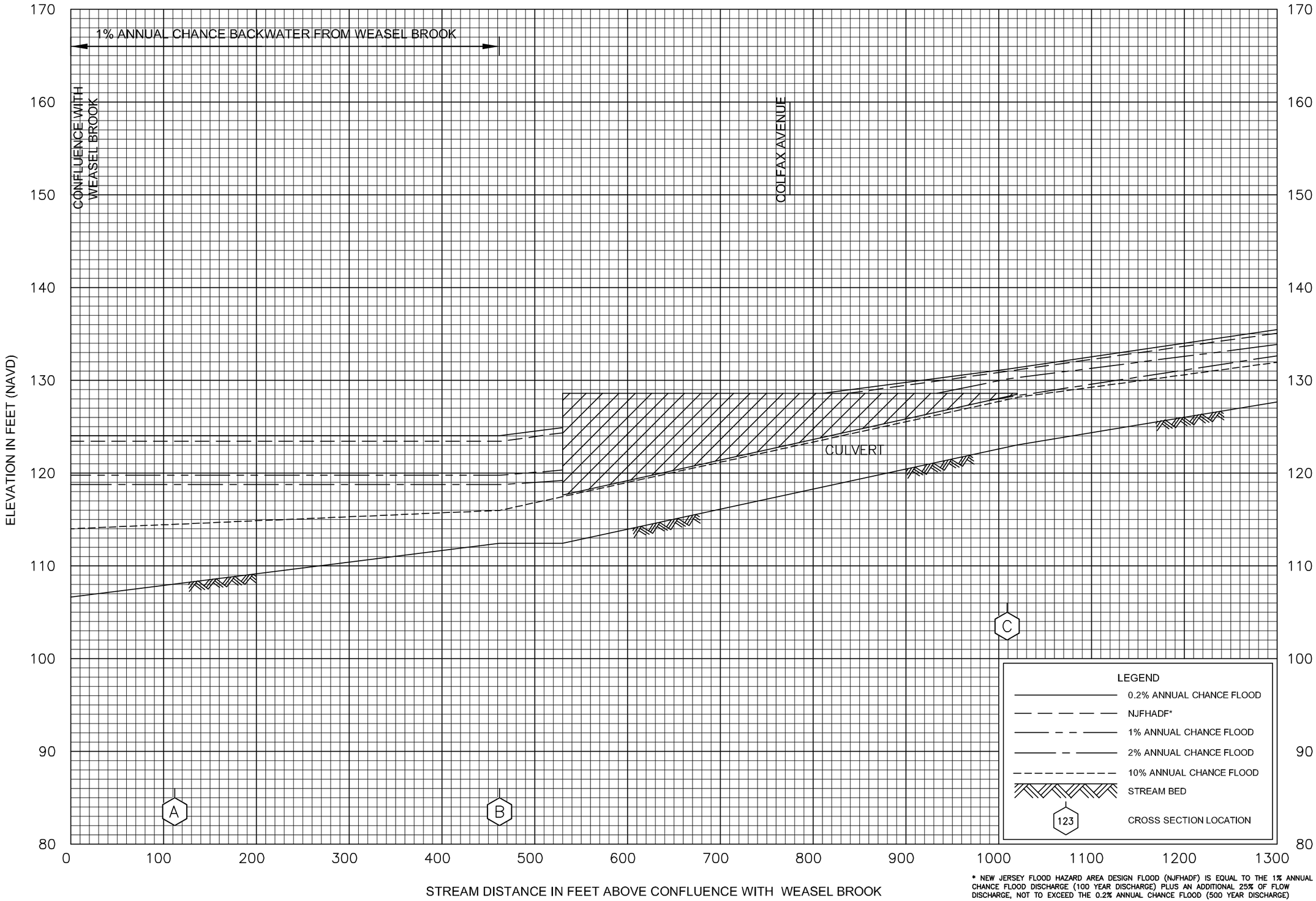

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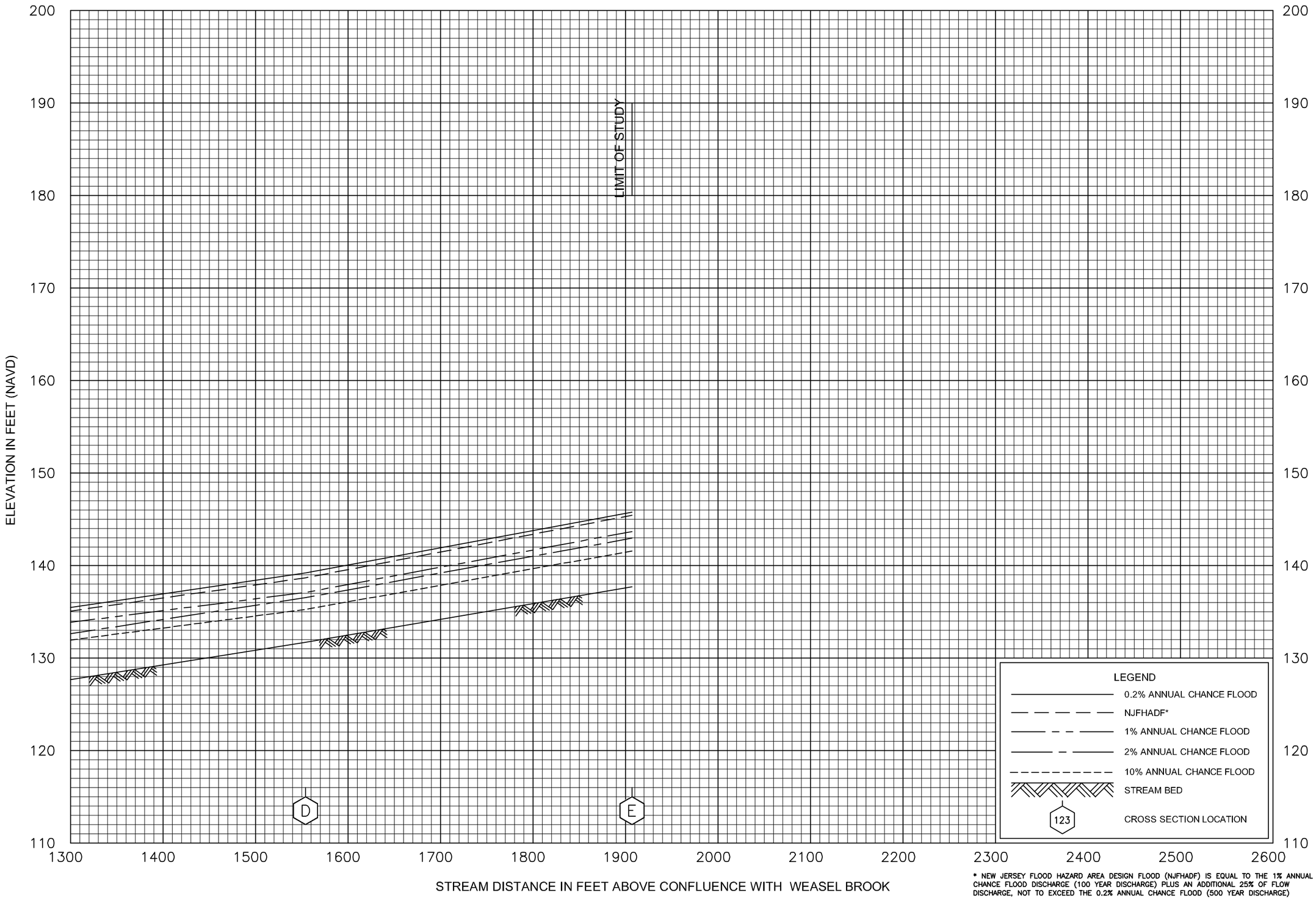
FLOOD PROFILES

BRANCH 3-5-2, WEASEL BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

PASSAIC COUNTY, NJ
(ALL JURISDICTIONS)



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