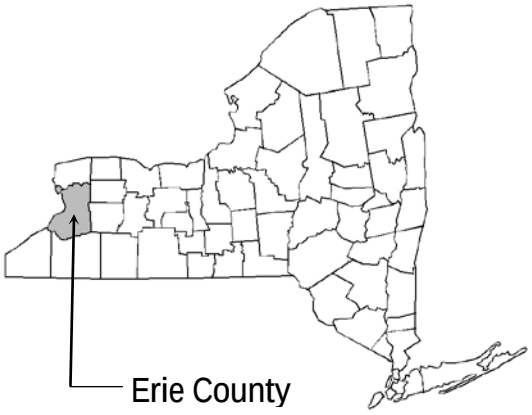
FLOOD INSURANCE STUDY

VOLUME 1 OF 5

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)



Community Name	Community Number	Community Name	Community Number	Community Name	Community Number
Akron, Village of	361553	Depew, Village of	360236	Marilla, Town of	360250
Alden, Town of	360225	East Aurora, Village of	365335	Newstead, Town of	360251
Alden, Village of	360224	Eden, Town of	360238	North Collins, Town of[1]	360252
Amherst, Town of	360226	Elma, Town of	360239	North Collins, Village of[1]	360789
Angola, Village of	360982	Evans, Town of	360240	Orchard Park, Town of	360255
Aurora, Town of	360227	Farnham, Village of[1]	361588	Orchard Park, Village of	360254
Blasdell, Village of	361489	Gowanda, Village of	360075	Sardinia, Town of	360256
Boston, Town of	360228	Grand Island, Town of	360242	Sloan, Village of [1]	361589
Brant, Town of	360229	Hamburg, Town of	360244	Springville, Village of	360258
Buffalo, City of	360230	Hamburg, Village of	360243	Tonawanda, City of	360259
Cheektowaga, Town of	360231	Holland, Town of	360245	Tonawanda, Town of	360260
Clarence, Town of	360232	Kenmore, Village of [1]	361590	Wales, Town of	360261
Colden, Town of	360233	Lackawanna, City of	360247	West Seneca, Town of	360262
Collins, Town of	360234	Lancaster, Town of	360249	Williamsville, Village of	360263
Concord, Town of	360235	Lancaster, Village of	360248		

[1] No Special Flood Hazard Areas identified

REVISED PRELIMINARY:
February 19, 2016

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
36029CV001B

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.

Selected Flood Insurance Rate Map (FIRM) panels for the communities within Erie County contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

Old Zone	New Zone
A1 through A30	AE
V1 through V30	VE
B	X
C	X

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 26, 2008

Revised Countywide FIS Dates: [*date*]

ATTENTION: On FIRM panels 36029C0207H, 36029C0219H and 36029C0243H, the Ellicott Creek FCP @ Amherst Levee, the Cayuga Creek Right Bank Levees and Floodwall, and the Cayuga Creek Left Bank Levee and Floodwall, have not been demonstrated by the community or levee owners to meet the requirements of Section 65.10 of the NFIP regulations in 44 CFR as it relates to the levee's capacity to provide 1-percent-annual-chance flood protection. The subject areas are identified on FIRM panels (with notes and bounding lines) and in the FIS report as potential areas of flood hazard data changes based on further review.

FEMA has updated levee analysis and mapping procedures for non-accredited levees. Until such time as FEMA is able to initiate a new flood risk project to apply the new procedures, the flood hazard information on the aforementioned FIRM panels that are affected by the Ellicott Creek FCP @ Amherst Levee, the Cayuga Creek Right Bank Levees and Floodwall, and the Cayuga Creek Left Bank Levee and Floodwall, are being added as a snapshot of the prior previously effective information presented on the FIRMs and FIS reports dated October 16, 1992 for the Town of Amherst, July 2, 1979 and January 1, 1979 for the Village of Lancaster, August 3, 1981 and February 3, 1981 for the Village of Depew, and March 15, 1984 for the Town of Cheektowaga. As indicated above, it is expected that affected flood hazard data within the subject area could be significantly revised. This may result in floodplain boundary changes, 1-percent-annual-chance flood elevation changes, and/or changes to flood hazard zone designations.

The effective FIRM panels (and the FIS report) will again be revised at a later date to update the flood hazard information associated with the Ellicott Creek FCP @ Amherst, the Cayuga Creek Right Bank Levees and Floodwall, and the Cayuga Creek Left Bank Levee and Floodwall when FEMA is able to

initiate and complete a new flood risk project to apply the updated levee analysis and mapping procedures.

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EXHIBITS

Exhibit 1 – Flood Profiles (continued)

EXHIBITS

FLOOD INSURANCE STUDY
ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide 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 Erie County, New York, including: the cities of Buffalo, Lackawanna and Tonawanda, the towns of Alden, Amherst, Aurora, Boston, Brant, Cheektowaga, Clarence, Colden, Collins, Concord, Eden, Elma, Evans, Grand Island, Hamburg, Holland, Lancaster, Marilla, Newstead, North Collins, Orchard Park, Sardinia, Tonawanda, Wales and West Seneca, and the villages of Akron, Alden, Angola, Blasdell, Depew, East Aurora, Farnham, Gowanda, Hamburg, Kenmore, Lancaster, North Collins, Orchard Park, Sloan, Springville, and Williamsville (hereinafter referred to collectively as Erie County).

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 Erie County 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 set forth in the Code of Federal Regulations at 44 CFR, 60.3.

Please note that on the effective date of this study, the Town of North Collins and the villages of Farnham, Kenmore, North Collins and Sloan have no mapped Special Flood Hazard Areas (SFHA). This does not preclude future determinations of SFHAs that could be necessitated by changed conditions affecting the community (i.e. annexation of new lands) or the availability of new scientific or technical data about flood hazards.

Please note that the Village of Gowanda is geographically located in Erie and Cattaraugus Counties. See these separately published FIS reports and FIRMs for countywide map dates and flood hazard information outside of Erie County.

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.

Please also note that FEMA has identified one or more levees in the Villages of Depew and Lancaster, and the Towns of Amherst and Cheektowaga, that have not been demonstrated by the community or levee owner(s) to meet the requirements of 44 CFR Section 65.10 of the NFIP regulations (44CFR65.10) as it relates to the levee's capacity to provide 1-percent annual-chance flood protection. As such, temporary actions are being taken until such time as FEMA is able to initiate a new flood risk project to apply

new levee analysis and mapping procedures. Please refer to the Notice to Flood Insurance Study Users page at the front of this FIS report for more information.

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.

This FIS was prepared to include all communities within Erie County in a countywide format. 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.

Akron, Village of:	For the May, 1980 FIS, hydrologic and hydraulic analyses were prepared by DeLeuw, Cather and Company of New York, Inc., for the Federal Insurance Administration (FIA) under contract No. H-4552. The work was completed in May 1979.
Alden, Town of:	For the December 1, 1980 FIS, hydrologic and hydraulic analyses were prepared by Parsons, Brinckerhoff, Quade and Douglas under subcontract to Goodkind and O'Dea, Inc., for the Federal Emergency Management Agency (FEMA) under Contract No. H-3831. The work was completed in December 1976. For the February 6, 1991 revision, hydrologic and hydraulic analyses were prepared by the U.S. Army Corps of Engineers (USACE) during the preparation of a Special Flood Hazard Evaluation Report for the Town of Alden.
Amherst, Town of:	For the June 18, 1984 FIS, hydrologic and hydraulic analyses were prepared by DeLeuw, Cather and Company of New York, Inc., for FEMA under Contract No. H-4552. The work was completed in April 1981. For the September 28, 1990 revision, the hydrologic and hydraulic analyses for Ellicott Creek, Gott Creek, and the Ellicott Creek Diversion channels were prepared by the USACE, Buffalo District and Pratt and Huth Associates. That work was completed in January 1990. For the October 16, 1992 revision, the hydrologic, hydraulic and floodway analyses for Tonawanda Creek, Black Creek and Ransom Creek were prepared by the USACE, Buffalo District for FEMA, under Inter-Agency Agreement No. EMW-89-E-2994, Project Order No. 1. In addition, the 1% annual-chance and 0.2% annual-chance floodplain boundaries were revised due to updated topographic information prepared by Pratt and Huth Associates. The work was completed in June 1991. An additional floodway analysis for Black Creek and a portion of

Ransom Creek was performed by Pratt and Huth Associates. That work was completed in March 1992.

Angola, Village of: For the August 6, 2002 FIS, the hydrologic and hydraulic analyses for Big Sister Creek were developed by the USACE, Buffalo District and prepared by Leonard Jackson Associates, for FEMA under Contract No. EMW-96-CO-0026. The work was completed in October 2000.

Aurora, Town of: For the October 1978 FIS, the hydrologic and hydraulic analyses were performed by Erdman, Anthony and Associates for the FIA under Contract No. H-3961. The work was completed in September 1977.

Boston, Town of: For the March 30, 1981 FIS, the hydrologic and hydraulic analyses were performed by McPhee, Smith, Rosenstein Engineers, Private Consultants, for the FIA under Contract No. H-4647. The work was completed in December 1979.

Buffalo, City of: For the September 28, 2007 FIS, the hydrologic and hydraulic analyses for Cazenovia Creek, Ellicott Creek and Spicer Creek were performed by Medina Consultants, P.C., for FEMA under Contract No. EMN-2003-CO-5005. The work was completed in September 2007. For the FIS revised August 23, 1999, the hydrologic and hydraulic analyses for Buffalo River were prepared by Leonard Jackson Associates for FEMA under Contract No. EMW-93-C-4145. That work was completed in October 1996. The hydrologic and hydraulic analyses for the remaining streams in the City of Buffalo were taken from the May 18, 1981 FIS. That work was prepared by Goodkind and O'Dea, Inc., for the FIA under Contract No. H-3831 and completed in February 1979.

Cheektowaga, Town of: For the March 15, 1984 FIS, the hydrologic and hydraulic analyses represent a revision of the original analyses by the USACE, Buffalo District for FEMA under Inter-Agency Agreement No. IAA-H-2-73, Project Order No. 4. The original study was completed in December 1979. The revised version was also prepared by the USACE, Buffalo District under agreement with FEMA. This work was completed in June 1983.

Clarence, Town of: For the October 1, 1981 FIS, the hydrologic and hydraulic analyses were prepared by DeLeuw, Cather and Company of New York, Inc., for FEMA under Contract No. H-4552. The work was completed in September 1980. For the March 5, 1996 revision, the hydrologic and hydraulic analyses for Tonawanda Creek and Black Creek

were prepared by Leonard Jackson Associates for FEMA under Contract No. EMW-87-R-2448. The work was completed in March 1989. Revisions to the hydrologic and hydraulic analyses for Gott Creek, Gott Creek Tributary, Ransom Creek, Tonawanda Creek and Black Creek were conducted by Pratt & Huth in order to resolve an appeal received during the statutory 90-day appeal period. This work was completed in August 1993. Additional revisions to the hydrologic and hydraulic analyses for Tonawanda Creek and Black Creek were conducted by Pratt & Huth during the second statutory 90-day appeal period. This work was completed in August 1994.

Colden, Town of: For the January 1979 FIS, the hydrologic and hydraulic analyses were performed by Erdman, Anthony Associates for the FIA under Contract No. H-3961. The work was completed in October 1977.

Collins, Town of: For the November 1976 FIS, the hydrologic and hydraulic analyses were conducted by the U.S. Geological Survey (USGS) at the request of the FIA, U.S. Department of Housing and Urban Development. The source of authority for the study is the National Flood Insurance Act of 1968, as amended. Authority and financing are contained in Inter-Agency Agreements IAA-H-20-74, Project Order No. 16 and IAA-H-17-75, Project Order No. 14. All cross sections and planimetric work maps, surveyed by the photogrammetric method, were collected and compiled by Kucera and Associates, Incorporated, Mentor, Ohio, under subcontract from the USGS.

Concord, Town of: For the September 4, 1986 FIS, the hydrologic and hydraulic analyses were prepared by the USACE during a Special Flood Hazard Evaluation Report for Spring Brook in the Town of Concord and Village of Springville. The report was completed in November 1984.

Depew, Village of: For the February 3, 1981 FIS, the hydrologic and hydraulic analyses were prepared by DeLeuw, Cather and Company for the FIA under Contract No. H-4552. The work was completed in December 1979.

East Aurora, Village of: For the June 29, 1979 FIRM, the hydrologic and hydraulic analyses were prepared by the USACE, Buffalo District, for FEMA under Inter-Agency Agreement No. IAA-H-15-72, Project Order No. 18. The work was completed in June 1972. For the August 6, 2002 revision, the hydrologic and hydraulic analyses for Tannery Brook

were developed by the USACE and prepared by Leonard Jackson Associates for FEMA under Contract No. EMN-96-CO-0026. The work was completed in January 2001.

Elma, Town of: For the December 1976 FIS and June 1, 1977 FIRM, the hydrologic and hydraulic analyses were prepared by the USACE for the FIA under Inter-Agency Agreement No. IAA-H-2-73, Project Order No. 4. For the June 22, 1998 revision, hydrologic and hydraulic analyses were prepared by Kozma Associates Consulting Engineers, P.C., for FEMA under Contract No. EMW-84-C-4379. The work was completed in July 1995.

Evans, Town of: For the November 1977 FIS, hydrologic and hydraulic analyses were prepared by the U.S. Geological Survey (USGS) for FEMA. The March 16, 1982 FIS analyses represent a revision of the original FIS also prepared by USGS under Inter-Agency Agreement Nos. IAA-H-20-74, Project Order No. 16 and IAA-H-17-75, Project Order Nos. 1 and 14. Hydrologic and hydraulic analyses of additional streams were prepared by McPhee, Smith, Rosenstein Engineers, Private Consultants, for FEMA under Contract No. H-4647. The work was completed in December 1979. For the February 2, 2002 revision, hydrologic and hydraulic analyses for Reisch Creek were prepared by Leonard Jackson Associates for FEMA under Contract No. EMW-93-C-4145. The work was completed in March 1999.

Gowanda, Village of: For the December 1976 FIS, the hydrologic and hydraulic analyses were performed by the Water Resources Division of the USGS, for the FIA, under Inter-Agency Agreement Nos. IAA-H-20-74, Project Order No. 16; and IAA-H-17-75, Project Order Nos. 1 and 14. The work was completed in December 1976.

Grand Island, Town of: For the July 1979 FIS, the hydrologic and hydraulic analyses were done by Erdman, Anthony, Associates, for the FIA, under Contract Number H-3961. That work, which was completed in December 1977, covered all significant flooding sources affecting the Town of Grand Island.

Hamburg, Town of: For the August 14, 1980 FIS and November 19, 1980 FIRM, the hydrologic and hydraulic analyses were prepared by McPhee, smith, Rosenstein Engineers for the FIA under Contract No. H-4647. The work was completed in December 1979. For the October 4, 1994 revision, the hydrologic and hydraulic analyses for Buttermilk Falls Creek were prepared by R & D

	Engineering, P.C., on behalf of the Town of Hamburg for FEMA. That work was completed in July 1992. For the December 20, 2001 revision, the hydrologic and hydraulic analyses for Foster Brook were prepared by Leonard Jackson Associates for FEMA under Contract No. EMW-93-C-4145 and included a June 17, 1999 Letter of Map Revision (LOMR) along an unnamed tributary. The work was completed May 5, 1999.
Hamburg, Village of:	For the July 20, 1981 FIS, the hydrologic and hydraulic analyses were prepared by McPhee, Smith Rosenstein Engineers for FEMA under Contract No. H-4647. The work was completed in December 1979.
Holland, Town of:	For the November 1978 FIS, the hydrologic and hydraulic analyses for that study were performed by Erdman, Anthony, Associates for the FIA, under Contract No. H-3961. That work, which was completed in September 1977, covered all significant flooding sources in the Town of Holland.
Lackawanna, City of:	For the January 1980 FIS, the hydrologic and hydraulic analyses were prepared by Parsons, Brinckerhoff, Quade and Douglas under subcontract to Goodkind and O'Dea, Inc., for FEMA under Contract No. H-3831. The work was completed in March 1977.
Lancaster, Town of:	For the June 1, 1981 FIS and December 1, 1981 FIRM, the hydrologic and hydraulic analyses were prepared by DeLeuw, Cather and Company of New York, Inc., for the FIA under Contract No. H-4552. he work was completed in March 1980. For the February 23, 2001 revision, the hydrologic and hydraulic analyses for Little Buffalo Creek, Ellicott Creek, Scajaquada Creek and Plum Bottom Creek were prepared by Leonard Jackson Associates for FEMA under Contract No. EMW-95-C-4692. The work was completed in January 1998.
Lancaster, Village of:	For the January 1979 FIS, the hydrologic and hydraulic analyses were performed by Erdman, Anthony Associates for the FIA under Contract No. H-3961. The work was completed in September 1977.
Marilla, Town of:	For the March 1978 FIS, the hydrologic and hydraulic analyses were performed by Erdman, Anthony Associates for the FIA under Contract No. H-3961. The work was completed in July 1977.
Newstead, Town of:	For the May 1980 FIS, the hydrologic and hydraulic analyses were prepared by DeLeuw, Cather and Company

	of New York, Inc., for FEMA under Contract No. H-4552. The work was completed in May 1979. For the May 4, 1992 revision, the hydrologic and hydraulic analyses were prepared by Leonard Jackson Associates for FEMA under Contract No. EMW-89-C-2822. The work was completed in May 1990.
Orchard Park, Town of:	For the September 16, 1982 FIS, the hydrologic and hydraulic analyses were prepared by McPhee, Smith Rosenstein Engineers for FEMA under Contract No. H-4647. The work was completed in December 1979.
Orchard Park, Village of:	For the July 1, 1981 FIS, the hydrologic and hydraulic analyses were prepared by McPhee, Smith Rosenstein Engineers for FEMA under Contract No. H-4647. The work was completed in December 1979.
Sardinia, Town of:	For the January 16, 2003 FIS, the hydrologic and hydraulic analyses were prepared by Leonard Jackson Associates for FEMA under Contract No. EMW-96-CO-0026. The work was completed in December 2000.
Springville, Village of:	For the July 17, 1986 FIS, the hydrologic and hydraulic analyses were prepared by the USACE, Buffalo District, during preparation of a Special Flood Hazard Evaluation report for Spring Brook in the Town of Concord and Village of Springville. The report was completed in November 1984.
Tonawanda, City of:	For the February 1979 FIS, the hydrologic and hydraulic analyses were performed by Erdman, Anthony, Associates for the FIA, under Contract No. H-3961. That work, which was completed in November 1977, covered all significant flooding sources affecting the City of Tonawanda.
Tonawanda, Town of:	For the February 17, 1981 FIS, the hydrologic and hydraulic analyses were prepared by DeLeuw, Cather and Company of New York, Inc., for FEMA under Contract No. H-4552. The work was completed in November 1979.
Wales, Town of:	For the February 1979 FIS, the hydrologic and hydraulic analyses were performed by Erdman, Anthony, Associates, for the FIA, under Contract No. H-3961. That work, which was completed in May 1977, covers all significant flooding sources in the Town of Wales.
West Seneca, Town of:	For the August 1976 FIS, the hydrologic and hydraulic analyses were prepared by the USACE, Buffalo District for FEMA under Inter-Agency Agreement No. IAA-H-2-

73, Project Order No. 2. For the September 3, 1992 revision, the hydrologic and hydraulic analyses were prepared by Kozma Associates Engineers, P.C., for FEMA under Contract No. EMW-86-C-2244. The work was completed in April 1990.

Williamsville, Village of: For the September 1, 1981, FIS, the hydrologic and hydraulic analyses were prepared by DeLeuw, Cather and Company of New York, Inc., for FEMA, under Contract No. H-4552. That work was completed in September 1980.

The authority and acknowledgements for the towns of Brant and Eden and the villages of Alden, Blasdell and North Collins are not available because no FIS reports were published for those communities.

For the countywide FIS dated September 26, 2008, the hydrologic and hydraulic analyses for the Cazenovia, Ellicott, and Spicer Creeks were prepared by T.Y. Lin International for FEMA, under Contract No. EMN-2003-CO-5005. The work was completed in September 2007.

For the countywide FIS dated [date], revised hydrologic and hydraulic analyses for the streams shown in Table 3 were prepared for FEMA by T.Y. Lin International under Contract No. EMN-2003-CO-0005. This work was completed in September 2009. The Physical Map Revising (PMR) 12-02-1567P was incorporated into the countywide mapping by Strategic Alliance for Risk Reduction (STARR II) under Contract No. HSFE60-15-D-0005, Task Order No. HSFE60-15-J-0002. PMR 12-02-1567P updated the hydraulic analysis and floodplain mapping of a portion of Tonawanda Creek beginning at stream station 34,540 (Cross Section M) and ending at station 64,300. This work was completed in January 2016.

Base map information shown on the FIRM dated [date] was provided in digital format by the New York State Office of Cyber Security & Critical Infrastructure Coordination. Files contained 2008 digital orthoimagery of Erie County, New York. Image pixel size is 1.0' and 2.0' GSD. Image horizontal accuracy is within 8' at the 95% confidence level. Each file contains an image covering 4000' by 6000' on the ground.

Base map information shown on this FIRM was provided in digital format by the New York State Office of Cyber Security. This information was provided as 4-Band RGB and NIR, with pixel size 1.0’ GSD from photography dated April 2011.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 18N. The horizontal datum was NAD 83, GRS80 spheroid.

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 a 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 the jurisdictions within Erie County which this FIS covers and the incorporated communities within those boundaries are shown in Table 1, "Initial and Final CCO Meetings."

TABLE 1 – INITIAL AND FINAL CCO MEETINGS

Community	Initial CCO Date	Final CCO Date
Akron, Village of	May 24, 1977	December 6, 1979
Alden, Town of	December 20, 1989[1]	February 26, 1990
Amherst, Town of	May 23, 1977	February 9, 1982
Angola, Village of	March 15, 2001[1]	July 12, 2001
Aurora, Town of	July 21, 1976	May 18, 1978
Boston, Town of	-	November 19, 1980
Buffalo, City of	September 25, 1975	November 5, 1980
	November 1, 2007	January 9 & 10, 2008
Cheektowaga, Town of	June 19,1978	July 15, 1980
Clarence, Town of	May 23, 1977	May 11, 1981
	May 1986	June 2, 1992
Colden, Town of	March 17, 1976	June 20, 1978
Collins, Town of	-	September 15, 1975
Concord, Town of	-	September 9, 1985
Depew, Village of	May 25, 1977	July 15, 1980
East Aurora, Village of	March 15, 2001[1]	July 12, 2001
Elma, Town of	-	August 25, 1975
	March 10, 1993	-
Erie County (All Jurisdictions)	March 15 &16, 2006	-
Evans, Town of	-	May 12, 1981
	-	December 19, 2000
Gowanda, Village of	-	November 24, 1975
Grand Island, Town of	April 7, 1976	September 27, 1978
Hamburg, Town of	-	April 8, 1980
	October 9, 1992[1]	November 2, 2000
Hamburg, Village of	-	April 8, 1980
Holland, Town of	July 21, 1976	May 18, 1978
Lackawanna, City of	September 26, 1975	August 13, 1979
Lancaster, Town of	May 25, 1977	October 28, 1980
	April 21, 1994	-
Lancaster, Village of	July 20, 1976	June 20, 1978
Marilla, Town of	March 16, 1976	-
Newstead, Town of	May 24, 1977	December 5, 1979
	March 1988	June 3, 1991
Orchard Park, Town of	-	February 10, 1981
Orchard Park, Village of	*	February 10, 1981
Sardinia, Town of	March 15, 2001[1]	January 29, 2002
Springville, Village of	*	September 3, 1985
Tonawanda, City of	March 17, 1976	August 14, 1978

TABLE 1 – INITIAL AND FINAL CCO MEETINGS

Tonawanda, Town of	May 23, 1977	September 3, 1980
Wales, Town of	March 16, 1976	August 14, 1978
West Seneca, Town of	October 11, 1990[1]	January 7, 1991
Williamsville, Village of	May 23, 1977	April 13, 1981

[1] Notified by Letter

For the [date] countywide FIS, initial CCO meetings were held March 2-4, 2010. These meetings were attended by representatives of the municipalities, NYSDEC, FEMA, T.Y. Lin International and RAMPP. No final CCO meeting was held for this countywide study.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Erie County, New York.

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

Berricks Creek	Little Sister Creek Tributary 2
Big Sister Creek	Muddy Creek
Black Creek	Murder Creek
Buffalo Creek	Niagara River – Tonawanda Channel
Buffalo River	Pike Creek
Buttermilk Falls Creek	Plum Bottom Creek
Cattaraugus Creek	Plum Bottom Creek North Branch
Cayuga Creek	Pond Brook
Cazenovia Creek	Ransom Creek
Cazenovia Creek East Branch	Reisch Creek
Cazenovia Creek West Branch	Rush Creek
Clear Creek	Scajaquada Creek
Delaware Creek	Scajaquada Creek North Branch
Ebenezer Brook	Slate Bottom Creek
Eighteenmile Creek	Slate Bottom Creek North Branch
Eighteenmile Creek North Branch	Slate Bottom Creek South Branch
Eighteenmile Creek South Branch	Smokes Creek
Ellicott Creek	Smokes Creek Northeast Branch
Ellicott Creek – North Diversion Channel	Smokes Creek Northwest Branch
Ellicott Creek – Pfohl Park Diversion Channel	Smokes Creek South Branch
Ellicott Creek – Upper Diversion Channel	Smokes Creek South Branch Tributary

TABLE 2 - FLOODING SOURCES STUDIED BY DETAILED METHODS

Fern Brook	Smokes Creek South Branch Tributary 1
Foster Brook	Smokes Creek South Branch Tributary 2
Grannis Creek	Spicer Creek
Gott Creek	Spring Brook
Gott Creek Tributary	Spring Creek
Gun Creek	Tannery Brook
Hampton Brook	Thatcher Brook
Hosmer Brook	Tonawanda Creek
Hunter Creek	Tributary 1 to Niagara River-Tonawanda Channel
Lake Erie	Waterfalls Village Creek
Ledge Creek	Woods Creek
Little Buffalo Creek	Woods Creek Tributary 1
Little Buffalo Creek Tributary	Woods Creek Tributary 3
Little Sister Creek	

- (Continued)

For the [date] countywide FIS, selected streams throughout Erie County were restudied using detailed methods. The streams and the limits of detailed study are shown in Table 3 – "Scope of Revision for [date] Countywide FIS."

TABLE 3 – SCOPE OF REVISION FOR [DATE] COUNTYWIDE FIS

Stream Name	Limits of Detailed Study
Cayuga Creek	Within the towns of Cheektowaga, Lancaster and West Seneca; the villages of Depew and Lancaster.
Eighteenmile Creek	Within the Town of Hamburg.
Ellicott Creek	Within the towns of Amherst and Tonawanda
Ransom Creek	Within the towns of Amherst and Clarence.
Scajaquada Creek	Within the City of Buffalo.
Slate Bottom Creek	Within the towns of Cheektowaga, Elma and Lancaster.
Tonawanda Creek	Within the Town of Tonawanda.

Table 4, "Stream Name Changes," lists streams that have names in this countywide FIS other than those used in previously printed FISs for the communities in which they are located.

TABLE 4 – STREAM NAME CHANGES

Community	Old Name	New Name
Aurora, Town of	Cazenovia Creek (Upstream Portion)	Cazenovia Creek West Branch
Aurora, Town of and Aurora, Village of	East Branch Cazenovia Creek	Cazenovia Creek East Branch

TABLE 4 – STREAM NAME CHANGES - (Continued)

Community	Old Name	New Name
Aurora, Town of and Aurora, Village of	West Branch Cazenovia Creek	Cazenovia Creek West Branch
Clarence, Town of	Tributary to Gott Creek	Gott Creek Tributary
Depew, Village of	North Branch Scajaquada Creek	Scajaquada Creek North Branch
Elma, Town of and Lancaster, Town of	South Branch Slate Bottom Creek	Slate Bottom Creek South Branch
Evans, Town of	Tributary No. 2 to Little Sister Creek	Little Sister Creek Tributary 2
Hamburg, Town of	North Branch Eighteenmile Creek	Eighteenmile Creek North Branch
Hamburg, Town of	South Branch Eighteenmile Creek	Eighteenmile Creek South Branch
Hamburg, Town of	Tributary to South Branch of Smokes Creek	Smokes Creek South Branch Tributary 1
Hamburg and Orchard Park, Towns of; City of Lackawanna and Village of Orchard Park	South Branch Smokes Creek	Smokes Creek South Branch
Lancaster, Town of	North Branch Slate Bottom Creek	Slate Bottom Creek North Branch
Lancaster, Town of	North Branch Plum Bottom Creek	Plum Bottom Creek North Branch
Marilla, Town of	Tributary to Little Buffalo Creek	Little Buffalo Creek Tributary
Wales, Town of	East Branch Cazenovia Creek	Cazenovia Creek East Branch

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.

Numerous flooding sources in the country were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and Erie County.

This FIS also incorporates the determinations of letters issued by FEMA resulting in map changes (Letter of Map Revision [LOMR], Letter of Map Revision - based on Fill [LOMR-F], and Letter of Map Amendment [LOMA], as shown in Table 5, "Letters of Map Change."

TABLE 5 – LETTERS OF MAP CHANGE

Community	Flooding Source(s) Project Identifier	Date Issued	Type

TABLE 5 – LETTERS OF MAP CHANGE

Community	Flooding Source(s) Project Identifier	Date Issued	Type
Amherst, Town of	Ellicott Creek Floodway Revision	08/17/1995	LOMR
Cheektowaga, Town of	Scajaquada Creek LOMR	03/14/1995	LOMR
Cheektowaga, Town of	Scajaquada Creek T-1 LOMR	01/26/2002	LOMR
East Aurora, Village of	Cazenovia Creek East Branch BFE Revision	09/03/1991	LOMR
Hamburg, Town of	Rush Creek Tributary – Zone A Revision	12/17/1999	LOMR
Hamburg, Town of	Buttermilk Falls Creek BFE Revision	06/03/2003	LOMR
Lancaster, Town of	Cayuga Creek LOMR Revision	05/17/2005	LOMR
Lancaster, Town of	Slate Bottom Creek North Branch LOMR Revision	08/28/2008	LOMR
Orchard Park, Town of	Smokes Creek Northwest Branch BFE Revision	03/27/1998	LOMR
Orchard Park, Village of	Smokes Creek Northwest Branch BFE Revision	03/27/1998	LOMR

- (Continued)

2.2 Community Description

Erie County is located in the extreme western part of New York State. It is bordered by Niagara County to the north, Genesee County, Wyoming County and the Tonawanda Reservation to the east, Cattaraugus County to the south, Cattaraugus Reservation to the southwest, and Lake Erie and the Niagara River to the west.

According to the 2000 U.S. Census, the land area in Erie County was 1,044 square miles and the estimated population of Erie County was 950,265 in 2000.

Erie County is located in two physiographic regions: the Allegany Plateau, characterized by the upland, sloping topography to the south and the Erie-Ontario Lowlands of lake plain to the north. Glaciers have covered this area several times leaving deposits of glacial till as they receded. (FEMA, Town of Orchard Park, 1982). Surface soils within the County are nonsorted rock materials; imbedded sand and gravel, as well as imbedded clay, silt and fine sand. They reflect the texture of the glacial till, outwash and lake deposits from which they come. Generally, soils are shallow and fairly well-drained (FEMA, Village of Depew, 1981). Soils for a thin mantle over the bedrock, which is generally found at depths greater than five feet. Heavy wooded areas can be found along steep hillsides and farming occurs on the gently rolling hilltop areas and n the broad valleys. Many farms are now overgrown, as a once agricultural area has rapidly become urbanized (FEMA, Town of West Seneca, 1992).

Erie County experiences a fairly humid, continental-type climate, but with a definite “maritime” flavor due to strong modification from the Great Lakes. Winters are generally cloudy, cold and snowy. The lake snow machine can start as early as mid-November. The

average date of the last frost is near the end of April in the City of Buffalo and in mid-May inland. Spring comes slowly to the Buffalo area; the ice pack on Lake Erie does not disappear until mid-April. Summers are pleasant, sunshine is plentiful, temperatures are warm and humidity levels are moderate. Autumn is pleasant, but rather brief. The first frost can be expected in late September inland and mid-October in the City of Buffalo (National Weather Service).

2.3 Principal Flood Problems

Flooding can occur in Erie County during any season of the year, but it most likely occurs in the late winter – early spring months when melting snow may combine with intense rainfall to produce increased runoff. Ice jams and debris have often increased flood heights by impeding water flow at bridges and culverts. Floods can result from collusion over the watershed of a large mass of warm moisture-laden air from the north; from sharp rises in temperature in the spring that melt the snow cover of the basin and are followed by rains; and from localized thunderstorms (Olean Times Herald, 2009).

Recent Flooding Events

In August 2009, devastating storms struck the southern area of Erie County, particularly in the Village of Gowanda. At USGS Gage No. 04213500 (Cattaraugus Creek at Gowanda, New York), a flow of 32,300 cubic feet per second (cfs) was recorded, the highest flow on record for that gage. (USGS, Ret. September 2009). One death was attributed to the storm, and debris and high water damaged the Village's primary water supply. Several roads and culverts were washed out and the New York and Lake Erie Railroad was temporarily suspended due to a washout of track. A federal disaster was declared on September 1, 2009.

In January 2008, an unnamed storm with severely strong sustained winds of 30-40 miles per hour (mph) and gusts to 60 mph caused a significant storm surge on Lake Erie and the upper Niagara River. Coastal flooding occurred in several areas in the City of Buffalo. The URS Group, Inc. was contracted by FEMA under Task Order HSFEHQ-07-J-0013 of the Hazard Mitigation Technical Assistance Program (HMTAP) to collect high water marks (HWMs) within the City of Buffalo (FEMA, March 2008). The results of this effort are shown in Table 6, "Summary of January 2008 High Water Mark Survey Results".

TABLE 6 – SUMMARY OF JANUARY 2008 HIGH WATER MARK SURVEY RESULTS

HWM ID	HWM Street Address	Survey Elevation (feet NAVD)	Survey Latitude	Survey Longitude
213-UNY-01-001	Retaining wall at La Salle Park	580.0	42.88715	-78.89009
213-UNY-01-002	Debris line at end of 116 South Street	579.4	42.86426	-78.86210
213-UNY-01-003	Tree at 41 South Street	579.5	42.86485	-78.86501
213-UNY-01-004	Tree at 30 Kentucky Street	579.0	42.86418	-78.86603
213-UNY-01-005	Buffalo-Ohio Park	580.2	42.86617	-78.86835
213-UNY-01-006	Fence at Marine Supplies Store at South Marine	580.5	42.84064	-78.85871

TABLE 6 – SUMMARY OF JANUARY 2008 HIGH WATER MARK SURVEY RESULTS - (Continued)

HWM ID	HWM Street Address	Survey Elevation (feet NAVD)	Survey Latitude	Survey Longitude
	entrance gate			
213-UNY-01-007	Boat dock at ice fishing behind Olson Bro. Marine	580.2	42.85190	-78.86525
213-UNY-01-008	Rocks at Maritime Center	580.1	42.85734	-78.87542
213-UNY-01-009	Boat dock at Erie Basin	578.7	42.87995	-78.88704
213-UNY-01-010	Sign post at La Salle Park	580.2	42.88749	-78.89010
213-UNY-01-011	West Side Row Club	579.3	42.90025	-78.90176
213-UNY-01-012	Peace Bridge - R.Rich / Island Park	577.6	42.91292	-78.90274
213-UNY-01-014	Ice line on utility pole	579.3	42.86448	-78.86289

Federal disasters were also declared for storms that occurred in October 2006, May-June of 2004 and May-September of 2000.

Historic Flooding Events

For each selected community within Erie County that has a previously printed FIS report, the principal flooding problems described in those reports have been compiled and are summarized below.

In the Village of Akron, low lying areas are subject to periodic flooding from the overflow of Murder Creek. Most major floods occurred in the late winter or early spring. Few damaging floods have been produced by precipitation alone, though floods have often been caused by melting snow combined with moderate amounts of rainfall. (FIA, Village of Akron, 1980)

In the Town of Alden, flooding occurs along Ellicott Creek and Cayuga Creek. The greatest flood of record in the area occurred in March 1936 and caused heavy damage by washing out road and bridges, which have since been replaced with more adequate structures. An intense rainstorm which brought more than 6 inches of rainfall occurred in July 1963. (FEMA, Town of Alden, 1991).

In the Town of Amherst, a flood of record occurred in March 1960. This flood inundated a total of 3,220 acres, most located within the Town. This flood had a recurrence interval of approximately 20 years. The areas subject to the most severe flood damage were located on the downstream portions of Ellicott Creek, from Maple Road to Niagara Falls Boulevard. Numerous homes have been constructed in the floodplains of streams within the Town. During periods of high flow on Ransom Creek, the last four miles of the stream have inadequate channel capacity and do not flow with enough velocity to handle the discharges, and the creek may overflow its banks. The channel capacity of Black Creek is also often inadequate during periods of heavy flow, and the stream flows slowly and overflows its banks. Drainage divides between Tonawanda Creek, Ransom Creek,

Black Creek and Gott Creek are low and their flood flows merge together. As a result, tributaries carry a large portion of major flood overflows from Tonawanda Creek. The channels of Black Creek and Ransom Creek are adequate to convey flood runoff from their own watershed areas, but the added flow from Tonawanda Creek frequently inundates land along Black Creek, Ransom Creek and Gott Creek. During the March 1960 flood, the overlap of floodplains reached a maximum width of approximately four miles. A large portion of losses due to flood damage were agricultural. (FEMA, Town of Amherst, 1992).

In the Village of Angola, flooding has occurred during winter and spring months and is usually the result of spring rains and/or snowmelt. (FEMA, Village of Angola, 2002).

In the Town of Aurora, flooding occurs on the Cazenovia Creek and its branches as a result of discharges in excess of channel capacity, restrictive bridges and ice jams. However, flood damages have been minor because of the hydraulic characteristics of the channels and limited development within the floodplains. On September 27, 1967, flooding occurred along the West Branch of Cazenovia Creek from West Falls in the Town of Aurora to Glenwood in the Town of Colden as a result of locally heavy rainfall. Basements of several structures were flooded. (USHUD, Town of Aurora, 1978).

In the Town of Boston, no significant flooding records exist. The floodplains in the Town of Boston are undeveloped and no damage has occurred to property in the Town. (FIA, Town of Boston, 1981).

In the City of Buffalo, low-lying areas are subject to flooding from Buffalo River, Cazenovia Creek and Scajaquada Creek. The most severe flooding occurs in early spring as a result of snowmelt and heavy rains. Under 1% annual-chance flooding conditions, flooding may be anticipated in Cazenovia Park and in areas adjacent to the confluence of the Buffalo River and Cazenovia Creek. Along Cazenovia Creek, the most severe storm on record in the city was March 1955, which was equivalent to a 4% annual-chance storm event. Other major floods occurred along Cazenovia Creek in January 1962, March 1964, February 1975, December 1969, January 1970 and March 1972. Along the Buffalo River, at the South Springs Subdivision of Mineral Spring Road, which is an area susceptible to flooding, high-water marks were recorded in 1956 and 1959. Along Scajaquada Creek, the most severe storm on record occurred August 7, 1963. The flood had a magnitude comparable to a 2% annual-chance event. In September 1967, a flood with a recurrence interval of 10 years occurred. Flooding in this area is more apt to occur as a result of sudden summer thunderstorms than from any combination of winter weather conditions. Under high-water conditions, flooding occurs approximately six to eight times per year along the banks of Scajaquada Creek and in low-lying areas such as parts of Delaware Park and Forest Lawn Cemetery. This is due in part to debris clogging sewer line, and in part to storm runoff entering the Scajaquada Drain. In higher areas, while the creek would expand in width, relatively little flooding would affect developed areas. Many flood problems in the City of Buffalo are associated with overflows of the sewer drainage system. The bulk of the city's combined sewer system can handle the peak runoff from 50% annual-chance to 5% annual-chance flood events without flooding. However, the area of South Buffalo has a sewer system that is unable to handle even a 100% annual-chance flood. (FEMA, All Jurisdictions, 2008; City of Buffalo, 1999).

In the Town of Cheektowaga, flooding along Ellicott Creek and Scajaquada Creek and its tributaries is a result of discharges in excess of channel capacity and restrictive bridges. Large magnitude floods, which would cause extensive damage due to present development, occurred along Ellicott Creek in March 1916, January 1929, March 1936 and March 1960. Flooding has occurred along Scajaquada Creek in February and July 1945, January 1946, September 1967 and August 1975. A flood of record occurred on August 7, 1963 and was estimated to have a recurrence interval of 100 years. Flood discharges exceeding channel capacity affect residential, commercial and public properties along Cayuga Creek, primarily in the area near Union Road Bridge. Damages due to flooding in this area have been minimized due to channel improvements. Damaging floods have occurred along Cayuga Creek in March 1942, March 1955, March 1956, January 1959 and August 1975. A flood of record for Cayuga Creek occurred in June 1937. (FEMA, Town of Cheektowaga, 1984).

In the Town of Clarence, low-lying areas are subject to periodic flooding cause by the overflow from the narrow, winding and obstructed channel of Tonawanda Creek, and complicated by overflow and overland flooding into Black Creek and the lower portion of Ransom Creek. The larger floods in the Tonawanda Creek watershed have been caused by melting snow with moderate amounts of rainfall. Major flood events occurred during March and April of 1960. Other flooding events occurred in March 1902, March 1916, March 1956, January 1957 and January 1959. (FEMA, Town of Clarence, 1996).

In the Town of Colden, flooding is a result of discharges in excess of channel capacity, restrictive bridges and ice jams. However, flood damages have been minor because of the hydraulic characteristics of the channels and limited development of the floodplains. On March 1, 1955, heavy rainfall sent many streams in the Town over their banks. State Route 240 along Cazenovia Creek West Branch was awash at two points approximately one mile north of the Town. On September 28, 1967, a locally heavy rainstorm cause flooding along Cazenovia Creek West Branch. The discharge due to heavy rainfall was augmented by the failure of several pond embankments, including one 3-acre pond in the Town of Concord. Damage was reported to three commercial and eight residential structures in the hamlets of Colden and Glenwood. The Town of Colden office building sustained major damage; floodwaters reached an elevation of two feet above the floor joists. A section of State Route 240 south of the Hamlet of Colden was washed out. The flooding was a result of floodwaters overtopping the stream bank at a sharp bend in the channel downstream of the Chessie System Bridge. Some channel work has been done along this section of stream. (USHUD, Town of Colden, 1979).

In the Town of Collins, Clear Creek flows in meandering, shifting channels with steep profiles, and between high and low banks. Flooding problems may occur along U.S. Highway 62 at all three stream crossings, when maximum carrying capacities of the bridge opening are exceeded; or ice and debris jams take place. In addition a flooding problem exists at School Street and also at Collins Center Zoar Road due to a low place in the road which results in road overflow and flooding of residential dwellings on the left bank. (USHUD, Town of Collins, 1976).

In the Village of Depew, floods occurring in August 1963, September 1967 and August 1975 all caused substantial damage, though not in the Village of Depew, with August 1963 being the most severe. The intensity of rainfall during this storm period was in excess of the estimated 1% annual-chance intensity. Flooding occurs almost annually

along Cayuga Creek. Along Cayuga Creek, significant storm events occurred in June 1937, March 1942, March 1955, March 1956, January 1959, March 1972, June 1972 and August 1975. The storm of record occurred in June 1937, with the discharge estimated to be a recurrence interval of approximately 500 years. (FIA, Village of Depew, 1981).

In the Town of Evans, flooding along Little Sister Creek is confined to stream overflow in low-lying areas, which are sparsely developed. Ice jam flooding occurs at State Route 5 just south of Backus Road. Major floods on Little Sister Creek primarily occur in the late winter or early spring. Road overflow and excessive backwater at road and driveway culverts, such as the State Route 5 culvert, constitute the major flooding problems on Fern Brook and Reisch Creek. Discharges as low as the 10% annual-chance recurrence interval cause road overflow at Kennedy Road along Fern Brook and at numerous secondary road crossings in Highland-on-the-Lake. Flooding along Pike Creek is due to the low-lying relief and shallow slope of the channel, which creates insufficient hydraulic capacity. (FEMA, Town of Evans, 2002).

In the Village of Gowanda, the deeply entrenched channel of Cattaraugus Creek can handle flows greater than the 0.2% annual-chance flood. Thatcher Brook and Grannis Creek, however, create major flood problems in their lower reaches. The main channels of these streams as they pass through more developed sections of the Village have been formed so that when the stage exceeds bankful, flow is lost over the left bank on Grannis Creek and over the right bank on Thatcher Brook. That part of the floodplain which receives this overbank flow is a heavily developed area; therefore flood damage is extensive. An unnamed tributary located north of Cattaraugus Creek and flowing in a westerly direction adds to the flooding problems in the Village. (USHUD, Village of Gowanda, 1976).

In the Town of Grand Island, flood problems have been associated with high-water elevations and ice jams on the Niagara River. Strong winds blowing across Lake Erie from the southwest cause “wind-upset” on the lake and high water elevations on the river. Large ice jams occur on the river in the spring when the ice breaks up on the lake and flows down the river. (USHUD, Town of Grand Island, 1979)

In the Town of Hamburg, the Lake Erie shoreline is a major area of flooding, due to wave action and high winds. This is particularly noticeable at the Hoover Beach area. Waves have been recorded over the tops of houses there and have reached State Route 5. Ice from the lake can be thrown against the shore, causing damage and hazardous conditions. Much of the shoreline has high bluffs, which experience serious erosion during storms. Lake Erie also causes streams that feed it to back up. The streamflow spreads out in low-lying areas, especially Woodlawn and Hoover Beach. Flooding problems are also created along most streams that cross the railroad near the lake. The underpass structures are generally severely restrictive to flow due to their small size. This causes water to back up and flood areas that normally would not be inundated. The culvert for Foster Brook under State Route 5 also creates flooding in the area. The road grades up from the south and is quite high above the creek. As the water backs up behind the culvert it flows around State Route 5 at the bottom of the incline and flows to the lake, flooding homes along the beach. The floodwaters converge on the floodplain of Waterfalls Village Creek, creating a large area that is inundated. (FEMA, Town of Hamburg, 2000)

In the Village of Hamburg, four bridges at the upstream end of Berricks Creek tend to restrict flow of the creek and create flooding problems; consequently, even the 10% annual-chance flood event overtops the roadways for these structures. These four structures are Brookwood Drive, Sunset Drive, Kenton Place and a footbridge just downstream of Sunset Drive. (FEMA, Village of Hamburg, 1981).

In the Town of Holland, flooding in the area can occur along Cazenovia Creek East Branch, Hunter Creek, Buffalo Creek and Gears Gulf. Flooding occurs as a result of discharges in excess of channel capacity, restrictive bridges and ice jams. Flood damages have been minor because of hydraulic characteristics of the channel and limited development of the floodplains. (USHUD, Town of Holland, 1978).

In the City of Lackawanna, flooding along Smokes Creek, Smokes Creek South Branch and the Lake Erie shoreline occurs when heavy rains, sometimes associated with thaws, and high winds cause the water levels in Lake Erie and the streams to rise. Ice jams are significant factors in floods in the City. (FIA, City of Lackawanna, 1980).

In the Town of Lancaster, agricultural lands and woodlands that have been rapidly urbanized without adequate drainage systems have led to flooding of Ellicott Creek downstream in the Town of Amherst. A storm of record occurred in March 1960. Other large storm events occurred in March 1916, January 1929, March 1936, June 1937, March 1940, March 1954, March 1956, January 1959 and March 1963. The flood of March 1960 was estimated to have a recurrence interval of 20 years. Low-lying areas along Scajaquada Creek have been subject to flooding, with large storm events occurring in August 1963, September 1967, August 1975 and September 1977. Housing and highway developments have obscured original drainage patters, eliminating some of the natural watercourses and combining or altering others. Flood problems are due primarily to rapid runoff during intense rainstorms with resulting flows in excess of channel capacities. The flood of August 1963 was estimated to have a recurrence interval of 40 years. Along Cayuga Creek, flooding occurs nearly annually. Most of the floods are cause by rapid thawing of snow cover and often accompanied by rainfall. Ice jams, vegetative growth and debris contribute to flooding by clogging bridge openings and culverts in the stream channel. Significant storm events occurred in June 1937, March 1942, March 1955, March 1956, January 1959, March 1972, June 1972, August 1975 and September 1979. The June 1937 flood was estimated to have a recurrence interval of 500 years. Plum Bottom Creek and Plum Bottom Creek North Branch are tributaries to Cayuga Creek, joining Cayuga Creek just inside the western corporate limits of the Village of Lancaster. Plum Bottom Creek and Plum Bottom Creek North Branch flood nearly annually as well. Significant storm events have occurred in June 1937, March 1942, March 1955, March 1956, January 1959, March 1972, June 1972 and August 1975. Slate Bottom Creek is a tributary to Cayuga Creek joining downstream west of Union and French Roads by the New York Central Railroad. Significant storm events occurred in June 1937, March 1942, March 1955, March 1956, January 1959, March 1972, June 1972 and August 1975. (FEMA, Town of Lancaster, 2001)

In the Town of Marilla, sources of flooding include Cayuga Creek, Buffalo Creek, Little Buffalo Creek and its tributary. Flooding occurs as a result of discharges in excess of channel capacity, restrictive bridges and ice jams. However, flood damages have been minor because of the hydraulic characteristics of the streams and limited development of the floodplains. (USHUD, Town of Marilla, 1978).

In the Town of Newstead, low-lying areas are subject to periodic flooding caused by the overflow of Beeman Creek, Ledge Creek, Murder Creek, Ransom Creek and Tonawanda Creek. Most major floods occur in the late winter or early spring. A flood of record occurred on March 31, 1960. At Hopkins Road on Tonawanda Creek, the peak discharge was associated with a recurrence interval of approximately 10 years. Other large storm events occurred in March 1902, March 1916, March 1942, March 1956 and January 1957. (FEMA, Town of Newstead, 1991).

In the Town of Orchard Park, developed floodplain areas are primarily inundated due to bridge structures in the area. Along Milestrip Road there are a few private driveway bridges that constrict flood flows. The culverts at Highland Avenue and South Freeman Road frequently back up and cause flood problems. Damage has been reported at the subdivision downstream of South Freeman Road. Ice jams can also cause problems within the Town, primarily at Lake Avenue bridge. Flooding from Smokes Creek Northwest Branch occurs north of the bridge, but damage has been minimal. Flooding caused by ice jams occurs at the end of Lakewood Drive, covering recreational land. (FEMA, Town of Orchard Park, 1982).

In the Village of Orchard Park, there is a large tract of homes located between Forest Drive and Highland Avenue at the end of Woodview Drive on Smokes Creek Northwest Branch which experiences flooding. Many of these homes are well within floodplains, sitting in low-lying areas. Ice jams, which aggravate flood problems, have occurred at both Forest Drive and Highland Avenue culverts. The spillway at Freeman Road fails to handle large storm flows. The water foes around the spillway and flows over Freeman Road but does not inundate any houses. The spillway at Green Lake also has problems handling large flows. The water goes around the side of the lake and floods several houses at the end of Woodland Drive. (FIA, Village of Orchard Park, 1981).

In the City of Tonawanda, Flooding along the Niagara River is caused by the wind upset-effect from high westerly or southwesterly winds moving across Lake Erie, and large ice jams. Due to the flat slopes of the stream, the effect of high water-surface elevations on the Niagara River extends through the City of Tonawanda and Town of Grand Island. Serious flooding from the Niagara River occurred in March 1955, when a combination of high water and an ice jam caused extensive damage (The Buffalo Evening News, 1955). In the Town of Grand Island, the most notable flooding occurred near Ferry Village and on Baseline Road between East River Road and Hutch Road. In the City of Tonawanda, flooding was near the mouth of Tonawanda Creek was flooded, forcing the closing of an industrial plant.

In the Town of Tonawanda, low-lying areas have been subject to frequent and great depths of flooding. Flood hazards have been lessened since the construction of a diversion channel from Ellicott Creek to Tonawanda Creek, which was constructed in the summer of 1965 and is located upstream of Niagara Falls Boulevard. Only minor damages have been sustained within Ellicott Creek. A storm of record occurred in March 1960, inundating parts of the Town. Other significant storms occurred in March 1916, January 1929, March 1936, June 1937, March 1940, March 1954, March 1956, January 1959 and March 1963. The storm event of March 1960 had a peak discharge associated with approximately a 20-year recurrence interval. The storm event of March 1936 was estimated to have a 50-year recurrence interval. (FIA, Town of Tonawanda, 1981).

In the Town of Wales, flooding occurs as a result of discharges in excess of channel capacity, restrictive bridges and ice jams. However, flood damages have been minor because of hydraulic characteristics of the channels and limited development of the floodplains. (USHUD, Town of Wales, 1979).

In the Village of Williamsville, low-lying areas have been subject to frequent flooding in late winter or early spring, caused by melting snow combined with moderate amounts of rainfall. (FEMA, Village of Williamsville, 1981).

2.4 Flood Protection Measures

In August 1986, Section 65.10 of the NFIP Regulations was published, outlining criteria and documentation needed for a levee or flood control structure to be shown on the FIRM as accredited and providing protection from the 1 percent-annual-chance flood. These include general elevation requirements, design and stability requirements, operations plans, maintenance plans and certification, among other criteria. As of the Preliminary date of this Countywide FIS (December 31, 2009), no flood control structures within Erie County are accredited or provisionally accredited.

Within the Villages of Depew and Lancaster, and the Towns of Amherst and Cheektowaga, there one or more levees that have not been demonstrated by the community or levee owner(s) to meet the requirements of 44 CFR Part 65.10 of the NFIP regulations as it relates to the levee's capacity to provide 1-percent-annual-chance flood protection. Please refer to the Notice to Flood Insurance Study Users page at the front of this FIS report for more information.

In the Village of Akron, a concrete overflow dam has been constructed in Akron Falls Park at Parkview Drive. However its presence is more for recreational purposes than for flood control. No other flood protection measures have been undertaken that would affect flooding on Murder Creek within the Village. (FIA, Village of Akron, 1980).

In the Town of Alden, no structural flood protection measures exist. However a town ordinance passed in 1973 defines the floodplains and controls any encroachment thereon. No commercial or residential development is permitted in the floodplain. (FEMA, Town of Alden, 1991).

In the Town of Amherst, various flood protection measures have been taken to reduce future flood damage. In 1900, the State of New York cleared the channels of Gott Creek, Ransom Creek and Black Creek. The channels of Ransom Creek and Black Creek were again cleared in the 1950s. In 1932, the Town made channel improvements consisting of cleaning, deepening and widening Ellicott Creek upstream of the Williamsville corporate limits for a distance of approximately 2,800 feet. In 1958 and 1959, the USACE cleared and snagged a six-mile portion of Ellicott Creek between Sheridan Drive and a point approximately 2,700 feet downstream of Sweet Home Road. In 1965, Erie County completed construction of a diversion channel in Ellicott Creek Park in the Town of Tonawanda from Ellicott Creek to Tonawanda Creek. Although the improvement was not constructed in the Town, the diversion channel reduces flooding with the Town of Amherst. The USACE has constructed diversion channels along Ellicott Creek through Amherst and has completed major improvements to the stream channel. The Town of Amherst has also

completed channel improvements to Gott Creek within the Town. Non-structural flood protection measures have also been used to reduce the risk of flood damage within the Town. (FEMA, Town of Amherst, 1992).

In the Town of Aurora, the dam at West Falls had been reconstructed after the flood of September 1967. The new configuration of the dam is meant to prevent similar consequences as the September 1967 flood. (USHUD, Town of Aurora, 1978).

In the Town of Boston, there are two small dams along Eighteenmile Creek; however they do not afford protection from sizeable flooding because the water either passes over or around these structures. (FIA, Town of Boston, 1981).

In the City of Buffalo, most of the shoreline along Niagara River and Lake Erie is protected by breakwaters. The outer harbor breakwater protects Buffalo Harbor by alleviating the severity of flooding on Lake Erie. The other breakwater, which is further north and parallels the lake's eastern shore, separates Black Rock Canal from the Niagara River. Parts of Buffalo River and Cazenovia Creek are manmade channels that are able to convey the 1% annual-chance flood discharge. Along many portions of these two waterways, the side walls of the channel are concrete-lined so as to reduce water-surface elevations by increasing water velocities. The Buffalo River channel has also been dredged from the river's mouth to the CONRAIL bridge. A stretch of slope-walled sheet piles were constructed to deflect ice along Cazenovia Creek. The City of Buffalo also maintains and operates an amphibious vehicle to break up ice jams. The city has constructed levees and excavated and widened the creek channel to reduce flooding near the Cazenovia Street bridge and in Cazenovia Park. The levees that exist in the City of Buffalo do not meet FEMA specifications for providing protection from the 1% annual-chance flood event. (FEMA, All Jurisdictions, 2008; City of Buffalo, 1999).

In the Town of Cheektowaga, zoning ordinances and building codes have been established by the Town to restrict development within the floodplains of Cayuga Creek and Ellicott Creek. Additionally, Slate Bottom Creek has been relocated, widened and deepened to allow for increased discharge due to extensive development in the area bordered by French Road, Lossen Road and Conrail. Scajaquada Creek and portions of its tributaries have been improved to provide additional protection of the development within their respective floodplains. There are flood protections structures located along the left and right banks of Scajaquada Creek within the Town, as well as a T-wall flood protection structure located on Cayuga Creek near Union Road. (FEMA, Town of Cheektowaga, 1984).

In the Village of Depew, the Scajaquada Creek channel between George Urban Boulevard and Forestview Drive was cleaned and widened in 1975. In 1949 the USACE constructed a flood control project along Cayuga Creek, partially within the Village. It included channel enlargement and straightening, construction of an earthen berm, elevating the Broadway Street bridge and miscellaneous storm sewer alterations. This project was designed to pass 18,000 cubic feet per second (cfs) of floodwaters, as was experienced in the 1937 flood. Additionally, the Village of Depew has implemented floodplain zoning in new development areas. (FIA, Village of Depew, 1981).

In the Village of East Aurora, a dam exists at Mill Road along Cazenovia Creek East Branch. (FEMA, Village of East Aurora, 2002).

In the Town of Elma, the U.S. Soil Conservation Service (SCS) constructed bank protection at a number of bends along Buffalo Creek to reduce erosion. In the summer of 1963, Erie County excavated a potion of the channel of Buffalo Creek from 300 feet upstream of Winspear Road to 1,100 feet upstream of Winspear Road. The channel was designed to concentrate the flow, thereby reducing ice formation at this location. Additionally, the Town of Elma has non-structural flood protection measures in place that consist of town ordinances restricting development within the floodplain. (FEMA, Town of Elma, 1998).

In the Village of Gowanda, a number of flood protection projects were completed between 1940 and 1973. On Cattaraugus Creek a section of the power dam upstream of the railroad was removed in 1953. Dredging of a new channel between the Erie Railroad and Main Street bridges was performed by Gowanda County in 1956. Gowanda had a retaining wall constructed in 1957 at the intersection of Commercial Street and South Water Street. There was also a channel cut for Cattaraugus Creek downstream of Thatcher Brook in 1958. A new Main Street bridge was constructed by New York State in 1962. In 1964 the Village and New York State had bank protection constructed between the Main Street and Aldrich Street bridges. Shortly after the June 1940 flood, improvements were made to Thatcher Brook. The Johnson and Chapel Street bridges were raised and the channel was cleaned out. North of Hill Street there is a weir which allows debris carried by high velocities to settle out and prevent jamming at the bridges downstream. At various location concrete and sheet pile retaining walls have been constructed for bank protection. The settling basin north of Hill Street, the channel, and bridge openings are cleaned our periodically as needed under a maintenance program. After Tropical Storm Agnes in 1972, the Soil Conservation Service did flood damage repair and improvements in the channels of Thatcher Brook and Grannis Creek.

In the Town of Hamburg, retention basins have been installed to retain excessive storm drainage in some areas of town. This helps reduce the peak flooding during storms and to compensate the increase in runoff caused by development. Additionally, the Town has a zoning ordinance in place restricting development in the floodplain. (FEMA, Town of Hamburg, 2001).

In the Village of Hamburg, the channel of Berricks Creek has been straightened and made trapezoidal in shape, and the banks have been lined with short grass. In addition, an underground tile pipe was added to carry the low flows. The floodplain is very narrow as a result of these improvements; only a few houses are adjacent to the streams. (FEMA, Village of Hamburg, 1981).

In the City of Lackawanna, Smokes Creek and Smokes Creek South Branch were improved in 1965 by the USACE. The project plan was designed to provide a non-damaging channel capacity of 2,500 cfs in the channels upstream of the confluence and 5,000 cfs on the main stem at the confluence. Additionally, zoning regulations restricting construction in the floodplain have been in effect for years. (FIA, City of Lackawanna, 1980).

In the Town of Lancaster, improvement has been made to the channel of Scajaquada Creek thereby increasing channel capacity and minimizing flooding along the source. The channel of Scajaquada Creek has been increased in size along the entire 3.6-mile length through projects of the Works Progress Administration and the Town of Cheektowaga. Portions of Slate Bottom Creek North Branch and Slate Bottom Creek South Branch were cleaned by

the Town in 1980. No work has been performed along Plum Bottom Creek to alleviate flooding from this stream within the Town of Lancaster. (FEMA, Town of Lancaster, 2001).

In the Village of Lancaster, various projects have been undertaken to reduce flood damages along Cayuga Creek. In 1942 and 1949, channel improvements were completed in the villages of Lancaster and Depew. In 1951, construction of flood control structures was completed in the Village. In 1946, the SCS started a program of farmland treatment to reduce runoff and erosion. The conservation practices instituted by this program are still being used by many landowners. Elsewhere in the Village, channel improvements and cleaning of existing culverts have aided in reducing flooding. (USHUD, Village of Lancaster, 1979).

In the Town of Orchard Park, zoning ordinances are in place to restrict construction within the floodplain. Within the Town, there is only one structure that reduces flooding, the Quaker Lake spillway, located south of Big Tree Road on Smokes Creek Northeast Branch. It provides a limited amount of protection downstream of the spillway by reducing flood flows. (FEMA, Town of Orchard Park, 1982).

In the Village of Orchard Park, zoning ordinances are in place that restricts construction within the floodplain. Within the Village, the spillways at Freeman Road and Green Lake offer a minimum amount of flood protection. They provide for some hydraulic retention and thus reduce the flow downstream of the spillways. These structures are not effective in containing the 1% annual-chance or 0.2% annual-chance flows. (FIA, Village of Orchard Park, 1981).

In the Town of Tonawanda, construction of a diversion channel in Ellicott Creek Park from Ellicott Creek to Tonawanda Creek was completed in 1965. This channel has lessened the flood hazards from Ellicott Creek within the Town. (FIA, Town of Tonawanda, 1981).

In the Town of Wales, a reservoir on Buffalo Creek has been studied as a possible flood protection measure; however the reservoir was found to not be economically feasible at the time.

In the Town of West Seneca, a floodplain management ordinance is in effect that restricts construction within the floodprone areas. A flood control structure was built along the Buffalo River south of Casimer Street; however it does not provide protection against the 1% annual-chance flood event. (FEMA, Town of West Seneca, 1992).

In the Village of Williamsville, several improvements since 1929 to the channel have been made, however, no physical work has been done to Ellicott Creek to protect the village from flooding. The 1929 improvements consisted of: a new channel, 1,100 feet long with a bottom width of 70 feet; cleaning, deepening, and widening of the existing channel upstream of the new channel for a distance of 1,400 feet; and the construction of a small gate-controlled dam at the lower end of the new channel. These improvements were made within the village, just upstream of Williamsville (Glen) Falls.

The study area of Erie County is located within the effective range of the Weather Surveillance Radar operating continuously at the Environmental Science Services Administration Weather Bureau Station at the Buffalo Airport. This equipment provides

for early detection and plotting of heavy precipitation and makes possible immediate radio and television broadcasts of information concerning the predicted path and amount of rainfall from a given storm.

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.

Note: Within the Villages of Depew and Lancaster, and the Towns of Amherst and Cheektowaga, there are one or more levees that have not been demonstrated by the community or levee owner(s) to meet the requirements of 44 CFR Part 65.10 of the NFIP regulations as it relates to the levees' capacity to provide 1-percent-annual-chance flood protection. Please refer to the Notice to Flood Insurance Study Users page at the front of this FIS report for more information.

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.

Precountywide Analyses

For each selected community within Erie County that has a previously printed FIS report, the hydrologic analyses described in those reports have been compiled and are summarized below.

Elevation-frequency relationships for Lake Erie were obtained from a study conducted by the USACE in 1988 (USACE, 1988). This study was a revision on the original 1977 report (USACE, 1977). In the revised study, gage information from 13 continuously reporting gage stations was used:

- Buffalo, Gage No. 3020, with record from 1990 – 1986;
- Barcelona, Gage No. 3032, with record from 1961 – 1986;
- Erie, Gage No. 3038, with record from 1959 – 1986;
- Cleveland, Gage No. 3063, with record from 1904 – 1986;
- Marblehead, Gage No. 3079, with record from 1960 – 1986;

- Toledo, Gage No. 3085, with record from 1941 – 1986;
- Fermi, Gage No. 3090, with record from 1964 – 1986;
- Gibraltar, Gage No. 4020, with record from 1941 – 1986;
- Kingsville (Canada), Gage No. 02GH070, with record from 1962 – 1986;
- Erieau (Canada), Gage No. 02FG0002, with record from 1957 – 1986;
- Port Stanley (Canada), Gage No. 02GC027, with record from 1926 – 1986;
- Port Dover (Canada), Gage No. 02GC028, with record from 1958 – 1986;
- Port Colbourne (Canada), Gage No. 02HA017, with record from 1911 – 1986.

For the updated Lake Erie study, both the log-Pearson Type III and Pearson Type III distributions were investigated. Comparison of the two methods resulted in nearly identical skew values, and logarithmic transformation was not needed, therefore a Pearson Type III frequency distribution was used. A skew value of 0.2 was utilized for Lake Erie. Flood levels for open-coast Lake Erie were computed for each station taking into consideration years of gage record, physical environment and shoreline configuration. In the USACE study, stillwater elevations for Lake Erie within Erie County were divided into five sections: Section A, Section B, Section C, Section D and Section E. The stillwater elevations for these sections are shown in Table 7, "Summary of Stillwater Elevations".

TABLE 7- SUMMARY OF STILLWATER ELEVATIONS

FLOODING SOURCE AND LOCATION	STILLWATER ELEVATION (feet NAVD) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
LAKE ERIE				
Section A	579.2	580.6	581.1	582.2
Section B	578.6	580.0	580.4	581.5
Section C	578.1	579.4	579.7	580.8
Section D	577.6	578.9	579.1	580.2
Section E	577.1	578.4	578.6	579.7

For streams studied by detailed methods in Erie County, several different methodologies were used for hydrologic analyses. For Berricks Creek in the Town of Hamburg and Village of Hamburg, discharges for the reach downstream of the New York State Thruway were determined using the method presented in the New York State (NYS) Water Resources Commission Study (Erie and Niagara Counties Regional Planning Board, 1968) establishes regional curves developed from stream gage data and correlate drainage area to stream flow. For Berricks Creek upstream of the New York State Thruway, peak discharges were determined using the Rational Method, where Q (flow) = C (Land use variable) * I (precipitation intensity) * A (drainage area) (American Society of Civil Engineers, 1889).

For Big Sister Creek in the Town of Evans and Village of Angola, peak discharges were determined utilizing USGS Water-Supply Paper 1677 (USGS, 1965), which uses the following equation to correlate discharges at the mouth of a stream to discharges at selected locations upstream:

$$(Q_{site} / Q_{mouth}) = (D_{site} / D_{mouth})^{a},$$

where a is an exponent defined by USGS. A total drainage area computed at the mouth of Big Sister Creek was 49.2 square miles. Discharges were also calculated in this way at a point just upstream on an unnamed tributary in the Town of Evans.

For Black Creek in the towns of Amherst and Clarence, a basin study for the Black Creek / Ransom Creek watershed showed that areas adjacent to Black Creek can experience flooding from its own runoff and overflow from Tonawanda Creek. Peak discharges were calculated for both scenarios; Black Creek was studied independently using a regional frequency analysis developed by the USACE (USACE, January 1990), and the Tonawanda Creek overflow was determined using a HEC-1 balanced hydrograph (USACE, December 1988).

For Buffalo Creek in the Town of Marilla, a regional drainage area / mean annual discharge curve was established utilizing the Water Resources Council (WRC) Bulletin 17 (WRC, 1976), by using gage data from a gage located on Buffalo Creek at Gardenville, New York, with a drainage area of 145 square miles and record dating to 1939. Additionally, information taken from a gage located at Wales Hollow, New York along Buffalo Creek was weighted against the original curve to develop an analysis more representative of the drainage area in question. For Buffalo Creek in the towns of Wales and West Seneca, peak discharges were determined in accordance with Water Resources Investigations (WRI) 79-83 (USGS, 1979), for ungaged sites on gaged streams, on the Buffalo River. For the western region of New York, the following equation is used:

$$Q = K(DA)^{x} (St + 10)^{-y},$$

Where Q is the stream discharge; DA is the drainage area; St is the percent of total drainage area stored in lakes, ponds and swamps; and K, x and y are variables of the frequency. For Buffalo Creek, a value of 49,900 was used for K; a value of 0.733 was used for x; and a value of 2.03 was used for y. Calculated peak discharges were then adjusted using regression equations calculated at the gage station at Gardenville.

For the Buffalo River, within the City of Buffalo and Town of West Seneca, peak discharges were determined using the procedures and regression equations outlined in the WRI 79-83 for ungaged sites on gaged streams, using the equation above for western New York.

For Buttermilk Falls Creek in the Town of Hamburg, peak discharges were calculated using the methods outlined in the NYS Water Resources Commission study described above.

For Cattaraugus Creek in the Village of Gowanda, peak discharges were calculated using a standard log-Pearson Type III method, as outlined by the Water Resources Council (WRC, 1967).

For Cayuga Creek in the Village of Alden, the peak discharge-frequency relationships of nine USGS gaging stations on Cattaraugus Creek, Eighteenmile Creek, Smoke Creek, Buffalo Creek, Little Buffalo Creek, Cayuga Creek, Cazenovia Creek and Scajaquada Creek were determined using Water Supply Paper 1677 (USGS, 1965) and WRC Bulletin 17B (USGS, September 1981), using a standard log-Pearson Type III method, as recommended by the Water Resources Council. The length of record for these stations

ranges from 11 to 35 years, with the longest record along Cayuga Creek near Lancaster. A set of regional flood frequency curves was then established for Cayuga Creek by correlating peak discharge and drainage area information at this gaging station. For Cayuga Creek in the Village of Depew and towns of Lancaster and Marilla, peak discharges were obtained from a USACE, Buffalo District report as part of an area water resources management study (USACE, March 1978 and March 1976). In the Town of West Seneca, peak discharges for Cayuga Creek were determined using WRI 79-83.

For Cazenovia Creek in the Town of Aurora, discharge-frequency relationships were established using five USGS gaging stations, including Cayuga Creek near Lancaster, Cazenovia Creek at Ebenezer and Buffalo Creek at Gardenville. Flood flow frequencies were determined by the USACE, Buffalo District using Water Resources Bulletin 17. In the City of Buffalo, a similar analysis was done; however this one included nine USGS gaging stations and performed a log-Pearson Type III analysis. The regional equations determined in that study were also extended to cover watershed with drainage areas of less than 15 square miles. In the Town of West Seneca, Cazenovia Creek was studied using WRI 79-83 as described above.

For Cazenovia Creek East Branch in the towns of Aurora and Holland; and Cazenovia Creek West Branch in the towns of Aurora and Colden, discharge-frequency relationships were established using five USGS gaging stations, including Cayuga Creek near Lancaster, Cazenovia Creek at Ebenezer and Buffalo Creek at Gardenville. Flood flow frequencies were determined by the USACE, Buffalo District using Water Resources Bulletin 17.

For Clear Creek in the Town of Collins and, a flood-frequency curve was developed using the USGS Publication "Magnitude and Frequency of Floods in the United States, Part 4" (USGS, undated). Discharges for the 1% and 0.2% floods were determined by straight-line extrapolation of the frequency curve above a frequency of 2%. Discharges were computed at the downstream end of the study reach (drainage area 28.8 square miles), for the 10%, 2%, 1% and 0.2% annual-chance frequencies. At points upstream from the downstream end of the study reach, where tributaries entered the stream, discharges were obtained using the following formula:

$$Q_{site} = Q_{mile}\ (7.08)\ (D_{site}/D_{mile\ 7.08})^{a},$$

where Q = discharge, D = drainage area, a = exponent defined by USGS Water-Supply Paper 1677.

For Delaware Creek in the Town of Evans, peak discharges were determined using regional regression equations. Although Delaware Creek has an active gaging station, at the time of study it was determined the period of record was too short and that much of the data collected was during a drought in the 1960s.

For Ebenezer Brook in the Town of West Seneca, peak discharges were determined using WRI 79-83 as described above.

For Eighteenmile Creek in the Town of Boston, peak discharges were determined by USGS using a log-Pearson Type III analysis (USGS, unpublished) to correlate stream flow with storm events. In the Town of Hamburg, peak discharges for Eighteenmile Creek, Eighteenmile Creek North Branch and Eighteenmile Creek South Branch were determined

using drainage area proportioning and a coefficient determined by McPhee, Smith, Rosenstein Engineers (Johnstone and Cross, 1949).

For Ellicott Creek in the Town of Alden, peak discharge-frequency relationships of six USGS gaging stations on Ellicott Creek, Tonawanda Creek and Little Tonawanda Creek were established using a log-Pearson Type III analysis. The length of record ranged from 10 to 61 years. A set of regional frequency curves was established and peak discharges were derived from them. In the towns of Lancaster and Tonawanda, peak discharges for Ellicott Creek were obtained from a USACE report (USACE, Revised April 1978). A Beard-type statistical discharge-frequency curve was computed from the annual peak discharges of the Williamsville gage on Ellicott Creek at Wehrle Drive. To compensate for the shore period of record (1955-1968), Beard-type generalized frequency curves were developed using peak discharge information from three western New York gaging stations with basin characteristics similar to Ellicott Creek: Canaseraga Creek near Dansville, New York; Little Tonawanda Creek at Linden, New York and Tonawanda Creek at Alabama, New York.

For the Ellicott Creek diversions channels – North Diversion Channel, Pfohl Park Diversion Channel and Upper Diversion Channel, located in the Town of Amherst, hydrologic data was taken from a design report prepared by the USACE, Buffalo District in conjunction with the Ellicott Creek flood control project (USACE, April 1978). The original discharge-frequency curves for Ellicott Creek were developed in 1968, using regional regression equations based on discharge records and watershed characteristics of three western New York streams in addition to Ellicott Creek. These curves were later verified through a new regional analysis. The discharges presented in the first revision were calculated with an adjustment for expected probability; values were also adjusted by five percent to account for future urbanization in the watershed. Expected probability is a USGS Bulletin 17B (USGS, September 1981) option, adopted as standard procedure by the USACE for flood control design, that increases the 1% and 0.2% annual-chance peak discharges by 10 and 20 percent, respectively.

For Fern Brook in the Town of Evans, peak discharges were developed using information presented by the Erie-Niagara Planning Board (Erie-Niagara Basin Regional Water Resources, 1968). Discharges of the 1% and 0.2% annual-chance flood events were obtained by straight-line extrapolation.

For Foster Brook in the Town of Hamburg, USGS regional regression equations were used to determine peak discharges for the floods of selected recurrence intervals USGS, 1991).

For Grannis Creek in the Village of Gowanda, flood-frequency discharges were developed using a rainfall-runoff relationship determined by the SCS (SCS, Revised 1973). The rainfall frequency was developed by the National Weather Service and extends through the 1% annual-chance interval. The 0.2% annual-chance interval was determined by straight-line extrapolation.

For Gott Creek in the Town of Amherst, hydrologic data was obtained from a USACE study for the Tonawanda Creek watershed (USACE, 1978). This report included a regression analysis of gaged information on hydrologically similar drainage basins within the Tonawanda Creek watershed. The analysis followed a standard log-Pearson Type III method as outlined by the Water Resources Council (USGS, Revised September 1981) and

USACE HEC-46 (USACE, 1972). The USACE publication established separate peak discharges, standard deviations and skew coefficient equations for portions of Tonawanda Creek and its tributaries. In the Town of Clarence, peak discharges for Gott Creek and Gott Creek Tributary were calculated using a USACE report on water resources and land management for the Buffalo Metropolitan area (USACE, October 1990).

For Gun Creek in the Town of Grand Island, peak flows were determined using the BPR Publication "Peak Rates of Runoff from Small Watersheds". (U.S. Department of Commerce, 1961).

For Hampton Brook in the Town of Hamburg, peak discharges were determined using the NYS Water Resources Commission study (Erie and Niagara Counties Regional Planning Board, 1968) mentioned above, in which regional curves were developed from stream gage data correlating drainage area to stream flow.

For Hosmer Brook in the Town of Sardinia, hydrologic data was developed for two reaches. Peak discharges were calculated using the regression equations of WRI 90-4197 (USGS, 1991). Watershed characteristics including contributing drainage area (in square miles), main channel slope (in feet per mile) and storage area (percent) were developed using USGS Quadrangle maps and the guidelines of the National Handbook of Recommended Methods for Water Data Acquisition (USGS, 1977).

For Ledge Creek in the Town of Newstead, two regional methods were used to compute peak discharges. A USGS analysis utilizing gage data throughout New York State to formulate regression equations for use on ungaged streams (USGS, 1979), which utilized the parameters of drainage area, channel slope and impervious area in the regression equations. Peak discharges were also computed using an SCS method (USGS, January 1975).

For Little Buffalo Creek in the towns of Elma and Lancaster, peak discharges were calculated using the regression equations of WRI 90-4197 (USGS, 1991) and WRC Bulletin "Guidelines for Determining Flood Flow Frequency" (USGS, September 1981). For Hydrologic Region No. 6 of New York State, the following equation was used:

$$Q = K(DA)^{w} (SL)^{x} (ST+1)^{y} (P-20)^{z},$$

Where Q is stream discharge; DA is drainage area (in square miles); SL is main channel slope (in feet per mile); ST is basin storage (percent) and P is mean annual precipitation (in inches), and K, w, x, y and z are functions of the frequency. The following were used:

STORM EVENT	K	w	x	y	z
10% annual-chance	16.2	0.869	0.334	-0.217	0.379
2% annual-chance	22.1	0.869	0.374	-0.224	0.356
1% annual-chance	24.1	0.870	0.385	-0.228	0.359
0.2% annual chance	27.5	0.872	0.406	-0.244	0.380

The peak discharges of Little Buffalo Creek calculated by the above regression equation and the peak discharges estimated as weighted peak discharges for USGS Gaging Station

No. 04214980 at East Lancaster, New York, were used to adjust the peak discharges calculated by the regression equations at ungaged sites. For Little Buffalo Creek and Little Buffalo Creek Tributary in the Town of Marilla, discharge-frequency relationships were established using five USGS gaging stations, including Cayuga Creek near Lancaster, Cazenovia Creek at Ebenezer and Buffalo Creek at Gardenville. Flood flow frequencies were determined by the USACE, Buffalo District using Water Resources Bulletin 17.

For Little Sister Creek and Little Sister Creek Tributary 2 in the Town of Evans, peak discharges were developed using information presented by the Erie-Niagara Planning Board (Erie and Niagara Counties Regional Planning Board, 1968). Discharges of the 1% and 0.2% annual-chance floods were obtained by straight line extrapolation.

For Muddy Creek in the Town of Evans, peak discharges were determined using a flood-frequency curve established in the USGS Water-Supply Paper 1677 (USGS, 1965).

For Murder Creek in the Village of Akron, peak discharges were obtained from a USACE report on flood management in the Tonawanda Creek watershed (USACE, 1978). The study included a regression analysis of gaged data from hydrologically similar drainage basins within the watershed. A standard log-Pearson Type III analysis was performed in accordance with WRC Bulletin No. 17 and USACE publication on peak discharges, standard deviation and skew coefficients for different reaches and selected tributaries of Tonawanda Creek. For Murder Creek in the Town of Newstead, a log-Pearson Type III analysis was also performed using gage data obtained from USGS Gage No. 04217700 at Pembroke, New York.

For Pike Creek in the Town of Evans, peak discharges were developed using information presented by the Erie-Niagara Planning Board (Erie and Niagara Counties Regional Planning Board, 1968). Discharges of the 1% and 0.2% annual-chance floods were obtained by straight line extrapolation.

For Plum Bottom Creek, Plum Bottom Creek North Branch and Plum Bottom Creek South Branch, located in the Town of Lancaster, hydrologic data was obtained from a USACE report on flood management in the Cayuga Creek watershed (USACE, March 1978). The study included a regional analysis of gaged information on the Buffalo River, Cazenovia Creek and Cayuga Creek. The analysis followed the standard log-Pearson Type III method (WRC, March 1976) and the HEC-1 computer program (USACE, October 1976). Discharges for all three streams were determined from the means annual discharge-standard deviation-drainage area and discharge-drainage area frequency relationships for Cayuga Creek. For the portion of Plum Bottom Creek, having a drainage area of less than one square mile, a standard log-Pearson Type III analysis and HEC-1 model were utilized. For the portion of Plum Bottom Creek located in the Village of Lancaster, a flood-flow frequency analysis performed by the USACE, which utilized a log-Pearson Type III analysis on gage data available from five gaging stations on streams within the drainage basin.

For Pond Brook in the Town of Elma, peak discharges were calculated using the regression equations of WRI 90-4197 (USGS, 1991) and WRC Bulletin “Guidelines for Determining Flood Flow Frequency” (USGS, September 1981). For Hydrologic Region No. 6 of New York State, the following equation was used:

$$Q = K(DA)^{w} (SL)^{x} (ST+1)^{y} (P-20)^{z},$$

Where Q is stream discharge; DA is drainage area (in square miles); SL is main channel slope (in feet per mile); ST is basin storage (percent) and P is mean annual precipitation (in inches), and K, w, x, y and z are functions of the frequency. The following values were used:

STORM EVENT	K	w	x	y	z
10% annual-chance	16.2	0.869	0.334	-0.217	0.379
2% annual-chance	22.1	0.869	0.374	-0.224	0.356
1% annual-chance	24.1	0.870	0.385	-0.228	0.359
0.2% annual chance	27.5	0.872	0.406	-0.244	0.380

For Reisch Creek in the Town of Evans, USGS regression equations were utilized to determine peak discharges (USGS, 1991).

For Rush Creek in the Town of Hamburg, peak discharges were determined using the NYS Water Resources Commission study mentioned above, in which regional curves were developed from stream gage data correlating drainage area to stream flow.

For Scajaquada Creek in the towns of Cheektowaga, peak discharges were determined using a standard log-Pearson Type III analysis. In the Village of Depew and Town of Lancaster, peak discharges for Scajaquada Creek and Scajaquada Creek North Branch were determined using a USACE report (USACE, March 1976). In this report, a Beard-type statistical discharge-frequency curve was computed from the annual maximum instantaneous discharge at the Pine Ridge gage (USGS No. 04216200) on the main stem of Scajaquada Creek. Snyder's method was utilized to determine the full effects of urbanization (Snyder, 1958).

For Slate Bottom Creek and Slate Bottom Creek South Branch in the towns of Elma and Lancaster, hydrologic data was obtained from the USACE report on flood management in the Cayuga Creek watershed (USACE, March 1978). In that report, a regional analysis of gaged information on the Buffalo River, Cazenovia Creek and Cayuga Creek was performed. The analysis followed the standard log-Pearson Type III method (WRC, 1976) and used HEC-1 computer models (USACE, October 1976). Partial duration adjustments were made for the Cayuga Creek gage.

For Smokes Creek in the City of Lackawanna and Town of West Seneca, Smokes Creek Northeast Branch and Smokes Creek Northwest Branch in the Town of Orchard Park, Smokes Creek South Branch in the Towns of Hamburg and Orchard Park, the City of Lackawanna and the Village of Orchard Park, peak discharges were established using gage data from nine USGS gages along Cattaraugus Creek, Eighteenmile Creek, Smoke Creek, Little Buffalo Creek, Cayuga Creek, Cazenovia Creek and Scajaquada Creek to perform a log-Pearson Type III analysis (USGS, 1967 and 1965). A set of regional flood-frequency curves was determined by correlating peak discharge and drainage area information from the gaging stations. The peak discharges estimated from the extended regional curves check closely with the peak discharges estimated with the Bureau of Public Roads method (U.S. Department of Commerce, 1963). This analysis was also used to determine peak discharges

for Smokes Creek South Branch Tributary and Smokes Creek South Branch Tributary South in the towns of Hamburg and Orchard Park.

For Spring Brook in the Town of Concord and Village of Springville, peak discharges were taken from a USACE Special Flood Hazard Evaluation Report (USACE, November 1984), in which a standard log-Pearson Type III analysis was performed as outlined in WRC Bulletin 17B (USGS, September 1981).

For Spring Creek in the Village of Lancaster, peak discharges were determined using procedures outline in WRC Bulletin 17 (WRC, March 1976).

For Tannery Brook in the Town of East Aurora, peak discharge-frequency relationships were determined using the SCS software TR-55 (USDA, 1975).

For Thatcher Brook in the Village of Gowanda, flood-frequency discharges were developed using a rainfall-runoff relationship determined by the SCS (SCS, Revised 1973). The rainfall frequency was developed by the National Weather Service and extends through the 1% annual-chance interval. The 0.2% annual-chance interval was determined by straight-line extrapolation.

For Tributary No. 1 to Niagara River - Tonawanda Channel in the Town of Grand Island, peak flows were determined using the BPR Publication "Peak Rates of Runoff from Small Watersheds". (U.S. Department of Commerce, 1961).

For Tonawanda Creek in the towns of Amherst and Clarence and the City of Tonawanda, the peak discharges were calculated using a regional frequency analysis and runoff models using HEC-1 which were developed by the USACE, Buffalo District for the Buffalo River / Lower Tonawanda Creek Study (USACE, January 1990).

For Tonawanda Creek in the Town of Grand Island and City of Tonawanda, statistical analyses of seven gages were made using a non-log Pearson Type III distribution (WRC, March 1976). Using a skew of 0.0 and standard deviation computed for each gage, stage elevations were computed for the selected recurrence intervals. Profiles for the Niagara River – Tonawanda Channel were established by connecting the respective stage elevations at the various gages, yielding these results:

Location	Distance*	Stage Elevations (Feet NAVD)				
		50%	10%	2%	1%	0.2%
At Woods Creek	26,500	565.6	566.8	567.5	567.7	567.2
At Gun Creek	45,200	567.0	568.2	568.9	569.1	569.6
At Spicer Creek	57,900	568.0	569.2	569.8	570.0	570.6
At Tributary 1	82,000	568.8	569.8	570.4	570.7	571.2

* Feet above Niagara Falls.

For Waterfalls Village Creek in the Town of Hamburg, peak discharges were determined using the NYS Water Resources Commission study mentioned above, in which regional curves were developed from stream gage data correlating drainage area to stream flow.

For Woods Creek, Woods Creek Tributary 1 and Woods Creek Tributary 3 in the Town of Grand Island, peak flows were determined using the BPR Publication "Peak Rates of Runoff from Small Watersheds". (U.S. Department of Commerce, 1961).

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For revised portions of Cazenovia Creek within the City of Buffalo, Ellicott Creek within the Village of Williamsville, Spicer Creek within the Town of Grand Island, and Tonawanda Creek within the Town of Tonawanda, all discharges were calculated in accordance with the procedures outlined in the publication by USGS 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 (USGS, 1994).

[date] Revision

For the stream reaches listed in Table 3, all discharges for the streams mentioned above were calculated in accordance with the procedures outlined in the publication by USGS 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 (USGS, 1994).

Flow locations were selected at various points along the reaches of the stream. Locations were first selected based on prior documented FIS flow locations for prior studies of the drainage basin and on USGS gage locations. As needed, additional flow locations were added along the stream to provide a uniform drainage analysis of the study area.

Based on WRI 94-4002, some of the variables governing the peak stream flows for each of the flow locations are drainage area (DA), basin storage (ST), mean annual precipitation (MAP), main channel slope (SL), average main channel elevation (EL), basin shape index (SH), 2-hour/2-year rainfall intensity (RI2), basin development factor (BDF), and impervious surface percentage (IA). With the flow locations selected, the DA of the prior documented FIS and USGS locations were reviewed and utilized in this study. The DA for the additional flow locations were calculated based on the USGS 7 ½ minute quadrangle maps.

The ST is the percentage of the drainage area occupied by lakes and swamps. This was estimated based by visual inspection of USGS 7 ½ minute quadrangle maps and available New York orthophotography. The MAP was calculated based on the New York Mean Annual Precipitation 1961-1990 map (NOAA, Ret. 2007), which maps the variations in rainfall across western and central regions of New York.

The SL and EL were measured between points which are 10 percent and 85 percent of the main channel length upstream from the study site. These were measured based on the USGS 7 ½ minute quadrangle maps. The SH was calculated as the ratio of the square of main channel stream length upstream to DA. The channel length was measured based on the USGS 7 ½ minute quadrangle maps.

The RI2 was estimated from U.S. Weather Bureau (USWB) Technical Paper 40 (U.S. Department of Commerce, 1963), which maps the variations in rainfall across the country.

The BDF is the basin development factor, an index of the prevalence of the urban drainage improvements. Both the BDF and IA were estimated based on visual inspection of USGS 7 ½ minute quadrangle maps, available New York orthophotography, and field visits.

There are 12 USGS gages along the main stems of this study: five gages on Tonawanda Creek, three gages on Ellicott Creek, one gage on Cayuga Creek, one gage on Cazenovia Creek, one gage on Eighteenmile Creek, and one gage on Scajaquada Creek.

Information was available for all gage locations; however, only five (5) gages were utilized due to their close proximity to the study sites. These gages are as follows:

- USGS 04215000 near Lancaster NY (active) located on Cayuga Creek has 67 years of record;
- USGS 04215500 at Ebenezer NY (active) located on Cazenovia Creek has 66 years of record;
- USGS 04214200 at North Boston NY (discontinued) located on Eighteenmile Creek has 14 years of record;
- USGS 04218518 below Williamsville NY (active), combined with USGS 04218500 at Williamsville NY (discontinued), located on Ellicott Creek has 52 years of combined record. USGS 04218500 record is transferred to USGS 04218518 via the use of the 100-year NY Region 7 drainage area equation;
- USGS 04218000 at Rapids NY located on Tonawanda Creek with 44 years of record. Peak flows for water year 1936, 1945, 1950, and 1954 were interpolated via the use of a best curve-fit.

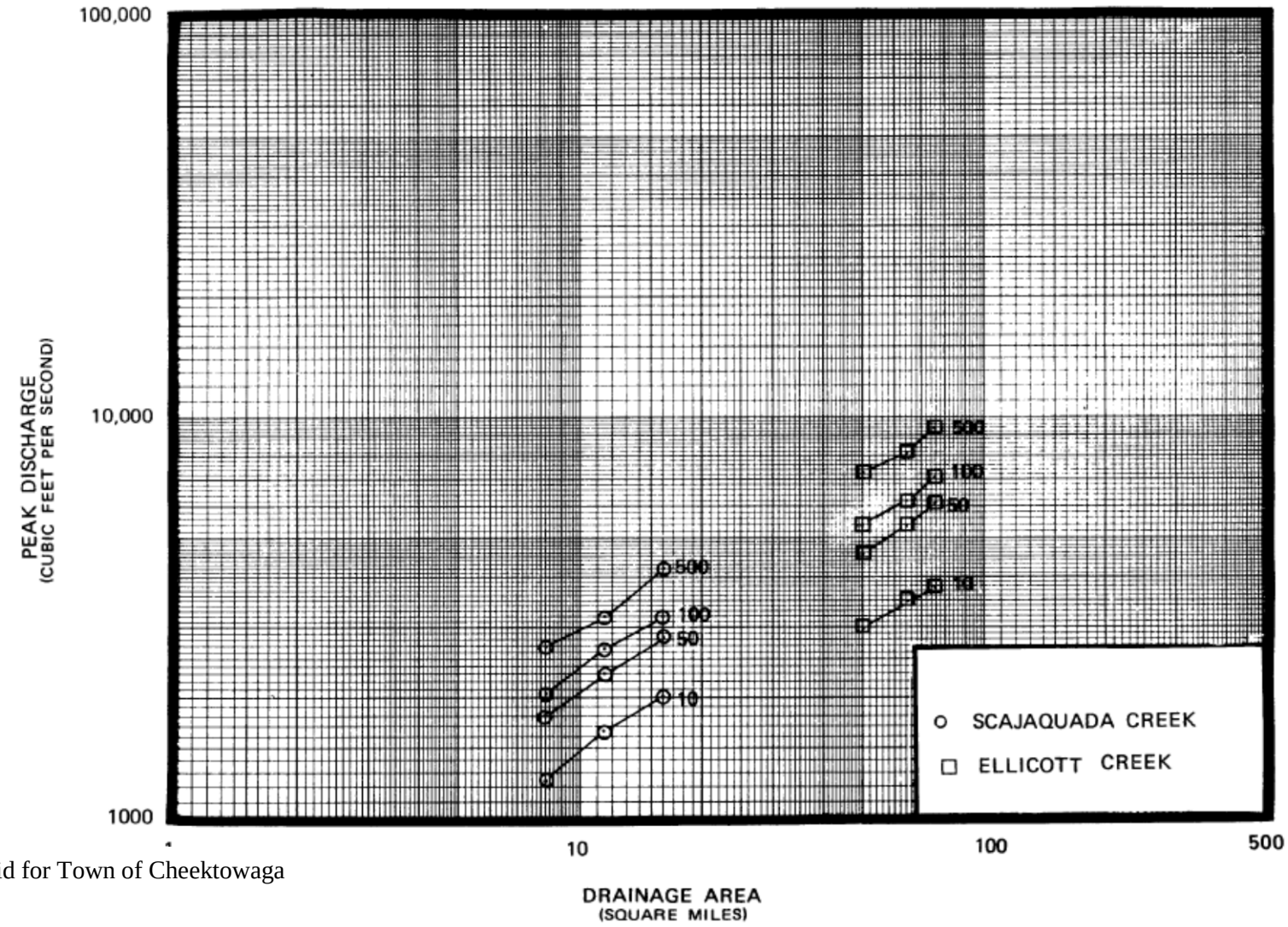
The historical annual peak streamflow data, current to year 2005, was downloaded from the USGS web site in the form of a WATSTORE file. Provisional data for water year 2006 was obtained directly from USGS Ithaca, NY office. A PeakFQ analysis was run in accordance with the "User's Manual for Program PeakFQ, Annual Flood Frequency Analysis Using Bulletin 17B Guidelines" (USGS, 2006). The generalized skew coefficient and standard error values for each gage location where obtained from WRI 00-4022 (USGS, 2000). PeakFQ discharges for USGS 04214200 were obtained from USGS Special Investigations Report (SIR) 2006-5112 (USGS, 2006).

A regression analysis was then performed at each of the flow locations in accordance with WRI 94-4002 to calculate flood discharges. The regression analysis was performed utilizing the National Flood Frequency Program (NFF) (USGS, 2002) to calculate discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance flood. This program employs the New York regional rural regressions equations as established in WRI 90-4197 (USGS, 1991). For urban setting, this program employs the nationwide urban equations as established in USGS Water-Supply Paper (WSP) 2207 (USGS, 1983).

The governing variables along with the PeakFQ discharges were inputted into the NFF program. At a gage location, the PeakFQ discharges were weighted against the rural regression analysis of that gage location. For each flow location within 50% of the

drainage area upstream or downstream of a gage location, the calculated gage flow was weighted against the calculated rural regression analysis. For urbanized areas, these weighted values were inputted into the urban regression equations to account for added flows due to urban development. For flow locations outside of the 50% range of a gage location, the calculated rural regression flows were utilized. Similarly, these rural values were input into the urban regression equations to account for urban development where applicable. Differences between the WRI Report 90-4197 and SIR 2006-5112 regression equations are within reasonable tolerances. The general differences of these equations were discussed via phone conversations with USGS-NY. The consensus is that both share similar methodologies and techniques but differ in user interface. The SIR 2006-5112 equations require the utilization of ArcGIS software to perform required variable iterations and equation calculations. The complexity of this tool does not allow for manual checks to ensure consistent results. According to USGS-NY, the WRI Report 90-4197 equations are still valid for use whether such software is made available or not. As such, this study employs the WRI Report 90-4197 equations and referrers to the SIR 2006-5112 as needed.

A summary of the drainage area-peak discharge relationships for all streams studied by detailed methods is shown in Table 8, “Summary of Discharges.” Frequency-discharge and drainage area curves were developed for portions of Buffalo Creek, Buffalo River, Cattaraugus Creek, Cayuga Creek, Cazenovia Creek, Clear Creek, Ellicott Creek and Scajaquada Creek and are shown in Figures 1 through 5.



*Data valid for Town of Cheektowaga

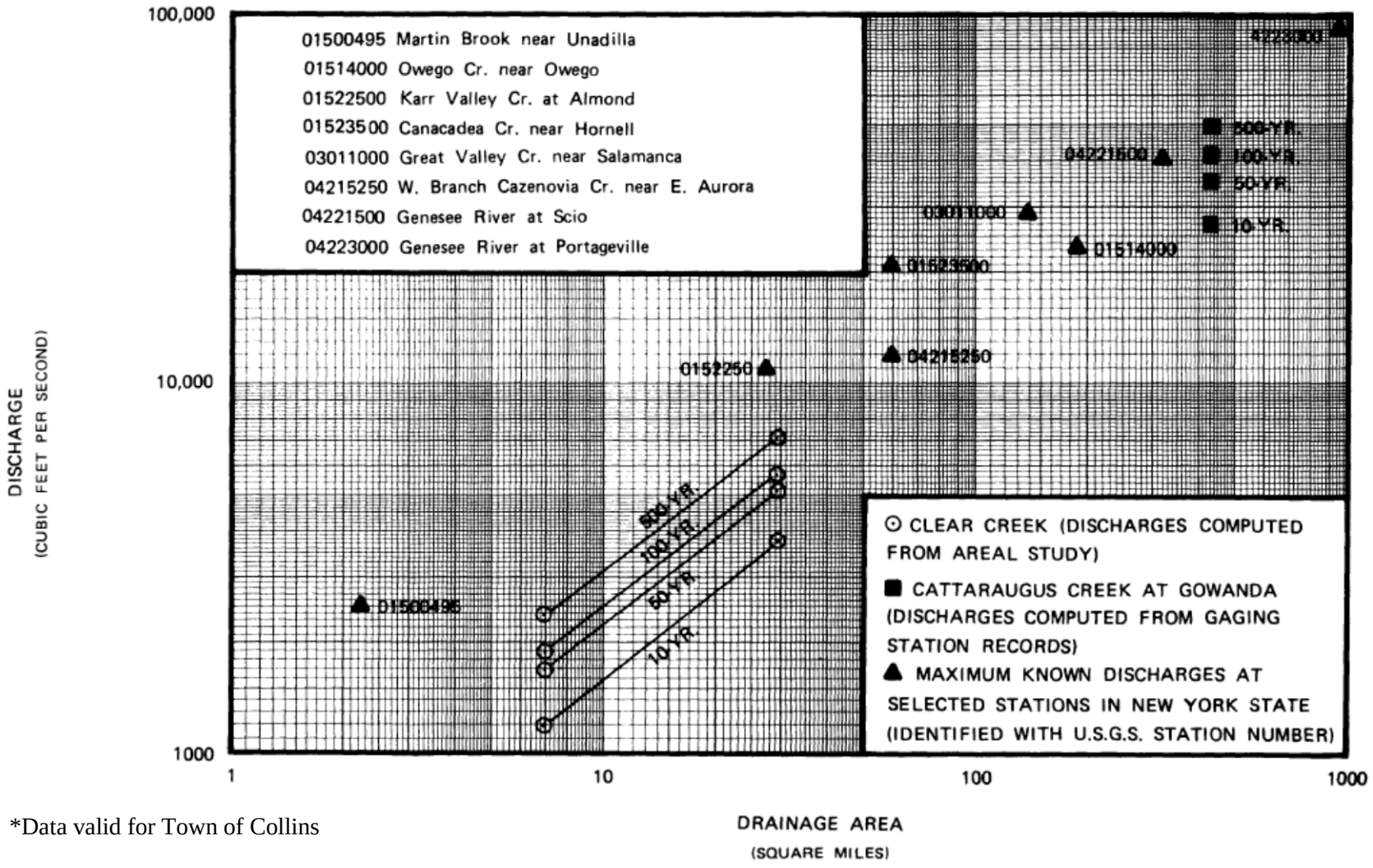
FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FREQUENCY-DISCHARGE, DRAINAGE AREA CURVES

ELLICOTT CREEK, SCAJAQUADA CREEK



*Data valid for Town of Collins

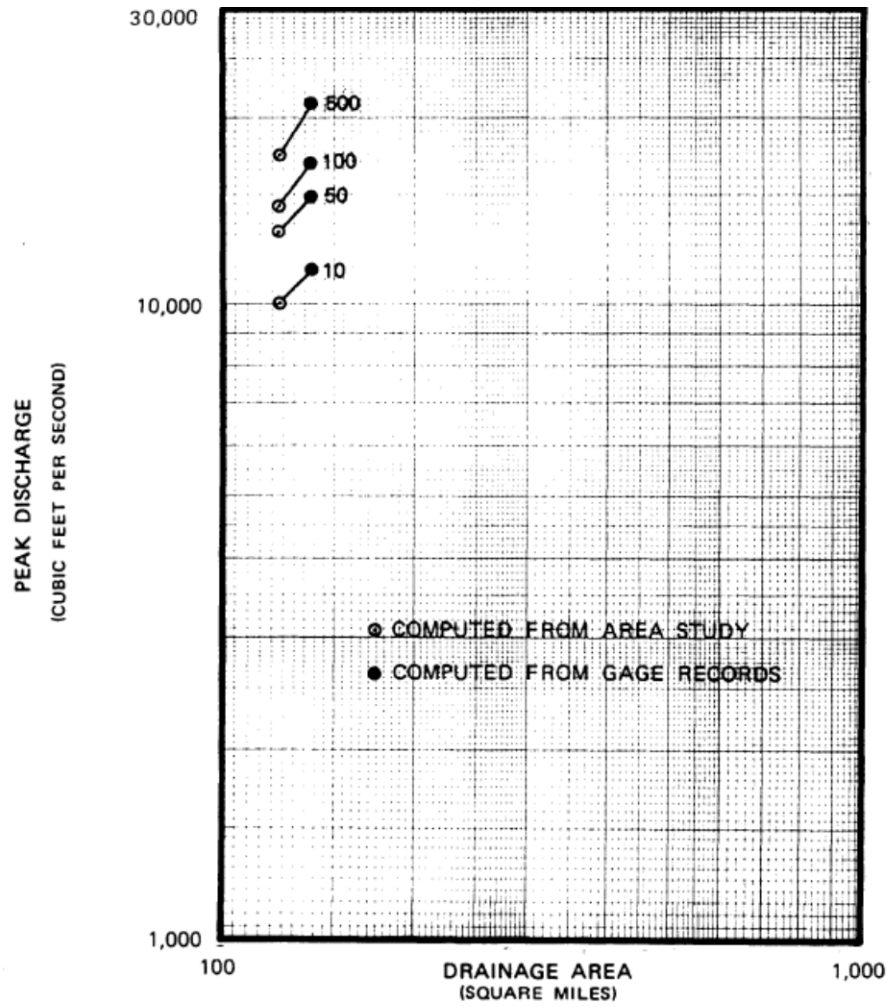
FIGURE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FREQUENCY-DISCHARGE, DRAINAGE AREA CURVES

CLEAR CREEK, CATTARAUGUS CREEK



*Data valid for Town of Elma

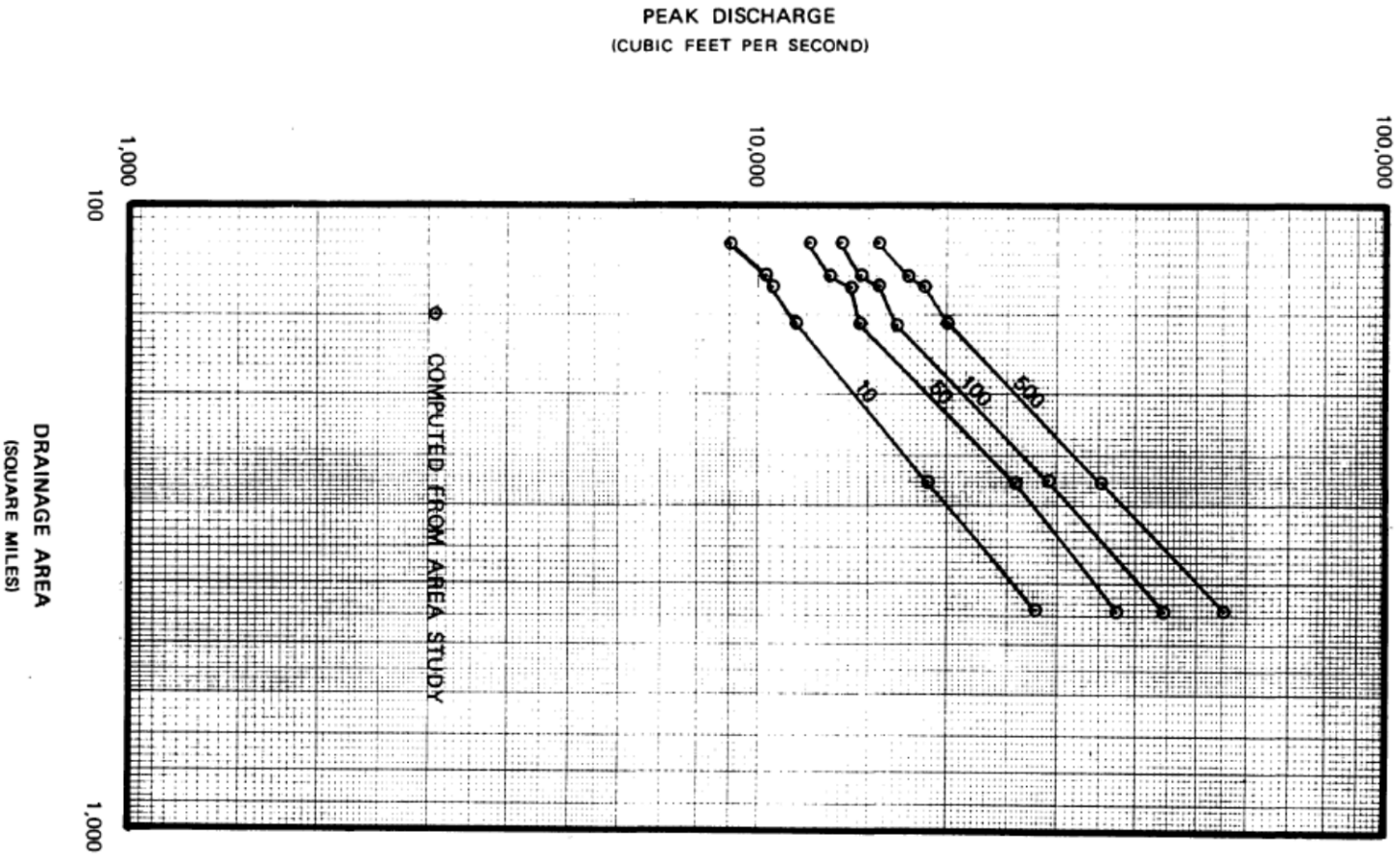
FIGURE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FREQUENCY-DISCHARGE, DRAINAGE AREA CURVES

CAZENOVIA CREEK



*Data valid for Town of Elma

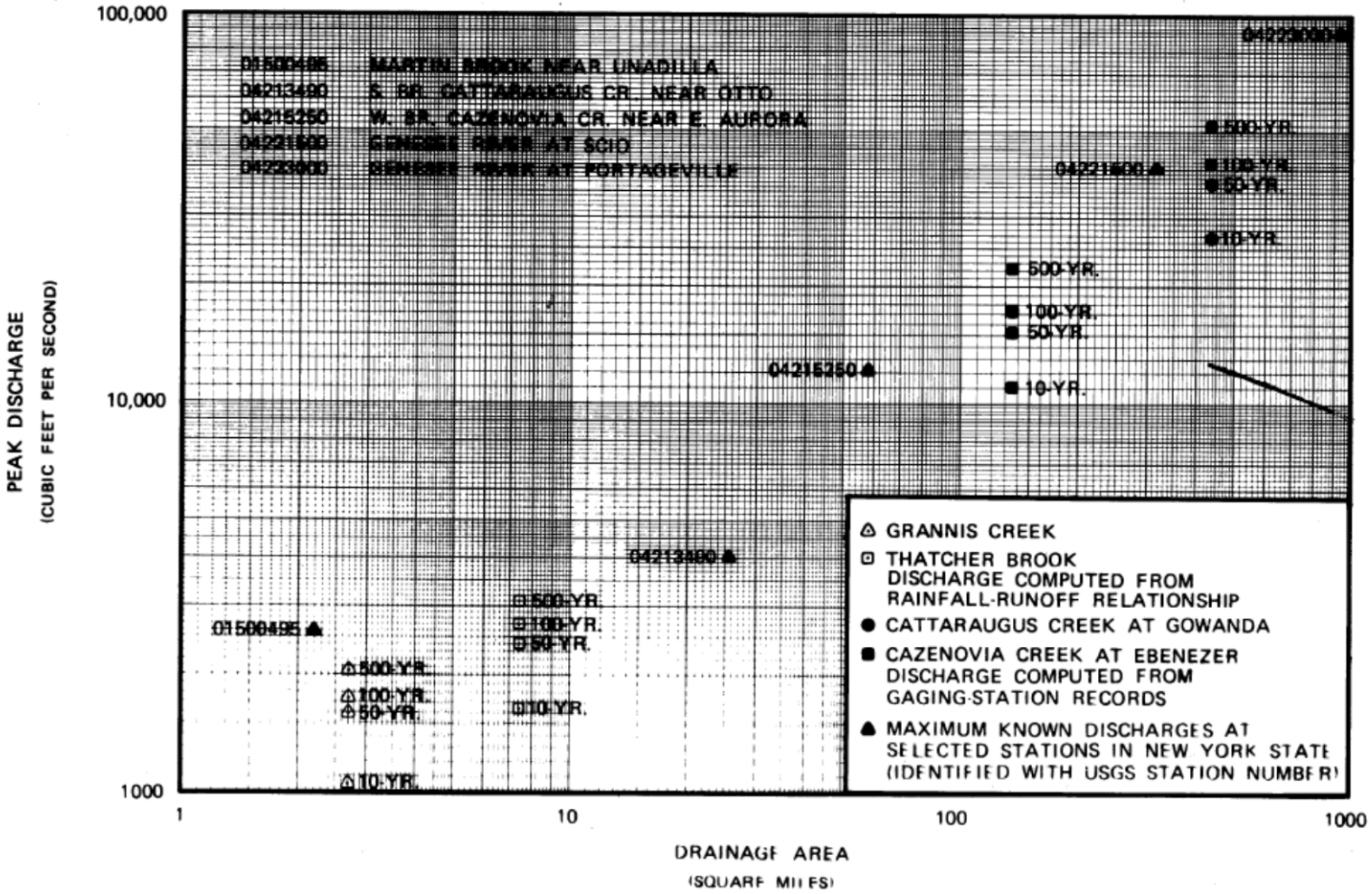
FIGURE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FREQUENCY-DISCHARGE, DRAINAGE AREA CURVES

BUFFALO CREEK



*Data valid for Village of Gowanda

FIGURE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FREQUENCY-DISCHARGE, DRAINAGE AREA CURVES

CATTARAUGUS CREEK, GRANNIS CREEK, THATCHER BROOK

TABLE 8 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
Berricks Creek					
At confluence with Lake Erie	3.60	770	1,060	1,170	1,460
Approximately 400 feet upstream of Sunset Drive	1.00	290	510	570	830
At Town of Hamburg / Village of Hamburg corporate limits	0.99	290	510	570	830
At Sunset Drive	0.34	170	210	245	340
Big Sister Creek					
At confluence with Lake Erie	49.2	5,500	7,500	8,400	10,400
Upstream of confluence with Unnamed Tributary	45.8	4,400	6,100	6,800	8,300
Black Creek					
At confluence of Ransom Creek	13.60	2,660	4,660	5,140	6,800
At Town of Amherst / Town of Clarence corporate limits	12.90	*	*	5,120	*
Buffalo Creek					
Upstream of confluence of Cayuga Creek	146	*	*	16,000	*
Approximately 100' downstream of towns of Elma, Marilla corporate limit	106	9,200	12,000	13,100	15,800
Approximately 1,300' upstream of towns of Elma, Marilla corporate limit	104	9,000	11,700	12,800	15,400
Approximately 5,050' upstream of towns of Elma, Marilla corporate limit	102	8,900	11,500	12,600	15,200
Approximately 400' upstream of towns of Marilla, Wales corporate limit	100	8,700	11,400	12,400	14,900
At Strykersville Road	81	7,300	9,600	10,500	12,700
Approximately 300' upstream of confluence with Stony Bottom Creek	74	6,800	8,900	9,800	11,800
Upstream limit of study	57	5,500	7,200	8,000	9,700
Buffalo River					
At mouth	431.5	*	*	37,290	*

*Data not available

TABLE 8 - SUMMARY OF DISCHARGES
(Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
Buffalo River - continued					
Downstream of confluence of Cazenovia Creek	417.20	*	*	37,290	*
Upstream of confluence of Cazenovia Creek	280.00	*	*	21,530	*
At City of Buffalo / Town of West Seneca corporate limits	276.70	*	*	21,530	*
Buttermilk Falls Creek					
At North Creek Road	1.40	380	520	570	720
Just upstream of Lakeview Road	0.85	60	120	140	200
Approximately 1,040' upstream of Lakeview Road	0.58	10	40	80	120
Approximately 1,620' downstream of Heltz Road	0.58	80	150	180	250
Just downstream of Heltz Road	0.30	50	100	120	180
Cayuga Creek					
Above confluence with Buffalo Creek	128.00	9,510	13,200	16,900	19,000
At Transit Road	112.00	9,260	12,500	14,100	17,700
At Village of Depew / Village of Lancaster corporate limits	111.00	9,230	12,600	14,100	17,600
Above Como Dam	101.00	8,730	11,700	13,000	16,100
At USGS Gage No. 04215000 near Lancaster, NY	96.40	8,460	7,020	7,970	10,300
At Town of Alden / Town of Lancaster corporate limits	59.10	5,450	7,750	8,800	11,350
Upstream of Two Rod Road and unnamed tributary	56.00	5,250	7,450	8,450	10,900
At towns of Alden, Marilla corporate limits	55.00	5,300	7,000	7,700	9,400
Approximately 8,775' upstream of towns of Alden, Marilla corporate limits	50.00	4,900	6,500	7,200	8,700
Approximately 10, 575' upstream of towns of Alden, Marilla corporate limits	48.00	4,700	6,300	7,000	8,500

*Data not available

TABLE 8 - SUMMARY OF DISCHARGES

(Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
Cazenovia Creek					
At confluence with Buffalo River	137.20	11,700	14,800	16,400	20,200
At abandoned railroad bridge	136.10	*	*	15,760	*
Upstream of confluence of Ebenezer Brook	134.20	*	*	15,610	*
Approximately 1,325 feet downstream of Big Tree Road (at Route 20A bridge)	116.00	9,900	12,800	14,800	16,800
Approximately 800 feet upstream of confluence with Cazenovia Creek West Branch	60.00	5,100	6,700	7,300	8,700
Approximately 800 feet upstream of confluence with Cazenovia Creek East Branch	56.00	4,800	6,100	6,700	8,100
Cazenovia Creek East Branch					
At Center Street Dam	46.00	4,580	6,080	6,720	8,181
Approximately 39,000 feet upstream of Town of Aurora / Town of Elma corporate limits	44.00	4,410	5,870	6,480	7,900
Approximately 57,700 feet upstream of Town of Aurora / Town of Elma corporate limits	40.00	4,080	5,440	6,010	7,340
Approximately 1,200 feet downstream of Emery Road (Route 67) Bridge	37.00	3,820	5,110	5,650	6,910
Approximately 800' downstream from Route 16 Bridge	34.00	3,560	4,770	5,280	6,470
Just downstream from Cross-Section F	29.00	3,120	4,200	4,660	5,710
Approximately 150' downstream from North Canada Street Bridge	23.00	2,580	3,490	3,870	4,770
Just downstream from Cross-Section N	19.00	2,200	2,990	3,330	4,110
Approximately 200' downstream from Cross-Section S	15.00	1,810	2,470	2,760	3,420

*Data not available

TABLE 8 - SUMMARY OF DISCHARGES

(Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
Cazenovia Creek West Branch					
At Town of Aurora / Town of Colden corporate limits (At West Falls Dam)	48.00	4,750	6,300	6,950	8,450
Approximately 1,600 feet downstream of State Route 240 in Hamlet of Colden	29.00	3,120	4,200	4,660	5,710
Approximately 1,900 feet downstream of Murray Road	22.00	2,480	3,370	3,740	4,610
Ebenezer Brook					
Upstream of confluence with Cazenovia Creek	1.36	*	*	585	*
Eighteenmile Creek					
At confluence with Lake Erie	120.00	11,000	15,000	16,500	20,000
Upstream of confluence of Eighteenmile Creek South Branch	64.80	4,920	6,990	7,960	10,300
Upstream of Creek Road	62.30	4,740	6,720	7,660	9,950
At town of Boston / Town of Hamburg corporate limits	39.00	4,640	5,880	6,380	7,430
Upstream of USGS gaging station in Town of Boston	36.90	4,430	5,620	6,100	7,100
Upstream of confluence of Irish Gulf	31.10	3,730	4,730	5,130	5,970
Upstream of confluence of Anthony Gulf	27.40	3,290	4,170	4,530	5,270
Upstream of Pfarner Road	21.40	2,590	3,280	3,560	4,140
Upstream of confluence with Landon Brook	14.10	1,720	2,190	2,370	2,760
Eighteenmile Creek North Branch					
At confluence with Eighteenmile Creek	3.70	340	460	510	640
Eighteenmile Creek South Branch					
At confluence with Eighteenmile Creek	0.80	210	340	380	540
Ellicott Creek					
At Niagara Falls Boulevard	104.00	6,010	8,110	9,430	11,000
Approximately 800 feet south of Maple Road	81.00	4,250	6,500	7,500	10,000
At Sheridan Drive	77.60	4,000	6,150	7,130	9,510
At Wehrle Drive	72.40	4,420	6,150	7,150	8,420

*Data not available

TABLE 8 - SUMMARY OF DISCHARGES
(Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
Ellicott Creek - continued					
At Stoney Road	72.40	38,101	5,870	6,790	9,060
At Town of Alden / Town of Lancaster corporate limits	67.40	3,630	5,580	6,470	8,620
Upstream of confluence of Spring Creek	27.60	2,300	3,150	3,700	4,500
Ellicott Creek – North Diversion Channel					
Approximately 3,485 feet upstream of Niagara Falls Boulevard	101.70	3,475	5,280	6,000	8,050
Ellicott Creek – Pfohl Park Diversion Channel					
Approximately 4,910 feet downstream of Millersport Highway bridge	97.00	2,000	3,960	4,650	7,000
Ellicott Creek – Upper Diversion Channel					
Approximately 1,200 feet north of Maple Road	81.20	1,700	3,450	4,300	5,830
Fern Brook					
At confluence with Lake Erie	1.70	440	600	660	820
At Pleasant Avenue	0.60	110	200	230	350
Foster Brook					
At confluence with Lake Erie	3.90	410	610	700	900
Upstream of Southwestern Boulevard	1.50	145	210	240	300
Gun Creek					
At confluence with Niagara River – Tonawanda Channel	3.28	250	360	420	550
At Ransom Road bridge	2.23	170	250	280	375
Gott Creek					
At confluence with Ransom Creek	15.20	640	880	990	1,240
At Transit Road	14.40	620	840	950	1,210
At Newhouse Road	10.70	540	755	850	1,080
At confluence of Gott Creek Tributary	6.10	330	470	530	675
Gott Creek Tributary					
At confluence with Gott Creek	3.30	195	280	320	410

TABLE 8 - SUMMARY OF DISCHARGES
(Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
Hampton Brook					
At confluence with Eighteenmile Creek	6.70	1,220	1,680	1,850	2,310
Hosmer Brook					
At confluence with Cattaraugus Creek	9.20	*	*	1,690	2,260
Just upstream of Genesee Road	7.50	*	*	1,500	2,020
Hunter Creek					
At mouth	18.00	2,100	2,900	3,200	3,900
Ledge Creek					
Upstream of confluence of Murder Creek	8.00	*	*	965	*
Little Buffalo Creek					
At confluence with Cayuga Creek	26.90	2,060	3,270	3,650	5,190
At confluence with Little Buffalo Creek Tributary 1	25.10	2,260	3,040	3,550	4,870
At USGS Gaging station in Town of Lancaster	24.00	1,770	2,880	3,380	4,670
At confluence with Tributary 4	23.30	1,740	2,830	3,310	4,560
At Town of Elma / Town of Lancaster corporate limits	23.00	1,680	2,710	3,160	4,340
Approximately 500 feet downstream from crossing of power lines	19.80	1,660	2,630	3,060	4,140
At downstream limit of detailed study in Town of Marilla	17.00	2,000	2,700	3,000	3,800
Approximately 700' upstream of downstream limit of detailed study in Town of Marilla	16.00	1,900	2,600	2,900	3,600
Approximately 5,075' upstream of downstream limit of detailed study in Town of Marilla	14.00	1,700	2,350	2,600	3,250
Approximately 5,265' upstream of downstream limit of detailed study in Town of Marilla	12.00	1,500	2,100	2,300	2,900

*Data not available

TABLE 8 - SUMMARY OF DISCHARGES
(Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
Little Buffalo Creek Tributary					
At confluence with Little Buffalo Creek	0.50	190	255	285	350
Little Sister Creek					
At confluence with Lake Erie	9.30	1,570	2,160	2,380	2,970
At Delameter Road	5.60	1,060	1,460	1,610	2,010
Little Sister Creek Tributary 2					
At confluence with Little Sister Creek	1.90	480	660	730	910
At Norfolk and Western Railway	0.60	120	220	240	370
Murder Creek					
Upstream of confluence of Ledge Creek	75.00	*	*	3,635	*
At Brooklyn Street / Maple Road	55.00	2,030	2,710	2,990	3,650
At Crittenden Road	48.00	1,790	2,400	2,660	3,250
Approximately 1,600 feet upstream of Crittenden Road	48.00	1,790	2,400	2,660	3,250
Pike Creek					
At confluence with Lake Erie	6.00	1,130	1,560	1,720	2,140
Approximately 300 feet upstream of Norfolk and Western Railway	3.30	720	1,000	1,100	1,380
Plum Bottom Creek					
At confluence with Cayuga Creek	8.00	1,080	1,490	1,670	2,100
At Town of Lancaster / Village of Lancaster corporate limits	5.80	850	1,190	1,330	1,680
At confluence of Plum Bottom Creek North Branch	2.30	380	540	620	800
At confluence of unnamed tributary	1.40	275	390	450	580
Plum Bottom Creek North Branch					
At confluence with Plum Bottom Creek	3.50	540	760	860	1,100
At Cemetery Road	3.20	500	700	800	1,020

*Data not available

TABLE 8 - SUMMARY OF DISCHARGES

(Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
Plum Bottom Creek North Branch - continued					
At confluence with Slate Bottom Creek South Branch	2.00	380	520	590	720
Approximately 1,600 feet downstream of Aurora Road	1.60	300	420	480	600
Approximately 1,200 feet upstream of Aurora Road	1.00	190	280	320	420
Plum Bottom Creek South Branch					
At confluence with Slate Bottom Creek North Branch	4.10	770	1,020	1,130	1,350
At Lake Avenue	2.20	420	570	650	790
Pond Brook					
At confluence with Buffalo Creek	6.30	490	700	800	1,010
Upstream of Woodward Road	5.70	440	630	720	910
Ransom Creek					
At confluence with Tonawanda Creek	59.50	2,500	3,460	3,900	5,340
At Hopkins Road	45.70	2,300	3,190	5,120	7,910
Upstream of confluence of Black Creek	30.50	1,640	2,300	2,590	3,270
Upstream of confluence of Gott Creek	18.10	1,030	1,450	1,630	2,050
At Transit Road	17.00	971	1,360	1,540	1,930
At Goodrich Road	14.00	933	1,330	1,510	1,920
Reisch Creek					
At confluence with Lake Erie	1.30	230	340	390	520
At Prescott Drive	0.90	170	250	290	390
At Lake Shore Road	0.70	140	210	240	320
Rush Creek					
At Highland Avenue (extended)	5.10	1,260	1,740	1,910	2,390
Upstream of Tomaka Drive Tributary	4.90	960	1,320	1,450	1,820
At Tributary to Rush Creek	2.50	580	800	880	1,100
Scajaquada Creek					
At mouth	28.60	4,250	5,330	6,100	6,950

TABLE 8 - SUMMARY OF DISCHARGES

(Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
Scajaquada Creek - continued					
Upstream of Dick Road Bridge	6.90	1,080	1,570	1,780	2,340
At Conrail Bridge No. 1	4.40	730	1,050	1,150	1,530
At Grant Street	2.20	400	580	630	820
Approximately 1,600 feet upstream of Grant Street	2.20	400	580	630	820
At Central Avenue	1.70	300	430	470	630
Approximately 2,300 feet upstream of Seneca Place	1.00	180	260	290	390
At Stonehedge Drive	0.20	57	75	80	89
Scajaquada Creek North Branch					
At George Urban Boulevard	1.40	250	360	410	550
Approximately 900 feet upstream of French Road	1.10	200	290	330	440
Slate Bottom Creek					
At mouth	11.60	1,760	2,360	2,710	3,200
Downstream of confluence with Slate Bottom Creek North Branch	6.10	937	1,270	1,450	1,730
Upstream of confluence with Slate Bottom Creek North Branch	6.10	682	926	1,050	1,260
Downstream of Aurora Street	3.70	657	895	1,020	1,220
Upstream of Aurora Street and Unnamed Tributary	3.00	549	759	861	1,040
At Lake Avenue	2.20	410	571	648	785
Slate Bottom Creek South Branch					
At confluence with Slate Bottom Creek South Branch	4.10	770	1,020	1,130	1,350
Downstream of Aurora Street	3.70	700	330	1,040	1,240
Upstream of Aurora Street	3.00	570	760	850	1,040
Smokes Creek					
*	34.00	3,600	5,200	6,600	9,900
At mouth	33.30	3,330	4,700	5,300	7,000
*	14.00	1,900	2,900	3,400	4,900
Upstream of confluence with Smokes Creek South Branch	15.70	1,800	2,600	2,900	3,900

*Data not available

TABLE 8 - SUMMARY OF DISCHARGES

(Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
Smokes Creek - continued					
Upstream of City of Lackawanna / Town of West Seneca corporate limits	14.60	1,700	2,450	2,750	3,700
Smokes Creek Northeast Branch					
At confluence with Smokes Creek Northwest Branch	4.92	1,130	1,530	1,840	2,360
At Big Tree Road	2.85	760	1,030	1,180	1,470
At Transit Road	1.44	480	650	740	930
Smokes Creek Northwest Branch					
At Town of Orchard Park corporate limits	12.07	1,700	2,600	3,000	4,400
At confluence with Smokes Creek Northeast Branch	5.90	1,020	1,550	1,830	2,550
At Freeman Pond Spillway	4.49	830	1,300	1,500	2,040
At Town / Village of Orchard Park corporate limits	4.50	830	1,300	1,500	2,040
At Chessie System Railroad	2.14	480	760	860	1,140
At Ellicott Road	1.14	320	500	560	730
Smokes Creek South Branch					
At mouth	15.80	1,800	2,600	2,900	3,900
At confluence with Smokes Creek	13.40	1,600	2,300	2,600	3,500
At Town of Hamburg / Town of Orchard Park corporate limits	10.97	1,310	1,900	2,150	2,900
Upstream of Smokes Creek South Branch Tributary	7.01	910	1,320	1,500	2,000
Upstream of Smokes Creek South Branch Tributary South	3.87	560	820	920	1,250
At Big Tree Road	3.27	490	710	800	1,080
At Town / Village of Orchard Park corporate limits	3.30	490	710	800	1,080
Upstream of Green Lake Tributary	2.72	410	610	700	920
Upstream of Green Lake Spillway	2.70	410	610	700	920
At South Freeman Road	1.27	210	310	360	500
Smokes Creek South Branch Tributary 1					
At confluence with Smokes Creek South Branch	2.44	360	550	630	860

TABLE 8 - SUMMARY OF DISCHARGES

(Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
Smokes Creek South Branch Tributary 1 - continued					
At Taylor Road	1.50	250	360	420	580
Smokes Creek South Branch Tributary 2					
At confluence with Smokes Creek South Branch	0.80	240	420	480	700
Smokes Creek South Branch Tributary South					
At confluence with Smokes Creek South Branch	3.03	460	650	750	1,000
Spicer Creek					
At mouth	2.97	229	324	365	460
At Whitehaven Road	2.25	208	296	335	427
At Harvey Road	1.81	189	273	309	396
Spring Brook					
At South Buffalo Street	8.07	400	*	650	850
At Middle Road	6.12	320	*	530	700
Spring Creek					
At confluence with Plum Bottom Creek	1.00	190	280	320	420
Tannery Brook					
At upstream face of Main Street crossing	2.86	480	1,210	1,620	3,250
At downstream face of Main Street crossing	2.05	390	950	1,260	2,500
Tonawanda Creek					
At mouth	635.00	16,800	21,300	23,200	27,600
At Twin Cities Memorial Highway	525.00	10,900	15,300	17,200	22,200
Upstream of confluence of Bull Creek	504.00	12,400	16,200	17,800	21,390
At upstream confluence of Ransom Creek	435.00	9,400	10,900	11,500	13,300
Upstream of confluence of Mud Creek	349.00	5,600	6,500	6,600	7,000
At most upstream crossing of Rapids Road	331.00	*	*	8,950	*
Tributary 1 to Niagara River - Tonawanda Channel					
At confluence with Niagara River – Tonawanda Channel	1.25	90	130	150	190

*Data not available

TABLE 8 - SUMMARY OF DISCHARGES

(Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
Waterfalls Village Creek					
At confluence with Lake Erie	1.00	300	420	460	580
Woods Creek					
At confluence with Niagara River – Tonawanda Channel	7.50	470	700	800	1,050
At confluence with Woods Creek Tributary 2	3.50	210	310	350	470
Downstream of confluence with Woods Creek Tributary 3	1.88	105	155	180	235
At Stony Point Road bridge	1.48	70	110	130	165
Woods Creek Tributary 1					
At confluence with Woods Creek	2.81	150	220	260	350
Woods Creek Tributary 3					
At confluence with Woods Creek	0.30	35	45	50	70

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the source 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.

Precountywide Analyses

The included jurisdictions within Erie County, which consist of the cities of Buffalo and Lackawanna, the towns of Alden, Amherst, Aurora, Boston, Cheektowaga, Colden, Concord, Elma, Evans, Hamburg, Lancaster, Marilla, Newstead, Orchard Park, Sardinia, Tonawanda and West Seneca, and the villages of Akron, Depew, East Aurora, Hamburg, Lancaster, Orchard Park, Springville and Williamsville, and with the exceptions of the towns of Brant and Eden, as well as the villages of Alden, Blasdell and North Collins, has a previously printed FIS report. The hydraulic analyses described in those reports have been compiled and are summarized below.

For streams studied by detailed methods, water-surface elevations of floods of the selected recurrence intervals were predominantly computed through the use of the USACE HEC-2 step-backwater program (USACE, 1976; 1974; 1991). Cross sections for the backwater analyses of the streams studied in detail were field-surveyed and located at close intervals above and below bridges and culverts, in order to compute the significant backwater effects of these structures in highly urbanized areas.

For Berricks Creek in the Town and Village of Hamburg, starting water-surface elevations were determined using the slope/area method and water-surface profiles for floods of the selected recurrence intervals were computed using HEC-2.

For Big Sister Creek in the Town of Evans, water-surface profiles were computed through the use of three different methods. For reaches, including bridges, exhibiting subcritical (tranquil) flow, the USGS E431 step-backwater program was used (USGS, 1976). At cross-sections where flow was supercritical (rapid), water-surface elevations were computed using critical depth computations. Finally, where the profile through bridges and culverts passed through critical depth, the USGS A526 culvert computer program (USGS, 1976) was used to determine water-surface elevations upstream from the structure. When warranted, flow over roads at these bridges and culverts were computed manually. Starting water-surface elevations were based on known elevations of Lake Erie at the confluence. In the Village of Angola, water-surface elevations were determined using HEC-2, and the starting water-surface elevations were taken from the profiles for the Town of Evans.

For Black Creek in the Town of Amherst, water-surface profiles were computed using HEC-2. Because overflows from Tonawanda Creek enter Ransom Creek through Black Creek, Black Creek was modeled as a continuation of Black Creek and no starting water-surface elevations were computed. Interbasin flow between Ransom Creek, Black Creek, Gott Creek and Tonawanda Creek causes many shallow flooding areas within Amherst. In these areas, determinations of water-surface elevations through the use of HEC-2 were not possible. These areas are subject to ponding of flood waters stemming from relatively flat terrain and/or weir flow over roadways. Flood elevations were determined using engineering judgment in these areas. These areas are located south of French Road between Dodge and Hopkins Roads; south of Schoelles Road between Hopkins Road, French Road and Campbell Boulevard; west of Sweet Home Road between Irwin Place, Niagara Falls Boulevard and Cascade Drive; and north of Ellicott Creek Road and Dodge Road between Sweet Home Road, Tonawanda Creek Road and Campbell Boulevard.

For Buffalo Creek, water-surface profiles were computed using HEC-2. In the Town of West Seneca, starting water-surface elevations were derived from a previous study (Federal Emergency Management Agency, September 1992). In the Town of Elma, starting water-surface elevations were determined from frequency-discharge curves using USGS stream gage records for streams with similar basin characteristics. In the Town of Marilla, starting water-surface elevations were coordinated with previous studies (USACE, 1966; USHUD, August 1976, December 1976). In the Town of Wales, starting water-surface elevations were determined using the slope/area method.

For Buffalo River, water-surface profiles were computed using HEC-2. Starting water-surface elevations were derived from the 50% annual-chance water-surface elevations on Niagara River, which were estimated using an analysis based on flood-stage records obtained form the USACE at the American Falls, Niagara Intake, LaSalle Yacht Club, Tonawanda Island, Black Rock, Peace Bridge and Buffalo gaging stations along Niagara River (USACE, unpublished). In the Town of West Seneca, starting water-surface elevations were determined from a previous study (USHUD, August 1976).

For Buttermilk Falls Creek in the Town of Hamburg, water-surface profiles were computed using HEC-2. Starting water-surface elevations were taken from a known water-surface elevation.

For Cattaraugus Creek in the Village of Gowanda, water-surface profiles were computed using the USGS E-431 step-backwater program (USGS, 1971).

For Cayuga Creek, water-surface profiles were computed using HEC-2. In the towns of Cheektowaga and West Seneca, the starting water-surface elevation was assumed to be that calculated for Buffalo River and Buffalo Creek at the confluence of these two streams due to the high probability of the peak discharges occurring simultaneously due to their similar basin characteristics. In the Village of Depew, starting water-surface elevations were obtained from the profiles in Cheektowaga. In the Village of Lancaster and Town of Alden, starting water-surface elevations were determined using the slope/area method. In the Town of Marilla, starting water-surface elevations were coordinated with previous studies (USACE, 1966; USHUD, August 1976, December 1976).

For Cazenovia Creek in the towns of Aurora and Elma, water-surface profiles were computed using HEC-2. In the Town of Elma, starting water-surface elevations were determined from discharge-frequency curves using USGS stream gage records for streams with similar basin characteristics. In the Town of Aurora, starting water-surface elevations were coordinated with previous studies.

For Cazenovia Creek East Branch in the towns of Aurora, Holland and Wales, water-surface profiles were computed using HEC-2. Starting water surface elevations were coordinated with previous studies.

For Clear Creek in the Town of Collins, water-surface profiles were computed through the use of the USGS E-431 step-backwater computer program (USGS, 1971) and the USGS culvert computer A-526 (WRI, 1970). Starting water-surface elevations were determined using the slope/area method.

For Delaware Creek in the Town of Evans, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using the slope/area method.

For Ebenezer Brook in the Town of West Seneca, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using the slope/area method.

For Eighteenmile Creek, in the towns of Evans and Hamburg, water-surface profiles were computed through the use of three different methods. For reaches, including bridges, exhibiting subcritical (tranquil) flow, the USGS E431 step-backwater program was used (USGS, 1976). At cross-sections where flow was supercritical (rapid), water-surface elevations were computed using critical depth computations. Finally, where the profile through bridges and culverts passed through critical depth, the USGS A526 culvert computer program (USGS, 1976) was used to determine water-surface elevations upstream from the structure. When warranted, flow over roads at these bridges and culverts were computed manually. Starting water-surface elevations were based on known elevations of Lake Erie at the confluence. In the Town of Boston, water-surface profiles were computed using HEC-2. Starting water-surface elevations were obtained from the profiles for Eighteenmile Creek in the Town of Hamburg FIS.

For Ellicott Creek, except in the towns of Amherst and Tonawanda, water-surface profiles were computed using HEC-2. In the City of North Tonawanda, starting water-surface elevations were taken from stage-frequency curves derived for the Niagara River. In the Town of Cheektowaga, starting water-surface elevations were obtained from the profiles for Ellicott Creek in the Town of Amherst FIS. In the Town of Lancaster, starting water-surface elevations were obtained from the profiles for Ellicott Creek in the Town of Cheektowaga FIS. In the Town of Alden, starting water-surface elevations were determined from a USACE report on floodplain information for Ellicott Creek (USACE, 1972) for the 2% and 1% annual-chance floods. For the 10% and 0.2% annual-chance floods, starting water-surface elevations were determined using the slope/area method.

For the Ellicott Creek Diversion Channels in the Town of Amherst, water-surface profiles were computed using HEC-2. Starting water-surface elevations were derived from a rating curve developed by the USACE (USACE, 1978).

For Fern Brook in the Town of Evans, water-surface profiles were computed using HEC-2. Starting water-surface elevations were taken from known water-surface elevations of Lake Erie at the confluence.

For Foster Brook in the Town of Hamburg, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using the slope/area method.

For Gott Creek in the towns of Amherst and Clarence, water-surface profiles were computed using HEC-2. In the Town of Amherst, starting water-surface elevations were determined from the hydraulic computations on Ransom Creek and by the slope/area method. In the Town of Clarence, starting water-surface elevations were obtained from the profiles for Gott Creek in the Town of Amherst FIS.

For Grannis Creek in the Village of Gowanda, water-surface profiles were computed using the USGS E-431 step-backwater program (USGS, 1971).

For Gun Creek in the Town of Grand Island, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using the profiles for Niagara River – Tonawanda Channel.

For Hampton Brook in the Town of Hamburg, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using the slope/area method.

For Hosmer Brook in the Town of Sardinia, water-surface profiles for the 1% and 0.2% annual-chance flood events were computer using HEC-2. No profiles were computed for the 10% and 2% annual-chance flood events. Starting water-surface elevations were determined using the slope/area method.

For Hunter Creek in the Town of Wales, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using the slope/area method.

For Ledge Creek in the Town of Newstead, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using critical depth.

For Little Buffalo Creek in the towns of Lancaster, Elma and Marilla, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using the slope/area method in each community's study. For Little Buffalo Creek Tributary in the Town of Marilla, water-surface profiles were computed using HEC-2, and starting water-surface elevations were determined using the slope/area method.

For Little Sister Creek and Little Sister Creek Tributary 2 in the Town of Evans, water-surface profiles were computed using HEC-2. Starting water-surface elevations for Little Sister Creek were based on known elevations of Lake Erie at its confluence. Starting water-surface elevations for Little Sister Creek Tributary 2 were determined using the slope/area method.

For Muddy Creek in the Town of Evans, water-surface profiles were computed through use of three different methods. For reaches (including bridges) exhibiting subcritical (tranquil) flow, the USGS E431 step-backwater program was used (USGS, 1976). At cross-sections where flow was supercritical (rapid), water-surface elevations were based on critical depth computations. These sections were located at naturally constricted reaches of the stream and at reaches of steep slope. Where the water-surface profiles through bridges and culverts passed through critical depth, the USGS A526 culvert computed program was used to determine the water-surface elevations upstream from the structure (USGS, 1976). Starting water-surface elevations were taken from known elevations of Lake Erie at its confluence.

For Murder Creek in the Town of Newstead and Village of Akron, water-surface profiles were computed using HEC-2. In the Town of Newstead, starting water-surface elevations were determined using the slope/area method. In the Village of Akron, starting water-surface elevations were taken from the May 1980 FIS for the Town of Newstead, which was later superseded by the May 4, 1992 FIS.

For Pike Creek in the Town of Evans, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using the slope/area method.

For Plum Bottom Creek in the Town and Village of Lancaster, as well as Plum Bottom Creek North Branch in the Town of Lancaster, water-surface profiles were computed using HEC-2. Starting water-surface elevations for Plum Bottom Creek in the Village of Lancaster were determined using the slope/area method. In the Town of Lancaster, starting water-surface elevations for Plum Bottom Creek were taken from the profiles for the Village of Lancaster, and starting water-surface elevations for Plum Bottom Creek North Branch were obtained from the profiles for Plum Bottom Creek.

For Pond Brook in the Town of Elma, water-surface profiles were calculated using HEC-2. Starting water-surface elevations were determined using the slope/area method.

For Reisch Creek in the Town of Evans, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined assuming critical depth.

For Rush Creek in the Town of Hamburg, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using the slope/area method.

For Scajaquada Creek in the Town of Cheektowaga, water-surface profiles were computed using HEC-2, however, instead of the 0.2% annual-chance flood, the Standard Project Flood (SPF) was computed. The SPF is defined as the largest flood that can be expected from the most severe combination of meteorological and hydrological conditions that is considered reasonably characteristic of the geographical region involved. The 0.2% annual-chance flood was interpolated between the 1% annual-chance flood and the SPF. Starting water-surface elevations were obtained from a rating curve which was computed with records from the gaging station at Pine Ridge Road. For Scajaquada Creek in the Village of Depew and Town of Lancaster, water-surface profiles were computed using HEC-2. Starting water-surface elevations in the Village of Depew were taken from the profiles from the Town of Cheektowaga FIS (FEMA, March 1984). Starting water-surface elevations in the Town of Lancaster were determined using the profiles from the Village of Depew FIS (FIA, February 1981).

For Scajaquada Creek North Branch in the Village of Depew, water-surface profiles were calculated using HEC-2. Starting water-surface elevations were determined from the Scajaquada Creek profiles.

For Slate Bottom Creek North Branch in the Town of Lancaster, water-surface elevations were calculated using HEC-2. Starting water-surface elevations were determined using the profiles for Slate Bottom Creek in the March 15, 1984 Town of Cheektowaga FIS, which have been superseded by the profiles in this All Jurisdictions report.

For Slate Bottom Creek South Branch in the towns of Lancaster and Elma, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using the profiles for Slate Bottom Creek in the March 15, 1984 Town of Cheektowaga FIS, which have been superseded by the profiles in this All Jurisdictions report. Starting water-surface elevations in the Town of Elma were determined using profiles from the Town of Lancaster FIS.

For Smokes Creek in the City of Lackawanna, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using the elevation of Lake Erie at its confluence for the 50% annual-chance storm event.

For Smokes Creek Northeast Branch in the Town of Orchard Park, and for Smokes Creek Northwest Branch in the Town and Village of Orchard Park, water-surface profiles were computed using HEC-2. The starting water-surface elevations for Smokes Creek Northeast Branch were determined using the slope/area method. In the Town of Orchard Park, starting water-surface elevations for Smokes Creek Northwest Branch were determined using profiles from the Town of West Seneca FIS. In the Village of Orchard Park, starting water-surface elevations were determined using profiles from the Town of Orchard Park FIS.

For Smokes Creek South Branch in the City of Lackawanna and Town of Hamburg, water-surface profiles were computed using HEC-2. In the City of Lackawanna, starting water-surface elevations were determined using the profiles for Smokes Creek the confluence. In the Town of Hamburg, starting water-surface elevations were determined using the profiles from the City of Lackawanna FIS. In the Town of Orchard Park, starting water-surface elevations were determined using the profiles from the Town of Hamburg FIS. In the Village of Orchard Park, starting water-surface elevations were determined using profiles from the Town of Orchard Park FIS.

For Smokes Creek South Branch Tributary 1 in the towns of Hamburg and Orchard Park, water-surface profiles were computed using HEC-2 and starting water-surface elevations were determined using the slope/area method. For Smokes Creek South Branch Tributary South in the Town of Orchard Park, water-surface profiles were computed using HEC-2 and starting water-surface elevations were determined using the slope/area method.

For Spring Brook in the Village of Springville and the Town of Concord, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined assuming critical depth in each community.

For Spring Creek in the Town of Lancaster, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using the slope/area method.

For Tannery Brook in the Village of East Aurora, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using the slope/area method.

For Thatcher Brook in the Village of Gowanda, water-surface profiles were computed using the USGS E-431 step-backwater program (USGS, 1971).

For Tonawanda Creek in the towns of Amherst and Clarence, water-surface profiles were computed using HEC-2. In the Town of Amherst, starting water-surface elevations were determined using a rating curve developed by the USACE for the Tonawanda Creek stages at its confluence. In the Town of Clarence, starting water-surface elevations were determined using the profiles from the Town of Amherst FIS.

For Tributary 1 to Niagara River - Tonawanda Channel, water-surface profiles were computed using HEC-2. Starting water-surface elevations were taken from the profiles for Niagara River – Tonawanda Channel.

For Waterfalls Village Creek in the Town of Hamburg, water-surface profiles were computed using HEC-2. Starting water-surface elevations were determined using the slope/area method.

For Woods Creek, Woods Creek Tributary 1 and Woods Creek Tributary 3 in the Town of Grand Island, water-surface profiles were computed using HEC-2. Starting-water surface elevations were determined from the profiles for the Niagara River-Tonawanda Channel for Woods Creek. Water-surface profiles for the tributaries were determined from the profiles for Woods Creek.

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For revised portions of Cazenovia Creek within the City of Buffalo, Ellicott Creek within the Village of Williamsville, Spicer Creek within the Town of Grand Island, and Tonawanda Creek within the Town of Tonawanda, water-surface profiles were computed using HEC-RAS.

[date] Revision

Information on the methods used to determine peak discharge/water-surface elevation relationships for the streams shown in Table 3, restudied as part of this revised FIS, is shown below.

The streams newly studied by detailed methods are located primarily in the northern region of Erie County. For these streams, cross sections were obtained from contour data developed from Light Detection and Ranging (LiDAR) data collected in Spring 2008 with two-foot contour accuracy. Below-water cross sections were obtained by field surveys. All bridges, wing dams and miscellaneous structures were field surveyed to obtain elevation data and structural geometry. As-build drawings provided by USACE and New York State Department of Transportation (NYSDOT) were utilized to supplement survey data where needed. Water-surface elevations for the floods of selected recurrence intervals were computed through the use of HEC-RAS (version 3.1.3 and 4.0) step-backwater computer program (USACE, 2005). The channel and overbank roughness values were assigned in HEC-RAS based on the information obtained from survey, aerial imagery, site inspection and engineering judgment.

PMR 12-02-1567P incorporated an updated HEC-RAS model for Tonawanda Creek beginning at stream station 34,540 and ending at stream station 64,300. The HEC-RAS model was created by Conestoga-Rovers & Associates. The HEC-RAS model uses the cross section data from the previously effective HEC-2 model but supplements the ground data above the water surface elevation with updated LiDAR data(Sanborn, 2007).

Channel roughness factors (Manning's "n") used in the hydraulic computations have been complied from the previous FIS texts. These computations were checked by field

observation of the streams and floodplain areas at selected cross sections. The roughness factors were estimated at each cross section using the Soil Conservation Service procedure. Roughness factors for all streams studied by detailed methods are shown in Table 9, "Manning's "n" Values."

TABLE 9 – MANNING'S "n" VALUES

Stream	Channel "n"	Overbank "n"
Berricks Creek	0.018-0.035	0.050-0.100
Big Sister Creek	0.030-0.070	0.050-0.090
Black Creek	0.030-0.080	0.040-0.100
Buffalo Creek	0.021-0.040	0.035-0.100
Buffalo River	0.021-0.040	0.070-0.100
Buttermilk Falls Creek	0.020-0.037	0.070-0.090
Cattaraugus Creek	0.032-0.070	0.031-0.120
Cayuga Creek	0.014-0.100	0.030-0.150
Cazenovia Creek	0.013-0.050	0.013-0.100
Cazenovia Creek East Branch	0.035	0.050-0.100
Cazenovia Creek West Branch	0.035	0.050-0.100
Clear Creek	0.032-0.045	0.034-0.065
Delaware Creek	0.025-0.070	0.050-0.080
Ebenezer Brook	0.030-0.40	0.070-0.080
Eighteenmile Creek	0.020-0.080	0.030-0.120
Eighteenmile Creek North Branch	0.020-0.035	0.050-0.100
Eighteenmile Creek South Branch	0.020-0.035	0.040-0.050
Ellicott Creek	0.021-0.100	0.030-0.150
Ellicott Creek – North Diversion Channel	0.027	0.060
Ellicott Creek – Pfohl Diversion Channel	0.027	0.060
Ellicott Creek – Upper Diversion Channel	0.027	0.060
Fern Brook	0.020-0.045	0.060-0.080
Foster Brook	0.022-0.035	0.050-0.090
Gott Creek	0.035-0.045	0.060-0.120
Gott Creek Tributary	0.045	0.075
Grannis Creek	0.032-0.045	0.035-0.120
Hampton Brook	0.030	0.100
Hosmer Brook	0.030-0.040	0.070
Ledge Creek	0.025-0.035	0.080-0.120
Little Buffalo Creek	0.015-0.040	0.030-0.100
Little Buffalo Creek Tributary	0.035	0.035-0.100
Little Sister Creek	0.030-0.050	0.050-0.070
Little Sister Creek Tributary 2	0.025-0.080	0.060-0.090
Muddy Creek	0.030-0.050	0.050-0.070
Murder Creek	0.037-0.055	0.047-0.200
Pike Creek	0.022-0.070	0.060-0.090
Plum Bottom Creek	0.021-0.100	0.048-0.120

(Continued)

TABLE 9 – MANNING'S "n" VALUES

Stream	Channel "n"	Overbank "n"
Plum Bottom Creek North Branch	0.040-0.050	0.070-0.120
Pond Brook	0.030-0.035	0.070-0.100
Ransom Creek	0.040-0.100	0.030-0.100
Reisch Creek	0.020-0.050	0.050-0.080
Rush Creek	0.017-0.036	0.035-0.100
Scajaquada Creek	0.013-0.040	0.013-0.100
Scajaquada Creek North Branch	0.030-0.045	0.070-0.150
Slate Bottom Creek	0.040-0.045	0.030-0.300
Slate Bottom Creek North Branch	0.035-0.055	0.060-0.120
Slate Bottom Creek South Branch	0.030-0.055	0.060-0.120
Smokes Creek	0.030	0.075-0.090
Smokes Creek Northeast Branch	0.020-0.035	0.050-0.100
Smokes Creek Northwest Branch	0.020-0.035	0.050-0.100
Smokes Creek South Branch	0.020-0.037	0.035-0.100
Smokes Creek South Branch Tributary 1	0.020-0.035	0.045-0.100
Smokes Creek South Branch Tributary South	0.030-0.032	0.050-0.100
Smokes Creek Tributary South	0.032-0.035	0.045-0.100
Spicer Creek	0.030-0.100	0.030-0.300
Spring Brook	0.040	0.040-0.060
Spring Creek	0.035-0.100	0.035-0.060
Tannery Brook	0.025-0.045	0.070
Thatcher Brook	0.032-0.045	0.031-0.100
Tonawanda Creek	0.023-0.055	0.030-0.150
Waterfalls Village Creek	0.024-0.035	0.040-0.120

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles. For stream segments for which a floodway was computed (Section 4.2), selected cross sections are also shown on the FIRM (Exhibit 2).

All qualifying bench marks 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. 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 which generally hold their position/elevation well (e.g., concrete bridge abutment)

- Stability C: Monuments which 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 the National Geodetic Vertical Datum of 1929 (NGVD29). With the finalization of the North American Vertical Datum of 1988 (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 community must, therefore, be referenced to NAVD88. It is important to note that adjacent communities may be referenced to NGVD29. This may result in difference in Base Flood Elevations (BFEs) across the corporate limits between the communities. The conversion factor used for Erie County is -0.50 feet for conversion from NGVD29 to NAVD88.

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 that wish to convert the elevations in this FIS to NGVD 29 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.

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 Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, 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.

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 areas of special flood hazards (Zones A, AE, V and VE); and the 0.2-percent-annual-chance flood 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 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).

Within the Villages of Depew and Lancaster, and the Towns of Amherst and Cheektowaga, there are one or more levees that have not been demonstrated by the community or levee owner(s) to meet the requirements of 44 CFR Part 65.10 of the NFIP regulations as it relates to the levee’s capacity to provide 1-percent-annual-chance flood protection. As such, the floodplain boundaries in this area were taken directly from the previously effective FIRM and are subject to change. Please refer to the Notice to Flood Insurance Study Users page at the front of this FIS report for more information on how this may affect the floodplain boundaries shown on the FIRM.

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 that can be used as a basis for additional floodway studies.

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.

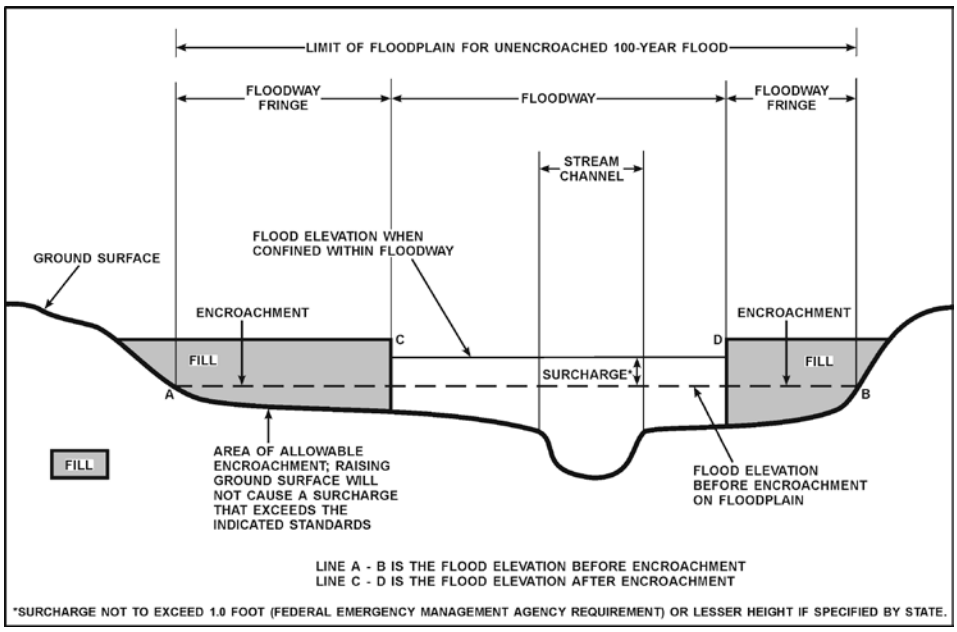
Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 10). The computed floodways are shown on the FIRM (Exhibit 2). In cases where the floodway and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

Portions of the floodway for Cattaraugus Creek and Tonawanda Creek extend beyond the County boundary.

Encroachment into areas subject to inundation by floodwaters having hazardous velocities aggravates the risk of flood damage, and heightens potential flood hazards by further 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. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 6.

Figure 6 - Floodway Schematic



FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Berricks Creek								
A	240	38	141	8.3	581.1	580.3[2]	580.8[2]	0.5
B	420	24	100	11.7	592.0	592.0	592.0	0.0
C	695	47	397	2.9	608.7	608.7	609.0	0.3
D	1090	46	309	3.8	608.7	608.7	609.0	0.3
E	1590	36	124	9.5	608.7	608.7	608.8	0.1
F	1705	47	314	3.7	613.8	613.8	613.8	0.0
G	1810	43	408	2.9	616.8	616.8	616.8	0.0
H	2060	87	705	1.7	616.9	616.9	616.9	0.0
I	2310	52	468	2.5	616.9	616.9	616.9	0.0
J	2747	70	917	1.3	629.4	629.4	629.9	0.5
K	2923	45	1028	1.1	638.3	638.3	638.9	0.6
L	3040	32	644	1.8	639.0	639.0	639.6	0.6
M	3178	102	1607	0.7	639.1	639.1	639.7	0.6
N	3193	135	1512	0.8	639.1	639.1	639.7	0.6
O	3540	130	2174	0.5	639.1	639.1	639.7	0.6
P	4690	104	891	1.3	639.1	639.1	639.7	0.6
Q	7565	52	129	9.1	666.1	666.1	666.1	0.0
R	7671	62	224	5.2	667.8	667.8	667.8	0.0
S	8535	60	236	5.0	676.7	676.7	677.7	1.0
T	8601	150	513	2.3	686.9	686.9	687.0	0.1
U	8812	250	2728	0.4	687.0	687.0	687.1	0.1
V	9174	43	219	5.3	687.0	687.0	687.1	0.1
W	9264	30	143	8.2	687.0	687.0	687.1	0.1
X	9495	55	362	1.9	691.7	691.7	691.7	0.0
Y	9790	45	124	5.7	692.4	692.4	692.8	0.4
Z	9930	33	134	5.2	695.8	695.8	695.8	0.0

[1] Feet above confluence with Lake Erie
[2] Elevation computed without consideration of backwater effects from Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

BERRICKS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Berricks Creek (Continued)								
AA	10460	35	91	7.7	700.5	700.5	700.6	0.1
AB	11720	40	109	6.4	717.0	717.0	717.6	0.6
AC	14000	30	73	7.8	747.7	747.7	747.9	0.2
AD	14390	68	343	1.7	753.3	753.3	753.3	0.0
AE	14740	15	62	9.2	753.3	753.3	753.7	0.4
AF	14960	33	204	2.8	757.4	757.4	757.4	0.0
AG	15880	21	114	5.0	758.1	758.1	759.1	1.0
AH	16570	20	104	5.5	761.1	761.1	761.9	0.8
AI	17650	30	117	3.4	767.2	767.2	767.6	0.4
AJ	18020	29	147	2.7	769.9	769.9	769.9	0.0
AK	18376	21	72	3.4	773.7	773.7	774.1	0.4
AL	18641	16	47	5.2	773.8	773.8	774.7	0.9
Big Sister Creek								
A	3990	390	2060	4.1	583.1	583.1	583.3	0.2
B	4590	230	1610	5.2	583.3	583.3	583.5	0.2
C	5050	200	1300	6.5	583.7	583.7	584.0	0.3
D	5620	200	1120	7.5	584.4	584.4	584.9	0.5
E	6080	200	1060	7.9	585.4	585.4	586.1	0.7
F	6660	200	780	10.8	587.3	587.3	587.7	0.4
G	7440	280	1540	5.4	590.5	590.5	591.5	1.0
H	7800	320	1920	4.4	591.3	591.3	592.3	1.0
I	8780	180	1270	6.6	595.8	595.8	596.8	1.0
J	9450	220	1380	6.1	597.2	597.2	598.2	1.0
K	9950	410	2160	3.9	598.1	598.1	599.1	1.0

[1] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

BERRICKS CREEK - BIG SISTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Big Sister Creek (Continued)								
L	10600	210	1,240	6.8	599.5	599.5	600.1	0.6
M	10970	150	940	8.9	600.3	600.3	601.0	0.7
N	11570	150	820	10.2	602.6	602.6	603.4	0.8
O	11770	150	1,000	8.4	604.6	604.6	604.7	0.1
P	12200	180	1,120	7.5	606.2	606.2	606.2	0.0
Q	12660	100	780	10.8	606.5	606.5	607.0	0.5
R	12830	110	850	9.8	607.5	607.5	607.7	0.2
S	13160	120	930	9.0	609.4	609.4	609.4	0.0
T	13990	150	1,030	8.2	614.1	614.1	615.0	0.9
U	14340	200	1,280	6.6	615.6	615.6	616.0	0.4
V	14810	150	870	9.7	616.3	616.3	616.8	0.5
W	15300	140	1,030	8.2	618.5	618.5	618.5	0.0
X	15860	150	1,190	7.1	619.7	619.7	619.8	0.1
Y	16440	170	1,250	6.7	620.5	620.5	620.8	0.3
Z	16940	180	1,530	5.5	621.0	621.0	621.8	0.8
AA	17391	119	958	8.8	621.6	621.6	622.4	0.8
AB	18346	184	1,669	5.0	629.5	629.5	630.4	0.9
AC	19840	103	1,022	8.2	634.8	634.8	634.8	0.0
AD	20725	136	1,460	5.8	635.9	635.9	636.2	0.3
AE	21200	130	1,142	7.4	636.1	636.1	636.6	0.5
AF	22280	213	1,660	5.1	638.4	638.4	639.4	1.0
AG	23155	126	1,274	6.6	640.3	640.3	641.1	0.8
AH	24145	227	1,922	3.5	642.8	642.8	643.7	0.9
AI	25335	166	1,563	4.4	643.6	643.6	644.5	0.9
AJ	25920	190	1,600	4.3	644.0	644.0	644.7	0.7

[1] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

BIG SISTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Big Sister Creek (Continued)								
AK	26440	140	1.270	5.4	644.3	644.3	645.0	0.7
AL	26920	140	1.150	5.9	644.7	644.7	645.4	0.7
AM	27320	150	1.280	5.3	645.2	645.2	645.9	0.7
AN	27960	120	1.060	6.4	645.7	645.7	646.4	0.7
AO	28560	110	760	9.0	646.4	646.4	647.1	0.7
AP	29180	130	900	7.5	648.7	648.7	649.4	0.7
AQ	29810	90	610	11.2	650.2	650.2	650.9	0.7
AR	30200	120	890	7.6	652.7	652.7	653.4	0.7
AS	30640	130	970	7.0	653.5	653.5	654.3	0.8
AT	30980	100	750	9.1	654.0	654.0	654.8	0.8
AU	31550	220	2.070	3.3	658.7	658.7	659.4	0.7
AV	31960	180	1.990	3.4	658.9	658.9	659.6	0.7
AW	32270	140	1.480	4.6	658.9	658.9	659.6	0.7
AX	32650	180	1.740	3.9	659.1	659.1	659.8	0.7
AY	33090	140	1.360	5.0	659.3	659.3	660.0	0.7
AZ	33510	120	980	6.9	659.6	659.6	660.2	0.6
BA	33910	200	1.630	4.2	660.4	660.4	661.2	0.8
BB	34400	90	790	8.6	660.5	660.5	661.3	0.8
BC	34840	200	1.350	5.0	662.0	662.0	662.8	0.8
BD	35310	140	940	7.2	662.6	662.6	663.4	0.8
BE	35710	60	440	15.4	663.3	663.3	663.9	0.6
BF	49300	100	670	6.9	711.2	711.2	711.8	0.6
BG	50020	80	460	10.0	712.6	712.6	713.0	0.4
BH	50660	60	500	9.3	714.9	714.9	715.0	0.1
BI	51120	110	550	8.3	716.3	716.3	716.4	0.1

[1] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

BIG SISTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Big Sister Creek (Continued)								
BJ	51880	110	640	7.1	718.1	718.1	718.6	0.5
BK	52600	110	580	7.9	720.1	720.1	720.3	0.2
BL	52980	100	540	8.6	721.3	721.3	721.3	0.0
BM	53600	80	650	7.0	723.7	723.7	723.8	0.1
BN	54180	120	760	6.0	724.5	724.5	724.8	0.3
BO	54780	255	1.100	4.2	725.5	725.5	726.1	0.6
BP	55320	228	1.240	3.7	726.0	726.0	726.8	0.8
BQ	55980	130	700	6.6	726.7	726.7	727.5	0.8
BR	56640	220	1.180	3.9	728.0	728.0	728.9	0.9
BS	56990	280	1.250	2.8	728.5	728.5	729.5	1.0
BT	57560	350	2.210	1.6	728.7	728.7	729.7	1.0
BU	58080	330	2.000	1.8	728.8	728.8	729.8	1.0
BV	58470	250	1.340	2.6	728.8	728.8	729.8	1.0
BW	58710	140	780	4.5	729.0	729.0	730.0	1.0
BX	59450	230	1.360	2.6	729.5	729.5	730.5	1.0
BY	60300	140	650	5.4	730.3	730.3	731.2	0.9
BZ	60750	380	1.280	2.7	732.2	732.2	732.7	0.5
CA	61630	220	940	3.7	732.8	732.8	733.5	0.7
CB	63010	130	780	4.5	734.0	734.0	734.7	0.7
CC	64000	220	970	3.6	734.7	734.7	735.5	0.8
CD	64840	200	1.290	2.7	735.3	735.3	736.2	0.9
CE	65590	210	930	3.8	735.8	735.8	736.7	0.9
CF	66090	80	480	7.2	736.7	736.7	737.5	0.8

[1] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

BIG SISTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Black Creek								
A	20650[1]	980	3614	1.5	581.4	581.4[3]	582.3[3]	0.9
B	26430[1]	949	2744	2.0	583.0	583.0[3]	583.9[3]	0.9
Buffalo Creek								
A	1990[2]	241	6125	5.1	593.2	593.2	594.2	1.0
B	6080[2]	278	2311	6.9	599.9	599.9	600.3	0.4
C	8380[2]	353	3385	4.7	606.8	606.8	606.8	0.0
D	11750[2]	102	1507	10.6	617.6	617.6	618.2	0.6
E	14475[2]	415	4115	3.9	623.4	623.4	624.2	0.8
F	17130[2]	355	2751	5.8	627.4	627.4	627.9	0.5
G	19395[2]	150	1518	10.5	631.0	631.0	631.9	0.9
H	21620[2]	412	3826	4.2	636.9	636.9	637.7	0.8
I	24940[2]	328	2054	7.8	642.0	642.0	642.8	0.8
J	26360[2]	525	3808	4.2	648.0	648.0	648.5	0.5
K	28610[2]	510	2940	5.4	652.1	652.1	652.8	0.7
L	29950[2]	199	2151	7.4	655.0	655.0	655.7	0.7
M	34067[2]	300	1553	10.5	670.5	670.5	670.6	0.1
N	39611[2]	250	1303	12.1	684.4	684.4	684.8	0.4
O	46053[2]	250	1399	12.3	701.5	701.5	701.9	0.4
P	51333[2]	250	1399	11.3	714.7	714.7	715.7	1.0
Q	63265[2]	300	1840	7.8	741.3	741.3	741.3	0.0
R	67489[2]	300	1449	9.9	753.7	753.7	753.7	0.0
S	75372[2]	250	1830	9.5	780.4	780.4	780.7	0.3
T	83025[2]	250	1217	11.3	798.5	798.5	798.7	0.2
U	88406[2]	250	2064	8.0	827.2	827.2	827.5	0.3
V	92511[2]	162	1619	8.1	832.9	832.9	833.9	1.0

[1] Feet above confluence of Ransom Creek and Tonawanda Creek
[2] Feet above confluence with Cayuga Creek
[3] Elevation computed using 1-percent annual chance discharge from Tonawanda Creek overflow

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

BLACK CREEK - BUFFALO CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Buffalo Creek (Continued)								
W	95111[1]	136	1468	8.7	837.9	837.9	838.5	0.6
X	97409[1]	200	1850	7.1	842.3	842.3	842.9	0.6
Y	4890[2]	360	2048	8.7	881.7	881.7	881.7	0.0
Z	6090[2]	269	1882	11.1	885.6	885.6	885.6	0.0
AA	7880[2]	142	1251	10.1	889.2	889.2	889.6	0.4
AB	9730[2]	269	2563	6.8	895.6	895.6	895.9	0.3
AC	11390[2]	213	1584	9.4	897.8	897.8	898.4	0.6
AD	12660[2]	270	2640	4.5	901.9	901.9	902.1	0.2
AE	13860[2]	188	1403	11.3	903.1	903.1	903.2	0.1
AF	16310[2]	160	1328	8.3	910.0	910.0	910.1	0.1
AG	18810[2]	138	1213	9.7	914.4	914.4	914.9	0.5
AH	20298[2]	237	1423	9.5	918.4	918.4	918.7	0.3
AI	21568[2]	295	1963	7.6	920.5	920.5	920.7	0.2
AJ	22698[2]	196	1758	6.6	921.7	921.7	921.9	0.2
AK	24958[2]	933	3568	6.1	923.4	923.4	924.1	0.7
AL	27338[2]	833	5788	4.6	925.9	925.9	926.0	0.1
AM	29688[2]	733	4205	9.1	926.7	926.7	926.8	0.1
AN	31869[2]	152	1299	8.0	930.7	930.7	930.7	0.0
AO	34119[2]	197	1220	8.1	933.2	933.2	933.7	0.5
AO	36359[2]	210	1741	6.7	937.6	937.6	938.1	0.5
AQ	38309[2]	180	1565	7.5	940.5	940.5	940.9	0.4
AR	40409[2]	200	1492	8.1	942.8	942.8	943.5	0.7
AS	43459[2]	228	1639	7.6	947.2	947.2	948.0	0.8
AT	46009[2]	181	1306	6.6	951.8	951.8	952.3	0.5

[1] Feet above confluence with Cayuga Creek
[2] Feet above Town of Wales downstream corporate limit

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

BUFFALO CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Buffalo River								
A	0	370	10974	3.4	581.1	576.5[2]	577.5[2]	1.0
B	2210	759	23010	1.6	581.1	576.8[2]	577.8[2]	1.0
C	4260	200	6781	5.5	581.1	576.9[2]	577.8[2]	0.9
D	6320	240	6652	5.6	581.1	577.6[2]	578.5[2]	0.9
E	9040	315	9837	3.8	581.1	578.4[2]	579.2[2]	0.8
F	10230	269	8189	4.6	581.1	578.5[2]	579.3[2]	0.8
G	12865	265	7474	5.0	581.1	579.0[2]	579.8[2]	0.8
H	15250	346	9710	3.8	581.1	579.6[2]	580.4[2]	0.8
I	17480	375	10005	3.7	581.1	579.8[2]	580.5[2]	0.7
J	19630	425	10619	3.5	581.1	580.5[2]	581.1[2]	0.6
K	22090	347	12039	3.1	581.1	581.0[2]	581.5[2]	0.5
L	24530	225	6669	5.6	581.2	581.2	581.7	0.5
M	26695	277	8372	4.5	581.8	581.8	582.3	0.5
N	29115	319	6289	5.9	582.9	582.9	583.2	0.3
O	30720	240	4098	5.3	584.0	584.0	584.2	0.2
P	32190	213	3975	5.4	585.9	585.9	586.0	0.1
Q	34260	350	5611	3.8	586.6	586.6	587.1	0.5
R	36990	138	3123	6.9	588.1	588.1	588.7	0.6
S	38570	322	7754	2.8	590.5	590.5	591.3	0.8
T	39600	806	12645	1.7	591.1	591.1	592.1	1.0
U	41430	307	5221	4.1	591.5	591.5	592.5	1.0
V	42925	233	2646	5.9	591.9	591.9	592.8	0.9

[1] Feet above confluence with Lake Erie
[2] Elevation computed without consideration of backwater effects from Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

BUFFALO RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Buttermilk Falls Creek								
A	340[1]	25	85	6.7	695.4	695.4	696.4	1.0
B	482[1]	30	171	3.3	706.1	706.1	706.6	0.5
C	703[1]	45	133	4.3	714.6	714.6	715.4	0.8
D	930[1]	45	262	2.2	715.2	715.2	716.2	1.0
E	2390[1]	65	107	5.3	721.4	721.4	721.6	0.2
F	4140[1]	36	148	3.8	726.7	726.7	727.0	0.3
G	4530[1]	22	85	5.7	727.3	727.3	727.5	0.2
H	4680[1]	53	189	2.5	729.1	729.1	729.2	0.1
I	5330[1]	92	309	1.6	729.4	729.4	729.6	0.2
J	5440[1]	78	324	1.5	729.4	729.4	729.7	0.3
K	5646[1]	74	336	1.4	729.4	729.4	729.7	0.3
L	6480[1]	70	289	1.7	729.5	729.5	729.9	0.4
M	7160[1]	105	128	3.7	729.9	729.9	730.6	0.7
N	7570[1]	110	256	1.9	732.0	732.0	733.0	1.0
O	8190[1]	151	264	1.8	733.9	733.9	734.8	0.9
P	8640[1]	104	249	1.9	735.5	735.5	736.5	1.0
Q	9320[1]	37	76	6.3	741.8	741.8	742.4	0.6
Cattaraugus Creek								
A	88100[2]	294	3120	14.0	745.7	745.7	745.7	0.0
B	88400[2]	382	4160	10.5	748.5	748.5	748.5	0.0
C	89300[2]	415	4230	10.0	750.9	750.9	750.9	0.0
D	89810[2]	278	3660	11.2	751.5	751.5	751.9	0.4
E	90400[2]	250	3170	12.9	752.3	752.3	753.1	0.8
F	90900[2]	144	2130	19.2	753.3	753.3	753.9	0.6
G	91220[2]	210	2960	13.8	757.8	757.8	757.9	0.1

[1] Feet above confluence with Eighteenmile Creek
[2] Feet above mouth

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

BUTTERMILK FALLS CREEK - CATTARAUGUS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cattaraugus Creek (Continued)								
H	92060[1]	210	2960	13.8	757.8	757.8	757.9	0.1
I	92550[1]	245	4140	9.9	762.9	762.9	762.9	0.0
J	92950[1]	272	4530	9.0	763.9	763.9	764.2	0.3
K	93770[1]	350	5320	7.7	764.7	764.7	765.2	0.5
L	91180[1]	#	#	#	766.5	766.5	766.5	0.0
M	94680[1]	#	#	#	768.9	768.9	768.9	0.0
N	95320[1]	#	#	#	775.5	775.5	775.5	0.0
O	96020[1]	239[3]	3250	12.6	778.7	778.7	778.7	0.0
P	96820[1]	240[3]	3570	11.4	782.3	782.3	782.3	0.0
Q	97460[1]	348[3]	4300	9.5	785.5	785.5	785.6	0.1
R	98180[1]	392[3]	4200	9.7	787.5	787.5	787.5	0.0
S	98680[1]	211[3]	2860	14.3	789.7	789.7	789.8	0.1
T	99080[1]	247[3]	3320	12.3	792.7	792.7	792.8	0.1
U	99400[1]	545[3]	5880	7.0	785.3	785.3	785.3	0.0
Cayuga Creek								
A	641[2]	488	4816	3.1	592.7	592.7	593.7	1.0
B	1266[2]	112	1986	7.5	592.9	592.9	593.8	0.9
C	1940[2]	140	2167	6.9	593.9	593.9	594.7	0.8
D	2913[2]	316	3841	3.9	595.0	595.0	595.9	0.9
E	4422[2]	150	2483	6.0	595.9	595.9	596.8	0.9
F	5331[2]	125	2219	6.7	596.5	596.5	597.4	0.9
G	6336[2]	180	2661	5.8	597.4	597.4	598.3	0.9
H	7763[2]	475	7093	2.6	598.3	598.3	599.1	0.8
I	8993[2]	318	4673	3.2	598.4	598.4	599.3	0.9

[1] Feet above mouth
[2] Feet above confluence with Buffalo River
[3] Width extends beyond Erie County corporate limits
Supercritical flow

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

CATTARAUGUS CREEK - CAYUGA CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cayuga Creek (Continued)								
J	10583	522	5976	2.5	598.9	598.9	599.7	0.8
K	12138	478	5526	2.7	599.2	599.2	600.2	1.0
L	13152	905	7219	2.1	599.6	599.6	600.6	1.0
M	15076	99	1677	8.9	600.1	600.1	601.1	1.0
N	16361	196	2493	6.0	602.6	602.6	603.4	0.8
O	17618	128	1424	10.5	603.7	603.7	604.7	1.0
P	18798	181	1954	7.6	610.4	610.4	610.6	0.2
Q	19812	326	3405	4.4	611.7	611.7	612.3	0.6
R	21080	711	6127	2.4	612.6	612.6	613.4	0.8
S	22089	336	3243	4.6	613.2	613.2	613.9	0.7
T	23454	815	7632	2.0	614.3	614.3	615.3	1.0
U	25061	693	3289	4.5	614.7	614.7	615.7	1.0
V	26350	745	4638	3.2	616.7	616.7	617.7	1.0
W	27139	441	3255	4.6	617.4	617.4	618.4	1.0
X	27838	146	1328	11.2	617.6	617.6	618.6	1.0
Y	28197	219	2277	6.5	622.5	622.5	622.5	0.0
Z	28540	206	2427	6.1	625.6	625.6	625.6	0.0
AA	29103	324	3422	4.4	626.2	626.2	626.4	0.2
AB	30074	151	1769	8.4	626.6	626.6	626.9	0.3
AC	31041	378	3968	3.8	628.2	628.2	628.9	0.7
AD	31792	482	4843	3.1	628.6	628.6	629.4	0.8
AE	32258	125	1920	7.8	628.5	628.5	629.3	0.8
AF	32692	226	2759	5.4	629.5	629.5	630.3	0.8
AG	33382	740	8210	1.8	630.4	630.4	631.4	1.0
AH	34347	662	6196	2.4	630.7	630.7	631.6	0.9

[1] Feet above confluence with Buffalo River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

CAYUGA CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cayuga Creek (Continued)								
AI	35847	547	3509	4.3	633.3	633.3	634.1	0.8
AJ	37161	241	1769	8.4	634.3	634.3	635.1	0.8
AK	37528	199	2397	6.2	637.8	637.8	637.8	0.0
AL	38079	176	2253	6.6	638.4	638.4	638.4	0.0
AM	38883	108	1611	9.3	639.0	639.0	639.2	0.2
AN	39582	214	2716	5.5	640.5	640.5	641.0	0.5
AO	40499	384	3150	4.7	641.4	641.4	642.1	0.7
AP	41509	201	2329	6.1	642.0	642.0	642.9	0.9
AQ	42170	118	1419	9.9	642.5	642.5	643.5	1.0
AR	43125	131	1879	7.5	646.7	646.7	647.0	0.3
AS	43959	610	5081	2.8	647.9	647.9	648.4	0.5
AT	44760	947	7386	1.9	648.1	648.1	648.6	0.5
AU	46223	316	2966	4.8	648.3	648.3	648.7	0.4
AV	46562	172	2211	6.4	648.6	648.6	649.2	0.6
AW	47959	158	2225	6.3	650.1	650.1	651.1	1.0
AX	48700	241	2749	5.1	651.1	651.1	651.9	0.8
AY	49624	263	2582	5.5	651.8	651.8	652.6	0.8
A[2]	49624	523	3038	5.5	654.0	651.9	651.9	0.0
AZ	51354	140	1695	8.3	654.0	654.0	654.8	0.8
BA	51929	161	1928	7.3	655.9	655.9	656.4	0.5
BB	53346	157	1604	8.8	658.1	658.1	658.5	0.4
BC	55027	146	1825	7.7	666.2	666.2	666.6	0.4
BD	55451	391	5127	2.8	670.8	670.8	671.8	1.0
BE	56468	643	5020	2.6	671.5	671.5	672.4	0.9
BF	57191	621	4668	2.8	672.0	672.0	672.7	0.7
BG	57910	266	2204	5.9	672.3	672.3	672.8	0.5

[1] Feet above confluence with Buffalo River

[2] This cross section lies within an area that has not been updated on the FIRM at this time due to the presence of levees that have not been demonstrated to meet the requirements of 44CFR Part 65.10 of the NFIP regulations. Please refer to the Notice to Flood Insurance Study Users page at the front of this FIS for more information.

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

CAYUGA CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cayuga Creek (Continued)								
BH	58984	191	1777	7.3	674.4	674.4	675.0	0.6
BI	59875	167	1965	6.6	676.3	676.3	677.3	1.0
BJ	60700	680	4041	3.2	677.7	677.7	678.5	0.8
BK	61534	534	3248	4.0	678.5	678.5	679.4	0.9
BL	62422	547	3095	4.2	680.3	680.3	681.1	0.8
BM	63711	388	2446	5.3	683.0	683.0	684.0	1.0
BN	64679	267	2986	4.2	688.1	688.1	688.5	0.4
BO	65999	592	2901	4.3	689.4	689.4	689.8	0.4
BP	66854	515	3582	2.5	690.8	690.8	691.7	0.9
BQ	67466	356	2308	3.9	691.5	691.5	692.4	0.9
BR	68051	349	2215	4.1	692.6	692.6	693.4	0.8
BS	69206	351	2027	4.5	695.0	695.0	695.9	0.9
BT	69718	393	2382	3.8	696.2	696.2	697.0	0.8
BU	70617	384	2476	3.6	697.0	697.0	697.9	0.9
BV	71165	292	1729	5.2	697.8	697.8	698.8	1.0
BW	71740	152	1259	7.2	700.1	700.1	701.0	0.9
BX	71975	246	1844	4.9	701.6	701.6	702.6	1.0
BY	72566	317	2337	3.9	702.3	702.3	703.3	1.0
BZ	73648	340	1927	4.7	703.9	703.9	704.9	1.0
CA	75015	237	1628	5.5	708.0	708.0	709.0	1.0
CB	76541	222	1501	6.0	712.0	712.0	712.8	0.8
CC	76962	339	1977	4.6	713.8	713.8	714.3	0.5
CD	77758	321	2224	4.1	715.7	715.7	716.5	0.8
CE	78930	355	1643	4.9	718.4	718.4	719.0	0.6
CF	79758	300	1469	5.4	720.1	720.1	720.4	0.3

[1] Feet above confluence with Buffalo River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

CAYUGA CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cayuga Creek (Continued)								
CG	80481	244	1469	5.4	721.2	721.2	722.2	1.0
CH	81190	215	1405	5.7	723.3	723.3	724.2	0.9
CI	81514	300	1978	4.0	724.4	724.4	725.3	0.9
CJ	81982	130	1227	6.5	724.8	724.8	725.7	0.9
CK	82984	86	792	10.1	727.9	727.9	728.4	0.5
CL	83928	148	1250	6.4	732.1	732.1	732.6	0.5
CM	84651	215	1553	5.1	734.0	734.0	734.5	0.5
CN	85667	290	1531	5.2	735.8	735.8	736.7	0.9
CO	86387	124	1162	6.9	737.5	737.5	738.5	1.0
CP	87350	200	1652	4.8	740.1	740.1	740.7	0.6
CQ	87873	119	960	8.3	740.7	740.7	741.4	0.7
CR	88577	163	814	10.8	743.3	743.3	743.3	0.0
CS	90592	240	1693	5.2	749.2	749.2	750.2	1.0
CT	91777	295	1066	8.3	752.0	752.0	752.2	0.2
CU	93152	143	1058	8.3	756.4	756.4	757.1	0.7
CV	94752	220	882	10.0	762.3	762.3	762.3	0.0
CW	96112	273	1735	4.9	767.3	767.3	767.8	0.5
CX	97222	277	1674	5.1	768.6	768.6	769.3	0.7
CY	98137	130	862	9.9	769.9	769.9	770.7	0.8
CZ	98347	135	930	8.9	772.4	772.4	772.4	0.0
DA	99387	159	743	11.2	775.9	775.9	776.0	0.1
DB	100432	134	715	11.6	782.4	782.4	782.6	0.2
DC	102072	362	1946	4.3	788.1	788.1	789.0	0.9
DD	103172	205	867	9.6	791.0	791.0	791.2	0.2
DE	103352	105	605	13.7	793.5	793.5	793.8	0.3

[1] Feet above confluence with Buffalo River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

CAYUGA CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cayuga Creek (Continued)								
DF	104922	185	1210	6.9	800.0	800.0	801.0	1.0
DG	106762	278	1224	6.8	805.0	805.0	805.0	0.0
DH	107782	133	719	11.6	808.7	808.7	808.7	0.0
DI	107927	160	1129	7.4	810.8	810.8	810.9	0.1
DJ	108662	192	879	9.4	813.5	813.5	813.5	0.0
DK	110062	191	1027	8.1	819.7	819.7	820.1	0.4
DL	111522	273	845	9.8	827.1	827.1	827.1	0.0
DM	112872	268	1588	5.2	830.7	830.7	831.7	1.0
SN	116030	88	739	10.4	843.5	843.5	844.4	0.9
DO	118905	94	731	10.5	855.5	855.5	856.3	0.8
DP	119530	70	603	12.7	859.5	859.5	859.5	0.0
DQ	120655	110	899	8.9	878.1	878.1	878.1	0.0
DR	123555	120	1002	7.8	885.6	885.6	886.6	1.0
DS	126505	102	792	8.8	896.0	896.0	897.0	1.0
Cazenovia Creek								
A	226	192	2670	6.1	583.9	580.9[2]	581.2[2]	0.3
B	436	172	2468	6.6	583.9	581.0[2]	581.3[2]	0.3
C	701	172	2741	6.0	583.9	582.2[2]	582.4[2]	0.2
D	996	157	2346	7.0	583.9	582.3[2]	582.6[2]	0.3
E	1296	138	2224	7.4	583.9	582.6[2]	582.9[2]	0.3
F	1483	136	2398	6.8	584.7	584.7	584.7	0.0
G	1659	155	2686	6.1	585.0	585.0	585.0	0.0
H	2288	153	2321	7.1	585.3	585.3	585.3	0.0
I	2836	154	2463	6.7	585.8	585.8	585.8	0.0

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

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

CAYUGA CREEK - CAZENOVIA CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cazenovia Creek (Continued)								
J	3211	156	2452	6.7	586.0	586.0	586.1	0.1
K	3466	156	2552	6.4	587.2	587.2	587.2	0.0
L	3752	152	2554	6.4	587.3	587.3	587.4	0.1
M	4531	149	2462	6.7	587.8	587.8	587.8	0.0
N	5525	119	2163	7.6	588.4	588.4	588.4	0.0
O	5869	119	2194	7.5	588.7	588.7	588.8	0.1
P	6088	108	1711	9.6	588.7	588.7	588.7	0.0
Q	6228	118	2095	7.8	589.7	589.7	589.8	0.1
R	6328	136	2152	7.6	589.9	589.9	590.0	0.1
S	6513	151	2004	8.2	590.1	590.1	590.1	0.0
T	6840	191	1812	9.1	590.6	590.6	590.8	0.2
U	7973	239	2771	5.9	593.2	593.2	593.4	0.2
V	8152	189	2223	7.4	593.2	593.2	593.5	0.3
W	8.366	174	2032	8.1	595.0	595.0	595.3	0.3
X	8484	263	2711	6.1	596.1	596.1	596.1	0.0
Y	8959	310	2586	6.3	596.5	596.5	596.6	0.1
Z	9642	629	4854	3.4	596.8	596.8	597.6	0.8
AA	9879	767	5079	3.2	596.8	596.8	597.8	1.0
AB	10092	791	6725	2.4	597.1	597.1	598.1	1.0
AC	10244	748	5067	3.2	597.1	597.1	598.1	1.0
AD	10908	703	4255	3.9	597.4	597.4	598.3	0.9
AE	11567	556	2846	5.8	598.0	598.0	598.7	0.7
AF	12061	446	2910	5.6	598.8	598.8	599.5	0.7
AG	12581	308	3903	4.0	601.1	601.1	602.1	1.0
AH	13506	250	2629	6.0	601.2	601.2	602.1	0.9

[1] Feet above confluence with Buffalo River

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

CAZENOVIA CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cazenovia Creek (Continued)								
AI	15826[1]	260	2451	6.4	611.5	611.5	611.7	0.2
AJ	17236[1]	146	2048	7.7	612.9	612.9	613.5	0.6
AK	20016[1]	130	1567	10.0	616.6	616.6	616.9	0.3
AL	21881[1]	130	1951	8.0	620.7	620.7	621.5	0.8
AM	26211[1]	240	1937	8.1	623.8	623.8	624.7	0.9
AN	29291[1]	140	1619	9.6	630.5	630.5	631.1	0.6
AO	32251[1]	120	1342	11.6	635.6	635.6	636.2	0.6
AP	35626[1]	242	2364	6.6	645.8	645.8	646.1	0.3
AQ	38201[1]	312	3210	4.9	651.5	651.5	652.3	0.8
AR	40211[1]	230	2341	6.7	655.2	655.2	655.8	0.6
AS	41246[1]	231	2982	5.2	658.1	658.1	659.0	0.9
AT	42871[1]	450	2589	6.5	660.7	660.7	661.6	0.9
AU	48121[1]	450	1748	9.6	674.9	674.9	675.0	0.1
AV	55866[1]	350	1035	13.8	706.6	706.6	706.4	-0.2
AW	59456[1]	300	1205	11.9	723.5	723.5	723.3	-0.2
AX	65739[1]	300	1326	11.5	742.1	742.1	742.8	0.7
AY	70175[1]	300	1294	12.2	755.9	755.9	756.5	0.6
Cazenovia Creek East Branch								
A	741[2]	985	2973	4.7	818.8	818.8	819.3	0.5
B	1497[2]	107	825	8.1	822.6	822.6	822.6	0.0
C	3847[2]	97	803	8.3	830.6	830.6	830.9	0.3
D	14347[2]	93	1199	5.6	874.6	874.6	875.4	0.8
E	16847	281	2902	4.2	875.7	875.7	876.6	0.9
F	18957	958	7733	1.4	876.0	876.0	876.9	0.9

[1] Feet above confluence with Buffalo River
[2] Feet above confluence with Cazenovia Creek West Branch

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

CAZENOVIA CREEK -
CAZENOVIA CREEK EAST BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cazenovia Creek East Branch (Continued)								
G	21697	541	4450	2.1	876.7	876.7	877.6	0.9
H	26647	836	3459	5.1	879.6	879.6	880.6	1.0
I	28397	132	973	8.6	881.1	881.1	881.6	0.5
J	30772	218	1664	5.7	883.9	883.9	884.7	0.8
K	32793	156	1388	5.7	885.5	885.5	886.2	0.7
L	34743	232	1589	4.6	888.0	888.0	888.6	0.6
M	37433	127	945	8.5	889.9	889.9	890.5	0.6
N	39893	172	1136	7.3	893.4	893.4	894.2	0.8
O	42741	99	831	7.2	898.4	898.4	898.8	0.4
P	43741	90	667	9.0	900.7	900.7	901.0	0.3
Q	45966	127	987	5.7	913.9	913.9	913.9	0.0
R	47141	96	668	8.4	915.6	915.6	916.2	0.6
S	48747	137	882	6.4	921.5	921.5	921.8	0.3
T	49685	100	797	7.4	923.4	923.4	924.4	1.0
U	51320	109	728	7.8	927.3	927.3	928.0	0.7
V	53880	90	547	10.3	937.1	937.1	938.1	1.0
W	56230	156	927	8.1	946.9	946.9	947.9	1.0
X	58165	172	1027	5.1	953.7	953.7	954.0	0.3
Y	60265	81	460	11.5	961.0	961.0	961.0	0.0
Z	62065	105	643	8.2	970.1	970.1	971.0	0.9
AA	63950	160	1209	4.4	981.2	981.2	981.9	0.7
AB	65200	72	421	12.3	984.2	984.2	984.4	0.2
AC	66800	170	901	8.3	992.1	992.1	993.1	1.0
AD	68900	740	499	9.3	1000.2	1000.2	1001.1	0.9
AE	70000	114	669	9.2	1004.9	1004.9	1005.7	0.8

[1] Feet above confluence with Cazenovia Creek West Branch

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

CAZENOVIA CREEK EAST BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cazenovia Creek East Branch (Continued)								
AF	72600[1]	172	949	8.3	1016.2	1016.2	1016.6	0.4
AG	73966[1]	221	896	6.5	1021.9	1021.9	1022.3	0.4
AH	75416[1]	99	486	8.0	1027.0	1027.0	1027.3	0.3
AI	77216[1]	45	275	14.0	1034.9	1034.9	1035.0	0.1
AJ	79616[1]	60	348	10.2	1045.8	1045.8	1046.5	0.7
AK	81383[1]	85	492	6.8	1056.5	1056.5	1056.6	0.1
AL	83333[1]	77	465	7.1	1076.3	1076.3	1076.3	0.0
AM	84069[1]	63	443	7.5	1084.7	1084.7	1084.9	0.2
AN	85369[1]	98	414	8.0	1091.1	1091.1	1091.1	0.0
AO	86929[1]	63	336	8.2	1099.5	1099.5	1099.5	0.0
AP	89229[1]	100	429	6.4	1110.3	1110.3	1111.1	0.8
Cazenovia Creek West Branch								
A	1761[2]	157	1717	8.2	815.9	815.9	816.4	0.5
B	2956[2]	985	2973	4.7	818.8	818.8	819.3	0.5
C	5505[2]	146	1093	6.7	824.5	824.5	824.5	0.0
D	34256[2]	89	756	9.2	934.1	934.1	934.2	0.1
E	36555[2]	102	641	10.8	940.2	940.2	940.3	0.1
F	37401[2]	86	567	10.5	944.2	944.2	944.5	0.3
G	38521[2]	100	633	9.4	949.6	949.6	949.8	0.2
H	39117[2]	109	731	8.2	968.8	968.8	969.2	0.4
I	40667[2]	122	952	6.3	972.7	972.7	973.4	0.7
J	42567[2]	205	1081	5.6	977.3	977.3	978.0	0.7
K	44867[2]	98	564	9.6	984.9	984.9	985.1	0.2
L	46867[2]	138	799	6.8	993.3	993.3	993.3	0.0

[1] Feet above confluence with Cazenovia Creek West Branch
[2] Feet above confluence with Cazenovia Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

CAZENOVIA CREEK EAST BRANCH - CAZENOVIA CREEK WEST BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cazenovia Creek West Branch (Continued)								
M	49317[1]	82	456	11.8	1003.4	1003.4	1003.7	0.3
N	51217[1]	91	546	9.9	1011.0	1011.0	1011.6	0.6
O	53217[1]	126	641	8.5	1020.6	1020.6	1021.6	1.0
P	55467[1]	105	671	8.0	1033.4	1033.4	1033.4	0.0
Q	57617[1]	91	588	7.9	1044.3	1044.3	1044.8	0.5
R	59327[1]	86	469	9.9	1057.2	1057.2	1057.3	0.1
S	59457[1]	91	685	6.8	1060.5	1060.5	1060.5	0.0
T	59997[1]	74	367	12.7	1076.6	1076.6	1076.6	0.0
U	60686[1]	187	1057	4.4	1083.5	1083.5	1083.5	0.0
V	63536[1]	90	494	9.4	1096.3	1096.3	1096.5	0.2
W	65536[1]	85	479	9.7	1107.2	1107.2	1107.3	0.1
X	67699[1]	81	576	8.1	1121.0	1121.0	1121.0	0.0
Y	69449[1]	108	486	9.6	1130.2	1130.2	1130.2	0.0
Z	71549[1]	97	492	9.5	1146.4	1146.4	1146.5	0.1
AA	73549[1]	93	470	8.0	1162.7	1162.7	1162.8	0.1
AB	74549[1]	90	469	8.0	1169.5	1169.5	1169.5	0.0
AC	75479[1]	90	420	8.9	1174.4	1174.4	1174.7	0.3
AD	76779[1]	90	442	8.4	1181.8	1181.8	1182.0	0.2
Clear Creek								
A	38808[2]	150	650	8.8	747.5	747.5	747.9	0.4
B	39283[2]	380	840	6.8	750.8	750.8	750.9	0.1
C	40920[2]	160	870	6.6	760.8	760.8	761.6	0.8
D	41342[2]	160	1120	5.1	761.8	761.8	762.8	1.0
E	42082[2]	#	#	#	764.0	764.0	764.0	0.0

[1] Feet above confluence with Cazenovia Creek
[2] Feet above mouth
Supercritical flow

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

CAZENOVIA CREEK WEST BRANCH - CLEAR CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Clear Creek (Continued)								
F	42715	#	#	#	770.3	770.3	770.3	0.0
G	44458	190	820	7.0	780.2	780.2	780.9	0.7
H	46042	70	660	8.7	789.9	789.9	790.8	0.9
I	46517	100	830	6.9	792.5	792.5	793.3	0.8
J	47414	100	730	7.8	797.9	797.9	798.6	0.7
K	47731	80	600	9.5	799.4	799.4	799.8	0.4
L	48734	140	860	6.6	804.8	804.8	805.2	0.4
M	51322	270	1330	4.1	828.7	828.7	828.8	0.1
N	52219	260	970	5.6	829.9	829.9	830.4	0.5
O	53698	350	1240	4.4	836.8	836.8	837.4	0.6
P	56796	290	660	8.2	850.5	850.5	850.6	0.1
Q	57446	70	470	11.4	856.2	856.2	856.9	0.7
R	57868	*	*	*	868.4	*	*	*
S	59611	*	*	*	877.5	*	*	*
T	61301	*	*	*	897.0	*	*	*
U	62832	*	*	*	911.5	*	*	*
V	65683	*	*	*	916.0	*	*	*
W	68534	*	*	*	925.1	*	*	*
X	69485	*	*	*	927.5	*	*	*
Y	70699	*	*	*	930.5	*	*	*
Z	73181	*	*	*	941.0	*	*	*
AA	75662	*	*	*	954.9	*	*	*
AB	77458	*	*	*	966.5	*	*	*
AC	78566	*	*	*	976.9	*	*	*
AD	80626	*	*	*	993.0	*	*	*

[1] Feet above mouth
Supercritical flow
* Data not available

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

CLEAR CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Clear Creek (Continued)								
AE	82685[1]	*	*	*	1009.0	*	*	*
AF	85308[1]	*	*	*	1042.1	*	*	*
AG	87912[1]	*	*	*	1067.5	*	*	*
AH	87965[1]	*	*	*	1071.4	*	*	*
AI	88862[1]	*	*	*	1085.4	*	*	*
AJ	90235[1]	*	*	*	1102.4	*	*	*
AK	93158[1]	*	*	*	1127.2	*	*	*
Delaware Creek								
A	1020[2]	50	350	8.0	583.7	583.7	584.7	1.0
B	1410[2]	80	430	6.5	586.0	586.0	586.2	0.2
C	1800[2]	120	770	3.6	587.0	587.0	587.0	0.0
D	2980[2]	340	1880	1.5	587.5	587.5	587.6	0.1
E	3410[2]	330	510	5.5	587.5	587.5	587.6	0.1
F	4080[2]	150	850	3.3	589.1	589.1	589.4	0.3
G	4640[2]	110	580	4.8	589.4	589.4	589.7	0.3
H	5450[2]	110	350	8.0	590.9	590.9	591.5	0.6
I	5890[2]	120	390	7.1	593.5	593.5	594.0	0.5
J	6510[2]	110	350	8.1	597.0	597.0	597.0	0.0
K	6910[2]	140	500	5.6	599.0	599.0	599.6	0.6
L	7350[2]	50	290	9.6	600.8	600.8	600.8	0.0
M	8000[2]	130	520	5.4	603.4	603.4	604.1	0.7
N	8520[2]	100	740	3.8	611.4	611.4	612.4	1.0
O	8830[2]	80	530	5.3	611.6	611.6	612.5	0.9
P	9080[2]	50	260	10.6	612.9	612.9	613.8	0.9

[1] Feet above mouth
[2] Feet above confluence with Lake Erie
* Data not available

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

CLEAR CREEK - DELAWARE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Delaware Creek (Continued)								
Q	9230	210	1500	1.7	615.6	615.6	616.6	1.0
R	9850	141	660	3.8	615.9	615.9	616.9	1.0
S	11180	150	920	2.7	622.3	622.3	623.2	0.9
T	11620	160	740	3.4	622.6	622.6	623.4	0.8
U	11970	130	540	4.7	622.8	622.8	623.6	0.8
V	12530	140	360	6.9	624.2	624.2	625.0	0.8
W	12880	80	380	6.5	625.6	625.6	626.6	1.0
X	13220	60	270	9.4	627.1	627.1	627.4	0.3
Y	14200	190	2100	1.2	644.9	644.9	645.9	1.0
Z	14700	200	1740	1.4	644.9	644.9	645.9	1.0
AA	15020	290	2350	1.1	644.9	644.9	645.9	1.0
AB	15330	140	800	3.1	644.9	644.9	645.9	1.0
AC	15650	230	2800	0.9	652.6	652.6	653.4	0.8
AD	16000	220	2490	1.0	652.6	652.6	653.4	0.8
AE	16400	150	1810	1.4	652.6	652.6	653.4	0.8
AF	16760	230	2320	1.1	652.6	652.6	653.4	0.8
AG	17340	180	1490	1.7	652.6	652.6	653.4	0.8
AH	17760	120	740	3.4	652.6	652.6	653.4	0.8
AI	18260	130	780	3.7	653.2	653.2	654.0	0.8
AJ	18860	90	480	5.2	653.7	653.7	654.5	0.8
AK	19180	160	410	6.2	654.7	654.7	655.5	0.8
AL	19600	190	1000	2.5	655.8	655.8	656.8	1.0
AM	20120	100	520	4.9	656.3	656.3	657.3	1.0
AN	20500	120	530	4.7	657.3	657.3	658.3	1.0
AO	21080	170	630	4.0	658.8	658.8	659.7	0.9
AP	21870	210	740	2.7	659.8	659.8	660.6	0.8

[1] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

DELAWARE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ebenezer Brook								
A	90[1]	8	83	7.0	615.2	611.7[3]	612.7[3]	1.0
B	1630[1]	22	215	2.7	625.6	625.6	625.9	0.3
C	3340[1]	22	149	3.9	630.7	630.7	631.7	1.0
D	4295[1]	35	243	2.4	633.4	633.4	634.4	1.0
E	4880[1]	50	334	1.7	635.2	635.2	636.2	1.0
F	5804[1]	68	163	3.6	637.2	637.2	637.6	0.4
Eighteenmile Creek								
A	2290[2]	184	1710	9.6	580.4	580.3[4]	581.3[4]	1.0
B	3190[2]	180	1570	10.4	582.8	582.8	583.2	0.4
C	3890[2]	230	2560	6.4	584.9	584.9	585.9	1.0
D	4800[2]	450	3480	4.7	587.6	587.6	588.3	0.7
E	5490[2]	150	1350	12.1	588.1	588.1	588.8	0.7
F	6180[2]	160	1600	10.3	591.4	591.4	591.8	0.4
G	6630[2]	220	2300	7.1	592.6	592.6	593.3	0.7
H	7200[2]	340	3120	5.3	593.4	593.4	594.1	0.7
I	7640[2]	240	2100	7.8	593.6	593.6	594.3	0.7
J	8260[2]	220	2580	6.4	594.6	594.6	595.6	1.0
K	8780[2]	220	2320	7.1	595.1	595.1	596.1	1.0
L	9320[2]	170	1300	12.6	596.0	596.0	596.6	0.6
M	9730[2]	340	3030	5.4	599.0	599.0	600.0	1.0
N	10210[2]	220	2080	7.9	599.5	599.5	600.3	0.8
O	10550[2]	150	1410	11.7	599.7	599.7	600.6	0.9
P	10750[2]	180	1650	9.9	600.7	600.7	601.6	0.9
Q	11920[2]	370	4420	3.4	609.4	609.4	610.4	1.0
R	12460[2]	470	4860	3.4	609.7	609.7	610.7	1.0

[1] Feet above confluence with Cazenovia Creek
[2] Feet above confluence with Lake Erie
[3] Elevation computed without consideration of backwater effects from Cazenovia Creek
[4] Elevation computed without consideration of backwater effects from Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

EBENEZER BROOK - EIGHTEENMILE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Eighteenmile Creek (Continued)								
S	13080	460	4000	4.4	609.9	609.9	610.9	1.0
T	13560	430	3130	5.3	609.9	609.9	610.9	1.0
U	14020	280	2160	7.6	610.2	610.2	611.2	1.0
V	14390	180	1380	11.9	610.4	610.4	611.4	1.0
W	14700	140	1120	14.7	611.4	611.4	612.2	0.8
X	15460	370	3500	4.7	617.3	617.3	618.2	0.9
Y	16380	220	2080	7.9	617.5	617.5	618.4	0.9
Z	16680	90	1080	15.2	617.5	617.5	618.5	1.0
AA	17290	220	2430	6.8	621.5	621.5	622.5	1.0
AB	29173	185	1130	7.0	650.3	650.3	650.4	0.1
AC	29691	259	1358	5.9	652.6	652.6	652.7	0.1
AD	30585	147	1012	7.9	656.7	656.7	656.8	0.1
AE	31203	183	1289	6.2	659.0	659.0	659.3	0.3
AF	32251	198	1338	6.0	662.2	662.2	662.3	0.1
AG	33379	233	1248	6.4	665.1	665.1	665.2	0.1
AH	34776	182	956	8.3	669.6	669.6	669.6	0.0
AI	35351	126	827	9.6	672.5	672.5	672.6	0.1
AJ	35899	250	1432	5.6	675.1	675.1	675.2	0.1
AK	36634	248	1071	7.4	677.5	677.5	677.6	0.1
AL	37589	253	1169	6.6	682.4	682.4	682.4	0.0
AM	38124	207	1126	6.8	685.2	685.2	685.3	0.1
AN	38952	149	1127	6.8	688.0	688.0	688.2	0.2
AO	39966	238	1224	6.3	691.5	691.5	691.6	0.1
AP	40816	160	1065	7.2	694.8	694.8	694.9	0.1
AQ	41344	112	853	9.0	696.7	696.7	696.8	0.1

[1] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

EIGHTEENMILE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Eighteenmile Creek (Continued)								
AR	42237	175	1285	6.0	699.7	699.7	699.7	0.0
AS	43222	123	712	10.8	702.0	702.0	702.0	0.0
AT	43885	162	1372	5.6	705.2	705.2	705.4	0.2
AU	43951	170	674	11.4	709.5	709.5	709.5	0.0
AV	44350	147	872	8.8	713.8	713.8	713.9	0.1
AW	44715	114	836	12.0	714.5	714.5	715.5	1.0
AX	44838	104	790	12.7	717.0	717.0	717.0	0.0
AY	45815	100	803	12.5	720.9	720.9	721.6	0.7
AZ	46900	112	1044	9.6	725.8	725.8	726.2	0.4
BA	47610	125	728	13.8	728.1	728.1	728.1	0.0
BB	48815	116	918	10.9	735.0	735.0	735.5	0.5
BC	49790	154	939	10.7	739.3	739.3	739.5	0.2
BD	50631	143	1083	9.3	743.7	743.7	743.8	0.1
BE	51623	158	1092	9.2	746.2	746.2	746.4	0.2
BF	51702	97	1107	9.1	754.3	754.3	754.3	0.0
BG	52000	92	1097	9.2	756.2	756.2	756.6	0.4
BH	52880	78	881	11.4	757.3	757.3	757.9	0.6
BI	54000	207	1378	7.3	760.2	760.2	760.6	0.4
BJ	55435	220	1748	5.0	763.0	763.0	764.0	1.0
BK	56050	129	1082	8.0	763.7	763.7	764.7	1.0
BL	57590	100	721	12.0	767.3	767.3	767.3	0.0
BM	68819	195	975	7.4	790.8	790.8	791.5	0.7
BN	69860	238	1880	3.8	793.5	793.5	794.5	1.0
BO	72110	250	1627	4.4	795.0	795.0	796.0	1.0
BP	75060	418	2229	3.2	797.8	797.8	798.8	1.0

[1] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

EIGHTEENMILE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Eighteenmile Creek (Continued)								
BQ	75860	296	1755	4.1	798.3	798.3	799.3	1.0
BR	76780	174	1194	6.0	799.1	799.1	800.1	1.0
BS	77895	147	158	6.2	800.8	800.8	801.7	0.9
BT	78150	340	1471	4.3	801.8	801.8	802.1	0.3
BU	78375	218	1321	4.8	802.2	802.2	802.4	0.2
BV	80455	220	1657	3.8	803.2	803.2	804.0	0.8
BW	81230	150	784	8.1	803.2	803.2	804.0	0.8
BX	81990	139	1318	4.8	804.8	804.8	805.8	1.0
BY	82160	121	1015	6.3	804.9	804.9	805.8	0.9
BZ	83180	120	636	10.0	806.4	806.4	806.6	0.2
CA	84360	112	923	6.9	809.6	809.6	810.6	1.0
CB	85524	87	819	7.8	812.0	812.0	812.7	0.7
CC	86025	80	619	10.3	812.4	812.4	813.4	1.0
CD	86889	140	838	7.3	816.2	816.2	816.2	0.0
CE	87585	84	623	9.8	817.9	817.9	818.1	0.2
CF	88320	84	810	7.5	820.2	820.2	820.4	0.2
CG	89195	88	845	7.2	821.4	821.4	821.9	0.5
CH	90550	141	1200	5.1	823.3	823.3	823.8	0.5
CI	91240	227	1284	4.8	824.2	824.2	824.9	0.7
CJ	93105	90	661	9.2	827.7	827.7	828.7	1.0
CK	93965	117	1016	6.0	830.7	830.7	831.2	0.5
CL	94840	73	757	9.4	831.4	831.4	832.2	0.8
CM	95385	234	1327	4.6	833.2	833.2	834.0	0.8
CN	96625	50	407	12.6	834.9	834.9	835.5	0.6
CO	97575	70	651	7.9	839.5	839.5	840.3	0.8

[1] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

EIGHTEENMILE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Eighteenmile Creek (Continued)								
CP	98190	120	538	9.5	841.0	841.0	841.5	0.5
CQ	99575	200	1244	4.1	845.5	845.5	845.9	0.4
CR	100830	120	683	7.5	847.1	847.1	847.9	0.8
CS	102480	90	694	7.4	850.9	850.9	851.8	0.9
CT	103514	108	616	8.3	855.0	855.0	855.0	0.0
CU	104260	82	595	7.6	856.8	856.8	857.1	0.3
CV	105218	88	593	7.6	859.0	859.0	859.3	0.3
CW	105580	45	339	13.4	859.0	859.0	859.3	0.3
CX	106250	100	1425	3.2	862.4	862.4	862.5	0.1
CY	106470	112	382	11.9	862.4	862.4	862.5	0.1
CZ	107180	55	483	9.4	866.0	866.0	866.3	0.3
DA	107510	168	1076	4.2	867.4	867.4	868.3	0.9
DB	108840	150	521	8.7	870.6	870.6	870.7	0.1
DC	109530	135	630	7.2	873.7	873.7	874.0	0.3
DD	110730	85	524	8.6	877.0	877.0	878.0	1.0
DE	111380	113	613	7.4	880.4	880.4	880.5	0.1
DF	112393	65	391	11.6	883.4	883.4	883.7	0.3
DG	112600	87	496	9.1	885.4	885.4	885.4	0.0
DH	113660	95	522	8.7	889.7	889.7	890.1	0.4
DI	115020	66	440	10.3	894.8	894.8	895.5	0.7
DJ	115875	161	944	4.8	897.4	897.4	898.4	1.0
DK	116430	80	444	10.2	899.1	899.1	899.9	0.8
DL	117340	180	636	7.1	904.6	904.6	904.6	0.0
DM	118580	84	484	9.4	908.7	908.7	909.4	0.7
DN	119090	140	502	9.0	911.9	911.9	911.9	0.0

[1] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

EIGHTEENMILE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Eighteenmile Creek (Continued)								
DO	119960[1]	79	552	8.2	916.2	916.2	916.3	0.1
DP	120730[1]	70	650	7.0	923.4	923.4	923.4	0.0
DQ	121190[1]	91	673	5.3	924.4	924.4	924.4	0.0
DR	122050[1]	200	540	6.6	925.5	925.5	925.5	0.0
DS	123240[1]	106	535	6.6	930.5	930.5	931.2	0.7
DT	123700[1]	89	435	8.2	932.1	932.1	932.5	0.4
DU	124482[1]	125	375	9.5	936.7	936.7	936.7	0.0
DV	125010[1]	80	427	8.3	940.1	940.1	940.5	0.4
DW	125810[1]	78	371	9.6	944.1	944.1	944.2	0.1
DX	126410[1]	117	609	5.8	949.1	949.1	949.1	0.0
DY	127210[1]	80	417	8.5	951.4	951.4	951.4	0.0
DZ	128040[1]	137	594	6.0	956.0	956.0	956.7	0.7
EA	129070[1]	98	418	8.5	961.3	961.3	962.0	0.7
EB	129500[1]	147	452	7.9	965.1	965.1	965.1	0.0
EC	130110[1]	98	291	8.1	969.3	969.3	969.6	0.3
ED	130950[1]	55	269	8.8	975.0	975.0	975.2	0.2
Eighteenmile Creek North Branch								
A	700[2]	27	89	5.7	798.0	792.9[3]	792.9[3]	0.0
B	950[2]	29	86	5.9	798.0	797.2[3]	797.2[3]	0.0
C	1093[2]	34	103	4.9	798.0	797.6[3]	797.6[3]	0.0
D	1970[2]	34	97	5.3	801.0	801.0	801.1	0.1

[1] Feet above confluence with Lake Erie
[2] Feet above confluence with Eighteenmile Creek
[3] Elevation computed without consideration of backwater effects from Eighteenmile Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

EIGHTEENMILE CREEK - EIGHTEENMILE CREEK NORTH BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Eighteenmile Creek South Branch								
A	100[1]	33	100	3.8	798.5	793.9[3]	794.9[3]	1.0
B	635[1]	23	58	6.6	798.5	796.4[3]	796.4[3]	0.0
C	981[1]	27	124	3.1	798.5	797.7[3]	798.3[3]	0.6
D	1765[1]	20	48	7.9	799.3	799.3	799.5	0.2
E	1987[1]	156	648	0.6	804.7	804.7	805.6	0.9
Ellicott Creek								
A	285[2]	140	1684	2.9	570.3	568.0[4]	569.0[4]	1.0
B	870[2]	110	1246	3.9	570.3	568.4[4]	569.3[4]	0.9
C	1420[2]	97	1111	4.4	570.3	568.8[4]	569.6[4]	0.8
D	2460[2]	95	919	5.3	570.3	569.2[4]	570.1[4]	0.9
E	2960[2]	124	1449	3.4	570.3	569.8[4]	570.7[4]	0.9
F	3780[2]	184	2783	1.8	570.4	570.1[4]	571.1[4]	1.0
G	4680[2]	156	1711	2.9	570.4	570.3[4]	571.2[4]	0.9
H	5200[2]	141	1485	3.3	570.4	570.4	571.4	1.0
I	6700[2]	132	1412	3.5	571.0	571.0	571.8	0.8
J	8100[2]	129	1463	3.4	571.5	571.5	572.2	0.7
K	9356[2]	160	1627	3.1	571.7	571.7	572.4	0.7
L	9694[2]	125	1306	3.8	571.8	571.8	572.4	0.6
M	11503[2]	124	1484	3.4	572.1	572.1	572.7	0.6
N	14337[2]	194	1824	2.7	572.5	572.5	573.1	0.6
O	15387[2]	155	1674	3.0	572.7	572.7	573.3	0.6
P	17126[2]	101	1182	4.2	572.9	572.9	573.5	0.6
Q	17647[2]	194	2462	3.8	573.0	573.0	573.7	0.7
R	18135[2]	156	2195	4.3	573.4	573.4	573.8	0.4

[1] Feet above confluence with Eighteenmile Creek
[2] Feet above confluence with Tonawanda Creek
[3] Elevation computed without consideration of backwater effects from Eighteenmile Creek
[4] Elevation computed without consideration of backwater effects from Tonawanda Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

EIGHTEENMILE CREEK SOUTH BRANCH - ELLICOTT CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ellicott Creek (Continued)								
S	20640	180	1467	1.8	573.1	573.1	573.1	0.0
T	29390	299	1515	1.0	574.7	574.7	574.7	0.0
U	37290	231	2304	3.4	577.2	577.2	577.2	0.0
V	41090	235	1788	2.0	582.9	582.9	582.9	0.0
W	54236	220	1829	3.8	594.9	594.9	595.8	0.9
X	58880	676	6117	1.2	599.6	599.6	600.5	0.9
Y	65515	503	4629	1.5	602.7	602.9	603.7	0.8
Z	69608	218	782	9.3	609.1	609.1	609.5	0.4
AA	70312	152	711	10.2	617.9	617.9	618.0	0.1
AB	70549	58	454	16.0	624.8	624.8	624.8	0.0
AC	70907	111	743	9.8	630.8	630.8	630.8	0.0
AD	71069	77	502	14.4	659.3	659.3	659.3	0.0
AE	71251	91	622	11.6	662.6	662.6	662.6	0.0
AF	71468	85	712	10.2	668.0	668.0	668.0	0.0
AG	71942	590	2939	2.5	672.2	672.2	673.0	0.8
AH	72306	409	2482	2.9	672.4	672.4	673.2	0.8
AI	72962	368	2264	3.2	673.2	673.2	674.0	0.8
AJ	73746	336	2384	3.4	674.7	674.7	675.7	1.0
AK	74698	221	1636	4.4	675.8	675.8	676.5	0.7
AL	75555	427	3602	2.0	676.9	676.9	677.7	0.8
AM	77009	110	798	9.0	677.4	677.4	678.4	1.0
AN	77842	220	1347	5.3	680.9	680.9	681.4	0.5
AO	79100	138	1227	5.8	683.3	683.3	684.3	1.0
AP	82051	272	1775	3.8	688.4	688.4	689.2	0.8
AQ	84586	297	2454	2.8	695.1	695.1	695.2	0.1

[1] Feet above confluence with Tonawanda Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

ELLICOTT CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ellicott Creek (Continued)								
AR	87278	102	1175	5.8	696.3	696.3	696.8	0.5
AS	90024	338	2354	2.9	697.9	697.9	698.7	0.8
AT	92506	231	2362	2.9	699.6	699.6	700.5	0.9
AU	93350	120	2014	3.4	699.8	699.8	700.7	0.9
AV	94190	171	1608	4.2	700.0	700.0	701.0	1.0
AW	95785	498	4514	1.5	701.5	701.5	702.3	0.8
AX	96910	672	4724	1.4	701.7	701.7	702.5	0.8
AY	98560	570	1085	6.3	704.0	704.0	704.0	0.0
AZ	99660	463	2074	3.3	707.7	707.7	707.7	0.0
BA	109785	1399	10924	0.6	715.0	715.0	716.0	1.0
BB	119360	1500	7498	0.9	720.4	720.4	721.4	1.0
BC	121190	1565	5119	1.3	720.8	720.8	721.8	1.0
BD	123250	1049	2969	2.2	723.4	723.4	724.1	0.7
BE	124910	884	2676	2.4	725.0	725.0	725.4	0.4
BF	126510	112	1095	5.9	728.6	728.6	729.0	0.4
BG	142160	80	578	9.3	746.5	746.5	747.4	0.9
BH	142385	87	651	8.3	748.1	748.1	748.1	0.0
BI	142770	160	1126	4.8	748.6	748.6	749.2	0.6
BJ	143820	239	1527	3.5	749.5	749.5	750.3	0.8
BK	145660	180	927	5.8	751.4	751.4	752.1	0.7
BL	146700	110	768	6.9	753.7	753.7	754.0	0.3
BM	146850	85	418	12.7	753.7	753.7	754.0	0.3
BN	147580	125	853	6.2	757.2	757.2	757.4	0.2
BO	148990	252	1977	2.7	758.0	758.0	758.8	0.8
BP	149550	220	1299	3.4	758.2	758.2	759.1	0.9

[1] Feet above confluence with Tonawanda Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

ELLICOTT CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ellicott Creek (Continued)								
BQ	150165	160	679	6.6	758.6	758.6	759.4	0.8
BR	151145	91	651	6.9	761.2	761.2	761.7	0.5
BS	151320	206	1116	4.0	762.0	762.0	762.2	0.2
BT	151610	287	1243	3.6	762.4	762.4	762.5	0.1
BU	152810	100	686	6.5	763.3	763.3	764.0	0.7
BV	154535	87	644	7.0	765.9	765.9	766.4	0.5
BW	154705	135	1087	4.1	767.0	767.0	767.5	0.5
BX	156005	293	435	10.3	768.4	768.4	768.5	0.1
BY	157070	94	739	6.1	771.5	771.5	772.2	0.7
BZ	157185	97	627	7.1	771.9	771.9	772.2	0.3
CA	158200	72	557	8.0	773.7	773.7	774.0	0.3
CB	158400	140	1076	4.2	774.8	774.8	774.9	0.1
CC	159260	290	1764	2.5	775.4	775.4	775.8	0.4
CD	160285	285	1067	4.2	775.4	775.4	776.4	1.0
CE	160885	112	582	7.7	777.0	777.0	777.2	0.2
CF	161170	120	688	6.5	778.0	778.0	778.1	0.1
CG	163160	330	721	6.2	783.0	783.0	783.2	0.2
CH	164820	207	806	5.6	788.7	788.7	789.4	0.7
CI	165855	189	807	5.4	791.1	791.1	792.1	1.0
CJ	167580	89	960	4.6	796.4	796.4	796.4	0.0
CK	168865	219	1031	4.2	797.4	797.4	797.8	0.4
CL	170030	155	619	7.1	799.2	799.2	799.7	0.5
CM	170780	121	442	9.9	803.2	803.2	803.2	0.0
CN	171025	240	1662	2.6	805.5	805.5	805.5	0.0
CO	171615	335	1626	2.7	805.5	805.5	805.6	0.1

[1] Feet above confluence with Tonawanda Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

ELLICOTT CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ellicott Creek (Continued)								
CP	172485	117	711	6.2	805.8	805.8	805.8	0.0
CQ	173785	148	895	4.9	807.5	807.5	807.6	0.1
CR	175185	183	1201	3.9	808.7	808.7	808.8	0.1
CS	176140	187	1404	2.9	809.1	809.1	809.4	0.3
CT	178640	250	1454	2.8	809.9	809.9	810.5	0.6
CU	185550	750	3429	1.0	814.6	814.6	815.3	0.7
CV	187265	354	1034	3.4	814.7	814.7	815.7	1.0
CW	188215	160	803	4.4	816.9	816.9	816.9	0.0
CX	188410	190	640	5.5	816.9	816.9	816.9	0.0
CY	188475	178[2]	*	*	816.9	*	*	*
CZ	191375	205[2]	*	*	818.5	*	*	*
DA	193195	329[2]	*	*	820.5	*	*	*
DB	194750	285[2]	*	*	821.4	*	*	*
DC	195835	100[2]	*	*	823.1	*	*	*
DD	196390	86[2]	*	*	823.9	*	*	*
DE	197825	112[2]	*	*	825.8	*	*	*
DF	198445	311[2]	*	*	826.6	*	*	*
DG	199355	343[2]	*	*	827.3	*	*	*
DH	200320	157[2]	*	*	828.4	*	*	*
DI	200685	205[2]	*	*	828.7	*	*	*
DJ	201280	105[2]	*	*	829.7	*	*	*
DK	202200	150[2]	*	*	831.6	*	*	*
DL	202974	84[2]	*	*	833.4	*	*	*

[1] Feet above confluence with Tonawanda Creek
[2] Data extrapolated from FIRM Panel 3602250005C dated February 6, 1991
* Data not available

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

ELLICOTT CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ellicott Creek - North Diversion Channel								
A	1330[1]	151	1489	4.0	573.0	573.0	573.0	0.0
B	6330[1]	163	1761	3.4	574.3	574.3	574.3	0.0
Ellicott Creek - Pfohl Park Diversion								
A	680[1]	209	1076	4.3	575.3	575.3	575.4	0.1
Ellicott Creek - Upper Diversion Channel								
A	700[1]	186	1128	3.8	583.0	583.0	583.0	0.0
B	4700[1]	155	811	5.3	586.2	586.2	586.2	0.0
Fern Brook								
A	120[2]	125	786	0.9	579.4	579.4	580.4	1.0
B	1381[2]	162	1078	0.6	584.5	584.5	585.5	1.0
C	1920[2]	115	831	0.8	584.6	584.6	585.6	1.0
D	2760[2]	147	793	0.8	584.7	584.7	585.7	1.0
E	3000[2]	200	736	0.9	584.8	584.8	585.8	1.0
F	3171[2]	195	913	0.7	584.9	584.9	585.9	1.0
G	3826[2]	62	220	3.0	585.7	585.7	586.7	1.0
H	5660[2]	80	267	2.5	589.7	589.7	590.7	1.0
I	5810[2]	85	335	2.0	591.4	591.4	592.3	0.9
J	6001[2]	119	478	1.4	591.6	591.6	592.5	0.9
K	7060[2]	68	334	2.0	594.3	594.3	595.3	1.0
L	7521[2]	199	923	0.7	594.5	594.5	595.5	1.0

[1] Feet above confluence with Ellicott Creek
[2] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

ELLICOTT CREEK NORTH DIVERSION CHANNEL - ELLICOTT CREEK PFOHL PARK DIVERSION CHANNEL - ELLICOTT CREEK UPPER DIVERSION CHANNEL - FERN BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Fern Brook (Continued)								
M	8125	72	228	2.9	594.6	594.6	595.6	1.0
N	8290	181	772	0.9	597.4	597.4	598.4	1.0
O	8900	163	588	1.1	597.5	597.5	598.5	1.0
P	9201	107	291	0.8	598.5	598.5	599.5	1.0
Q	9351	112	264	0.9	598.5	598.5	599.5	1.0
R	9860	152	614	0.4	598.5	598.5	599.5	1.0
S	10021	128	453	0.5	598.6	598.6	599.6	1.0
Foster Brook								
A	250	19	107	6.6	581.1	579.4[2]	580.4[2]	1.0
B	1079	80	470	1.5	589.0	589.0	589.1	0.1
C	1869	120	441	1.6	590.0	590.0	590.4	0.4
D	3579	110	1069	0.7	609.1	609.1	609.4	0.3
E	4949	104	918	0.8	621.4	621.4	622.3	0.9
F	6449	40	85	8.2	631.1	631.1	631.1	0.0
G	8199	30	81	8.7	668.4	668.4	668.5	0.1
H	9099	98	265	2.7	683.2	683.2	683.2	0.0
I	10159	163	254	2.8	688.1	688.1	688.1	0.0
J	11559	115	128	5.5	696.4	696.4	696.4	0.0
K	13649	66	47	5.1	716.6	716.6	716.6	0.0
L	15149	130	86	2.8	729.8	729.8	729.8	0.0
M	15909	51	44	5.5	737.7	737.7	737.7	0.0
N	17281	16	38	6.3	746.4	746.4	746.5	0.1
O	18546	20	48	5.0	755.7	755.7	755.8	0.1
P	20299	38	39	6.2	779.9	779.9	779.9	0.0
Q	20929	17	31	7.9	787.9	787.9	787.9	0.0

[1] Feet above confluence with Lake Erie
[2] Elevation computed without consideration of backwater effects from Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

FERN BROOK - FOSTER BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Gott Creek								
A	475[1]	53	354	2.8	582.9	582.1[3]	582.3[3]	0.2
B	6018[1]	39	201	4.9	585.0	585.0	585.1	0.1
C	7871[1]	25	112	8.6	587.3	587.3	587.8	0.5
D	11073[1]	100	543	1.9	592.8	592.8	593.4	0.6
E	12098[1]	160	677	1.5	593.2	593.2	594.1	0.9
F	13773[1]	190	844	1.2	594.0	594.0	594.9	0.9
G	14806[1]	115	473	2.1	595.8	595.8	596.6	0.8
H	15831[1]	100	297	3.4	596.9	596.9	597.5	0.6
I	18121[1]	110	472	2.2	600.0	600.0	600.8	0.8
J	20096[1]	110	525	1.9	603.9	603.9	604.1	0.2
K	21520[1]	38	229	3.7	606.4	606.4	607.2	0.8
L	22214[1]	70	306	2.8	607.8	607.8	608.3	0.5
M	23452[1]	109	516	1.6	611.0	611.0	611.0	0.0
N	26679[1]	155	435	2.0	612.0	612.0	612.4	0.4
O	27509[1]	155	429	2.0	612.6	612.6	613.3	0.7
P	33094[1]	135	474	1.1	626.9	626.9	627.6	0.7
Q	33989[1]	130	408	1.3	626.9	626.9	627.9	1.0
R	35012[1]	45	108	4.9	629.0	629.0	629.6	0.6
Gott Creek Tributary								
A	1030[2]	70	228	1.4	620.3	620.3	620.9	0.6
B	1680[2]	78	171	1.9	620.7	620.7	621.4	0.7
C	2305[2]	87	147	2.2	622.5	622.5	623.2	0.7

[1] Feet above confluence with Ransom Creek
[2] Feet above confluence with Gott Creek
[3] Elevation computed without consideration of backwater effects from Ransom Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

GOTT CREEK - GOTT CREEK TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Grannis Creek								
A	81[1]	#	#	#	752.5	751.2[4]	#	#
B	416[1]	#	#	#	752.5	751.7[4]	#	#
C	991[1]	#	#	#	765.1	765.1	#	#
D	1250[1]	#	#	#	769.3	769.3	#	#
E	2020[1]	#	#	#	778.4	778.4	#	#
F	2608[1]	#	#	#	789.2	789.2	#	#
G	2708[1]	#	#	#	791.6	791.6	#	#
H	3050[1]	#	#	#	800.1	800.1	#	#
Gun Creek								
A	175[2]	55	311	1.4	569.1	567.5[5]	568.4[5]	0.9
B	325[2]	63	336	1.2	569.1	567.5[5]	568.3[5]	0.8
C	2875[2]	31	153	2.7	569.1	568.2[5]	568.8[5]	0.6
D	4175[2]	26	74	5.7	570.1	570.1	570.4	0.3
E	5575[2]	62	184	1.5	572.1	572.1	572.4	0.3
F	5782[2]	54	239	1.2	573.5	573.5	574.0	0.5
G	5932[2]	63	226	1.3	573.5	573.5	574.0	0.5
H	7532[2]	50	118	2.4	573.9	573.9	574.5	0.6
Hampton Brook								
A	1700[3]	34	193	9.6	766.8	766.8	767.3	0.5
B	2550[3]	55	336	5.5	770.7	770.7	771.7	1.0
C	4075[3]	50	203	9.1	777.3	777.3	777.3	0.0
D	4635[3]	50	219	8.5	781.6	781.6	781.8	0.2

[1] Feet above confluence with Cattaraugus Creek
[2] Feet above confluence with Niagara River - Tonawanda Channel
[3] Feet above confluence with Eighteenmile Creek
[4] Elevation computed without consideration of backwater effects from Cattaraugus Creek
[5] Elevation computed without consideration of backwater effects from Niagara River - Tonawanda Channel
Floodway not computed

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

GRANNIS CREEK - GUN CREEK - HAMPTON BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Hosmer Brook								
A	2500[1]	48	200	9.2	1319.4	1319.4	1319.4	0.0
B	6150[1]	165	413	4.5	1349.7	1349.7	1349.7	0.0
C	6760[1]	62	271	6.5	1359.0	1359.0	1359.0	0.0
D	9625[1]	57	198	8.9	1378.0	1378.0	1378.6	0.6
E	13555[1]	79	324	5.4	1405.6	1405.6	1406.3	0.7
F	13805[1]	79	282	5.8	1407.7	1407.7	1407.7	0.0
Hunter Creek								
A	684[2]	114	451	8.1	898.3	898.3	898.4	0.1
B	1650[2]	121	413	8.6	903.3	903.3	903.3	0.0
C	2450[2]	95	515	6.6	911.0	911.0	911.0	0.0
Ledge Creek								
A	3000[3]	213	296	3.3	604.4	604.4	605.0	0.6
B	4800[3]	389	764	1.3	606.6	606.6	607.4	0.8
C	6200[3]	119	378	2.6	613.3	613.3	614.3	1.0
D	7500[3]	117	437	2.2	617.7	617.7	617.9	0.2
E	8800[3]	142	330	2.9	619.6	619.6	620.3	0.7
F	10000[3]	106	253	3.8	624.7	624.7	624.8	0.1
G	11100[3]	363	491	2.0	626.6	626.6	627.1	0.5
H	11985[3]	188	498	1.9	631.1	631.1	631.8	0.7
Little Buffalo Creek								
A	610[4]	123	825	4.4	691.6	691.6	692.3	0.7
B	2000[4]	338	1252	2.9	693.1	693.1	693.5	0.4
C	3780[4]	183	798	4.4	695.9	695.9	696.7	0.8

[1] Feet above confluence with Cattaraugus Creek
[2] Feet above confluence with Buffalo Creek
[3] Feet above confluence with Murder Creek
[4] Feet above confluence with Cayuga Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

HOSMER BROOK - HUNTER CREEK - LEDGE CREEK - LITTLE BUFFALO CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Little Buffalo Creek (Continued)								
D	5490[1]	200	681	5.2	698.0	698.0	699.0	1.0
E	7000[1]	361	1830	1.9	702.3	702.3	702.3	0.0
F	8590[1]	449	800	4.4	705.2	705.2	705.4	0.2
G	10130[1]	499	2131	1.7	710.7	710.7	711.6	0.9
H	11688[1]	151	1253	2.7	714.7	714.7	714.9	0.2
I	12970[1]	275	1192	2.8	715.9	715.9	716.4	0.5
J	14500[1]	172	846	4.0	720.0	720.0	720.1	0.1
K	16420[1]	198	889	3.8	722.8	722.8	723.5	0.7
L	60[2]	210	1563	2.0	744.1	744.1	745.0	0.9
M	5680[2]	75	496	6.4	748.9	748.9	749.5	0.6
N	6840[2]	135	893	3.5	751.2	751.2	751.9	0.7
O	9300[2]	95	566	5.6	756.6	756.6	757.4	0.8
P	12180[2]	70	437	7.2	765.9	765.9	766.8	0.9
Q	14345[2]	145	767	4.0	770.8	770.8	771.6	0.8
R	15825[2]	220	840	3.6	775.9	775.9	776.8	0.9
S	600[3]	55	260	11.5	818.8	818.8	818.8	0.0
T	2940[3]	56	386	7.5	832.2	832.2	832.2	0.0
U	5380[3]	64	387	5.9	841.8	841.8	841.8	0.0
V	6530[3]	130	528	4.7	845.4	845.4	846.2	0.8
W	7900[3]	77	444	5.2	856.9	856.9	856.9	0.0

[1] Feet above confluence with Cayuga Creek
[2] Feet above Hall Road
[3] Feet above limit of detailed study (Limit of detailed study is approximately 2,920 feet downstream of Two Rod Road)

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

LITTLE BUFFALO CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Little Buffalo Creek Tributary								
A	0[1]	28	62	4.6	818.8	815.3[3]	816.3[3]	1.0
B	1330[1]	27	106	2.7	844.7	844.7	844.7	0.0
C	2180[1]	100	125	2.3	848.6	848.6	848.7	0.1
Little Sister Creek								
A	160[2]	75	242	9.8	579.1	576.9[4]	577.4[4]	0.5
B	190[2]	92	431	5.5	579.1	577.9[4]	578.9[4]	1.0
C	330[2]	93	436	5.5	579.1	579.0[4]	579.6[4]	0.6
D	850[2]	130	780	3.1	580.1	580.1	580.9	0.8
E	1230[2]	160	829	2.9	580.3	580.3	581.3	1.0
F	1860[2]	80	478	5.0	581.6	581.6	582.4	0.8
G	2090[2]	100	663	3.6	583.1	583.1	583.7	0.6
H	2610[2]	300	1912	1.2	583.3	583.3	584.3	1.0
I	3060[2]	352	2053	1.2	583.4	583.4	584.4	1.0
J	5990[2]	260	914	2.6	585.5	585.5	586.5	1.0
K	6690[2]	294	1711	1.4	589.3	589.3	590.3	1.0
L	7080[2]	110	454	5.2	589.5	589.5	590.4	0.9
M	7390[2]	78	330	7.2	592.0	592.0	593.0	1.0
N	8130[2]	101	497	4.8	596.1	596.1	597.1	1.0
O	8450[2]	95	495	4.8	597.3	597.3	598.1	0.8
P	8960[2]	172	1250	1.9	602.8	602.8	603.0	0.2
Q	9190[2]	200	1138	2.1	602.9	602.9	603.2	0.3
R	9870[2]	100	539	3.5	603.4	603.4	604.3	0.9
S	10400[2]	128	479	4.0	604.8	604.8	605.8	1.0
T	11840[2]	130	635	3.0	610.7	610.7	611.6	0.9
U	12490[2]	185	875	2.2	611.8	611.8	612.8	1.0

[1] Feet above confluence with Little Buffalo Creek
[2] Feet above confluence with Lake Erie
[3] Elevation computed without consideration of backwater effects from Little Buffalo Creek
[4] Elevation computed without consideration of backwater effects from Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

LITTLE BUFFALO CREEK TRIBUTARY - LITTLE SISTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Little Sister Creek (Continued)								
V	12960[1]	162	866	2.2	612.4	612.4	613.4	1.0
W	13150[1]	333	1955	1.0	614.7	614.7	615.7	1.0
X	14210[1]	204	1088	1.8	615.0	615.0	615.9	0.9
Y	16130[1]	140	439	4.1	617.6	617.6	618.5	0.9
Z	16830[1]	141	603	3.0	621.3	621.3	622.2	0.9
AA	18940[1]	200	914	2.0	625.6	625.6	626.4	0.8
AB	21310[1]	120	292	6.2	634.0	634.0	634.2	0.2
AC	22550[1]	122	570	2.8	639.8	639.8	640.8	1.0
AD	22710[1]	190	755	2.1	642.5	642.5	643.5	1.0
Little Sister Creek Tributary 2								
A	30[2]	120	258	2.8	603.0	599.7[3]	600.7[3]	1.0
B	650[2]	65	164	4.5	604.6	604.6	605.6	1.0
C	2190[2]	105	374	2.0	610.5	610.5	611.5	1.0
D	3010[2]	117	532	1.4	614.3	614.3	615.3	1.0
E	4110[2]	118	443	1.6	615.4	615.4	616.4	1.0
F	4940[2]	80	156	4.7	618.4	618.4	619.2	0.8
G	6530[2]	147	417	1.8	627.5	627.5	628.1	0.6
H	8080[2]	160	239	3.1	635.0	635.0	635.9	0.9
I	9100[2]	90	371	2.0	641.9	641.9	642.0	0.1
J	9810[2]	41	126	5.8	643.8	643.8	644.8	1.0
K	10320[2]	36	129	5.7	650.3	650.3	650.8	0.5
L	10700[2]	54	196	3.7	652.2	652.2	653.2	1.0
M	11000[2]	58	211	3.5	653.6	653.6	654.3	0.7
N	11370[2]	120	371	2.0	654.5	654.5	655.5	1.0

[1] Feet above confluence with Lake Erie
[2] Feet above confluence with Little Sister Creek
[3] Elevation computed without consideration of backwater effects from Little Sister Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

LITTLE SISTER CREEK -
LITTLE SISTER CREEK TRIBUTARY 2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Little Sister Creek Tributary 2 (Continued)								
O	12080[1]	60	176	4.2	655.9	655.9	656.8	0.9
P	12485[1]	18	95	2.5	662.3	662.3	662.3	0.0
Q	12971[1]	58	33	7.2	667.2	667.2	667.8	0.6
Muddy Creek								
A	1160[2]	190	930	3.3	582.9	582.9	582.9	0.0
B	1730[2]	130	590	5.3	583.2	583.2	583.2	0.0
C	2220[2]	70	450	6.9	583.8	583.8	584.2	0.4
D	2820[2]	220	900	3.4	585.1	585.1	585.7	0.6
E	3150[2]	90	550	5.7	585.6	585.6	586.2	0.6
F	3920[2]	140	800	3.9	586.6	586.6	587.5	0.9
G	4340[2]	90	540	5.8	586.9	586.9	587.8	0.9
H	5020[2]	190	1080	2.9	587.7	587.7	588.7	1.0
I	5680[2]	500	2190	1.4	588.0	588.0	589.0	1.0
J	6180[2]	430	1250	2.5	588.2	588.2	589.2	1.0
K	7120[2]	300	1690	1.8	588.7	588.7	589.7	1.0
L	7680[2]	610	3370	0.9	588.7	589.0	590.0	1.0
M	8110[2]	370	2110	1.5	589.0	589.0	590.0	1.0
N	8540[2]	290	1480	2.1	589.0	589.0	590.0	1.0
O	8960[2]	290	1160	2.7	589.2	589.2	590.2	1.0
P	9710[2]	200	860	3.6	590.0	590.0	590.8	0.8
Q	10310[2]	180	730	4.2	590.7	590.7	591.5	0.8

[1] Feet above confluence with Little Sister Creek
[2] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

LITTLE SISTER CREEK TRIBUTARY 2 - MUDDY CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Murder Creek								
A	4900[1]	249	1064	3.4	609.0	609.0	609.5	0.5
B	6300[1]	983	2489	1.5	610.6	610.6	611.4	0.8
C	7900[1]	211	693	5.2	612.8	612.8	613.0	0.2
D	9000[1]	445	1892	1.9	616.2	616.2	617.1	0.9
E	10900[1]	210	1283	2.8	618.7	618.7	619.7	1.0
F	12300[1]	336	1760	2.1	621.5	621.5	622.3	0.8
G	14445[1]	109	594	5.0	626.2	626.2	627.0	0.8
H	16056[1]	77	440	6.8	631.0	631.0	631.9	0.9
I	18406[1]	60	313	9.5	639.3	639.3	640.2	0.9
J	23186[1]	151	600	5.0	649.3	649.3	650.2	0.9
K	25186[1]	807	3977	0.8	652.8	652.8	653.8	1.0
L	26946[1]	179	822	3.6	657.7	657.7	658.5	0.8
M	28346[1]	300	1249	2.4	662.2	662.2	663.1	0.9
N	29566[1]	91	649	4.6	671.2	671.2	671.7	0.5
O	30336[1]	78	325	9.2	675.7	675.7	675.7	0.0
P	30956[1]	70	532	5.6	679.5	679.5	679.6	0.1
Q	31861[1]	48	323	9.3	682.8	682.8	683.2	0.4
R	37135[1]	100	667	4.0	805.7	805.7	806.6	0.9
S	37675[1]	132	1108	2.4	806.3	806.3	807.0	0.7
T	40131[1]	365	2317	1.1	807.6	807.6	808.5	0.9
U	43721[1]	130	844	3.2	809.1	809.1	810.0	0.9
Pike Creek								
A	40[2]	33	246	7.0	579.7	579.4[3]	580.3[3]	0.9
B	150[2]	60	249	6.9	579.7	579.7	580.7	1.0
C	370[2]	53	169	10.2	586.6	586.6	586.6	0.0

[1] Feet above mouth
[2] Feet above confluence with Lake Erie
[3] Elevation computed without consideration of backwater effects from Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

MURDER CREEK - PIKE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pike Creek (Continued)								
D	690	98	843	2.0	594.2	594.2	594.4	0.2
E	1180	70	314	5.5	594.2	594.2	594.4	0.2
F	1430	120	709	2.4	598.7	598.7	598.7	0.0
G	2010	35	147	11.7	602.7	602.7	602.7	0.0
H	2230	59	179	9.6	608.4	608.4	608.4	0.0
I	3070	76	364	4.7	614.1	614.1	614.8	0.7
J	3870	110	250	6.9	618.6	618.6	618.8	0.2
K	4150	108	270	6.4	623.2	623.2	623.8	0.6
L	5240	50	237	7.3	632.6	632.6	633.6	1.0
M	5530	33	310	5.5	639.5	639.5	639.8	0.3
N	5760	88	718	2.4	641.3	641.3	641.4	0.1
O	5950	88	632	2.7	641.3	641.3	641.5	0.2
P	6670	85	347	5.0	641.5	641.5	642.0	0.5
Q	7300	53	169	10.1	646.7	646.7	646.8	0.1
R	7700	60	647	2.7	657.1	657.1	657.1	0.0
S	8110	60	521	3.3	657.3	657.3	657.6	0.3
T	8720	128	786	2.2	657.4	657.4	658.4	1.0
U	9100	90	305	5.6	658.2	658.2	658.9	0.7
V	10600	70	391	4.4	669.9	669.9	670.7	0.8
W	12720	90	482	3.6	680.6	680.6	681.6	1.0
X	15000	270	1306	1.3	684.0	684.0	684.9	0.9
Y	16030	105	176	6.3	687.1	687.1	687.6	0.5
Z	16470	70	370	3.0	693.5	693.5	694.5	1.0
AA	17030	171	2012	0.5	703.4	703.4	704.4	1.0
AB	17190	161	1614	0.7	703.4	703.4	704.4	1.0

[1] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

PIKE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Plum Bottom Creek								
A	1165[1]	22	214	8.0	660.4	660.4	660.4	0.0
B	1831[1]	25	205	6.4	662.5	662.5	663.2	0.7
C	2411[1]	76	399	3.5	667.2	667.2	667.2	0.0
D	2861[1]	26	214	6.2	669.2	669.2	669.2	0.0
E	3231[1]	125	627	3.8	669.6	669.6	669.7	0.1
F	4071[1]	52	277	4.8	676.0	676.0	676.0	0.0
G	8150[1]	101	532	1.2	685.5	685.5	685.6	0.1
H	9650[1]	43	152	4.1	687.2	687.2	687.4	0.2
I	11050[1]	71	196	2.3	695.1	695.1	695.6	0.5
J	11970[1]	85	340	1.3	701.1	701.1	701.4	0.3
Plum Bottom Creek North Branch								
A	700[2]	67	317	2.7	682.8	682.8	683.8	1.0
B	2676[2]	222	2141	0.4	694.3	694.3	694.5	0.2
Pond Brook								
A	1415[3]	40	131	6.1	722.1	722.1	722.4	0.3
B	3670[3]	40	124	6.5	738.1	738.1	738.2	0.1
C	4810[3]	22	87	9.2	743.2	743.2	743.8	0.6
D	5760[3]	20	92	8.7	750.8	750.8	751.8	1.0
E	7700[3]	95	134	6.0	761.9	761.9	761.9	0.0
F	8680[3]	38	179	4.5	766.9	766.9	767.7	0.8
G	10585[3]	63	116	6.9	777.4	777.4	777.4	0.0
H	12245[3]	84	455	1.6	790.1	790.1	790.1	0.0
I	13360[3]	32	107	6.7	791.9	791.9	792.3	0.4

[1] Feet above mouth
[2] Feet above confluence with Plum Bottom Creek
[3] Feet above confluence with Buffalo Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

PLUM BOTTOM CREEK - PLUM BOTTOM CREEK NORTH BRANCH - POND BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Pond Brook (Continued)								
J	14460[1]	38	157	4.6	797.3	797.3	797.4	0.1
K	15790[1]	24	74	9.7	807.0	807.0	807.1	0.1
Ransom Creek								
A	43[2]	967	7766	0.5	578.9	578.9	579.4	0.5
B	1306[2]	819	3031	1.3	578.9	578.9	579.4	0.5
C	4804[2]	644	3291	1.2	579.1	579.1	579.7	0.6
D	8897[2]	731	4625	1.1	579.3	579.3	579.9	0.6
E	10592[2]	707	4226	1.2	579.5	579.5	580.2	0.7
F	13607[2]	1111	6397	0.8	579.9	579.9	580.7	0.8
G	13968[2]	1093	4206	1.2	580.1	580.1	581.0	0.9
H	15163[2]	1041	6138	0.8	580.3	580.3	581.3	1.0
I	15537[2]	506	4208	1.2	580.4	580.4	581.4	1.0
J	16508[2]	600	3683	1.4	580.4	580.4	581.4	1.0
K	18008[2]	829	3841	1.3	580.6	580.6	581.6	1.0
L	18594[2]	1269	4181	1.2	580.7	580.7	581.7	1.0
M	18790[2]	1196	5261	1.0	580.8	580.8	581.8	1.0
N	19271[2]	1037	6132	0.6	580.8	580.8	581.8	1.0
O	19736[2]	847	3989	0.7	580.8	580.8	581.8	1.0
P	20243[2]	920	3029	0.9	580.8	580.8	581.8	1.0
Q	20907[2]	824	2450	1.1	580.9	580.9	581.9	1.0
R	21347[2]	704	2454	1.1	581.0	581.0	581.9	0.9
S	21917[2]	437	2296	1.1	581.0	581.0	582.0	1.0
T	23375[2]	324	1769	1.5	582.4	582.4	583.1	0.7
U	24476[2]	592	2688	1.0	582.7	582.7	583.4	0.7

[1] Feet above confluence with Buffalo Creek
[2] Feet above confluence with Tonawanda Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

POND BROOK - RANSOM CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ransom Creek (Continued)								
V	24823	646	2644	1.0	582.9	582.9	583.5	0.6
W	26070	525	2240	0.7	583.0	583.0	583.7	0.7
X	27258	311	698	2.3	582.9	582.9	583.9	1.0
Y	28351	273	765	2.1	584.4	584.4	585.2	0.8
Z	29107	158	435	3.7	585.2	585.2	585.9	0.7
AA	29344	207	768	2.1	586.9	586.9	587.0	0.1
AB	30305	340	1124	1.5	587.1	587.1	587.5	0.4
AC	30515	150	913	1.7	587.8	587.8	588.8	1.0
AD	31259	376	1877	0.8	588.0	588.0	589.0	1.0
AE	32113	272	1198	1.3	588.2	588.2	589.2	1.0
AF	33447	152	538	2.9	589.2	589.2	590.1	0.9
AG	34673	105	581	2.7	593.3	593.3	594.0	0.7
AH	34963	72	451	3.4	595.5	595.5	595.9	0.4
AI	35794	150	727	2.1	596.1	596.1	596.5	0.4
AJ	37316	176	792	1.9	596.6	596.6	597.3	0.7
AK	38538	42	304	5.1	597.2	597.2	598.2	1.0
AL	39260	101	574	2.7	598.7	598.7	599.7	1.0
AM	40509	288	1375	1.1	599.7	599.7	600.6	0.9
AN	41751	281	800	1.9	600.4	600.4	601.3	0.9
AO	42574	189	846	1.8	601.5	601.5	602.1	0.6
AP	43507	180	729	2.1	602.5	602.5	603.0	0.5
AQ	44026	279	900	1.7	603.2	603.2	603.7	0.5
AR	44253	225	944	1.6	605.1	605.1	605.7	0.6
AS	45120	168	746	2.1	605.4	605.4	606.1	0.7
AT	45987	178	673	2.3	606.6	606.6	607.3	0.7

[1] Feet above confluence with Tonawanda Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

RANSOM CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ransom Creek (Continued)								
AU	46848	83	412	3.7	608.6	608.6	609.2	0.6
AV	47892	176	696	2.2	610.8	610.8	611.4	0.6
AW	48110	373	1737	0.9	611.5	611.5	612.4	0.9
AX	48787	213	923	1.7	611.8	611.8	612.6	0.8
AY	49742	68	369	4.2	613.1	613.1	614.0	0.9
AZ	51085	140	789	2.0	616.2	616.2	617.2	1.0
BA	51268	121	601	2.6	616.4	616.4	617.4	1.0
BB	51667	208	931	1.7	616.6	616.6	617.6	1.0
BC	51970	120	601	2.6	617.4	617.4	618.0	0.6
BD	52719	194	983	1.6	617.5	617.5	618.5	1.0
BE	53427	158	315	4.9	621.2	621.2	621.2	0.0
BF	54157	83	331	4.7	624.8	624.8	625.2	0.4
BG	54525	107	405	3.8	626.1	626.1	626.6	0.5
BH	54911	195	866	1.8	627.3	627.3	627.9	0.6
BI	55364	196	642	2.4	627.6	627.6	628.6	1.0
BJ	55876	66	241	6.3	629.3	629.3	629.3	0.0
BK	56082	30	255	5.9	631.3	631.3	632.0	0.7
BL	56902	103	546	2.8	632.9	632.9	633.7	0.8
BM	57166	174	862	1.8	633.2	633.2	634.0	0.8
BN	58032	144	571	2.6	634.5	634.5	635.1	0.6
BO	58751	90	439	3.4	636.5	636.5	636.6	0.1
BP	59485	79	439	3.4	638.3	638.3	638.6	0.3
BQ	59650	72	503	3.0	641.1	641.1	641.2	0.1
BR	60327	200	1229	1.2	641.4	641.4	641.7	0.3
BS	61825	230	801	1.9	642.0	642.0	642.4	0.4

[1] Feet above confluence with Tonawanda Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK
(ALL JURISDICTIONS)

FLOODWAY DATA

RANSOM CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Ransom Creek (Continued)								
BT	62593[1]	252	881	1.7	643.0	643.0	643.4	0.4
BU	62694[1]	259	896	1.7	643.6	643.6	644.0	0.4
BV	63783[1]	230	779	1.9	645.0	645.0	645.4	0.4
BW	64540[1]	209	653	2.3	646.5	646.5	646.8	0.3
BX	65977[1]	155	585	2.6	648.7	648.7	648.8	0.1
BY	67196[1]	298	668	2.3	650.0	650.0	650.2	0.2
BZ	67379[1]	258	815	3.3	652.0	652.0	652.5	0.5
Reisch Creek								
A	100[2]	41	114	3.4	588.6	588.6	589.6	1.0
B	1370[2]	29	155	2.5	612.5	612.5	612.6	0.1
C	2650[2]	135	158	2.5	624.3	624.3	624.4	0.1
D	3800[2]	20	45	8.6	631.5	631.5	631.5	0.0
E	5520[2]	22	47	8.4	650.6	650.6	650.6	0.0
F	6880[2]	19	37	7.9	669.0	669.0	669.0	0.0
G	7815[2]	35	206	1.2	680.2	680.2	681.0	0.8
H	8400[2]	24	140	1.7	680.2	680.2	681.2	1.0
Rush Creek								
A	12537[3]	85	1025	1.9	627.0	627.0	627.6	0.6
B	13330[3]	51	647	3.0	635.5	635.5	635.5	0.0
C	14390[3]	44	170	11.2	637.6	637.6	637.6	0.0
D	14700[3]	46	446	4.3	647.7	647.7	647.8	0.1
E	16385[3]	33	156	12.3	649.5	649.5	649.5	0.0
F	16740[3]	45	382	5.0	654.0	654.0	654.0	0.0

[1] Feet above confluence with Tonawanda Creek
[2] Feet above confluence with Little Sister Creek
[3] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

RANSOM CREEK - REISCH CREEK - RUSH CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Rush Creek (Continued)								
G	17310	60	388	4.9	654.3	654.3	654.5	0.2
H	18240	59	410	4.7	655.7	655.7	656.2	0.5
I	19035	84	262	7.3	658.1	658.1	658.1	0.0
J	20660	65	339	5.6	664.9	664.9	665.8	0.9
K	21257	80	274	7.0	667.9	667.9	668.5	0.6
L	23050	45	187	7.8	678.2	678.2	678.5	0.3
M	24312	48	237	6.1	683.8	683.8	684.5	0.7
N	24740	37	284	5.1	687.6	687.6	688.1	0.5
O	26570	50	174	8.4	691.4	691.4	691.7	0.3
P	30980	78	356	2.5	704.3	704.3	705.3	1.0
Q	33640	43	104	8.5	715.9	715.9	715.9	0.0
R	34186	100	637	1.4	725.0	725.0	725.0	0.0
S	34796	25	148	6.0	725.2	725.2	725.3	0.1
T	35610	49	125	7.1	727.9	727.9	728.4	0.5
U	38260	40	110	8.0	750.5	750.5	751.0	0.5
V	39090	63	180	4.9	755.8	755.8	756.6	0.8
W	39255	77	335	2.6	759.5	759.5	759.6	0.1
X	41375	27	86	10.2	776.4	776.4	776.4	0.0
Y	41570	52	582	1.5	788.3	788.3	789.3	1.0
Z	41990	120	1738	0.5	795.7	795.7	796.7	1.0
AA	42580	98	623	1.4	795.7	795.7	796.7	1.0
AB	42802	88	923	1.0	803.7	803.7	804.7	1.0
AC	43570	46	145	6.1	809.4	809.4	809.6	0.2
AD	44460	53	249	3.5	824.2	824.2	824.7	0.5
AE	45215	76	457	1.9	838.8	838.8	839.8	1.0
AF	46180	80	164	5.4	840.5	840.5	841.5	1.0

[1] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

RUSH CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Scajaquada Creek								
A	36	104	1026	5.9	578.4	578.4	578.6	0.2
B	160	90	982	6.2	578.5	578.5	578.8	0.3
C	232	144	1380	4.4	578.8	578.8	579.1	0.3
D	305	116	1343	4.5	579.2	579.2	579.3	0.1
E	541	84	772	7.9	579.2	579.2	579.2	0.0
F	590	80	781	7.8	579.2	579.2	579.2	0.0
G	654	71	771	7.9	579.9	579.9	580.6	0.7
H	733	68	844	7.2	580.9	580.9	581.4	0.5
I	840	67	1235	4.9	584.2	584.2	584.6	0.4
J	1002	83	1284	4.8	584.3	584.3	584.9	0.6
K	1165	166	1444	4.2	584.4	584.4	585.0	0.6
L	1287	217	2354	2.6	586.4	586.4	587.3	0.9
M	1456	158	2064	3.0	586.6	586.6	587.5	0.9
N	1639	139	1907	3.2	586.7	586.7	587.6	0.9
O	1769	180	2559	2.4	586.8	586.8	587.7	0.9
P	1969	153	2148	2.8	586.8	586.8	587.8	1.0
Q	2159	93	1276	4.8	586.8	586.8	587.7	0.9
R	2335	71	1031	6.7	587.5	587.5	588.3	0.8
S	2499	147	2467	2.5	590.4	590.4	591.3	0.9
T	2763	86	1722	3.5	590.4	590.4	591.3	0.9
U	3225	102	1815	3.4	590.5	590.5	591.4	0.9
V	4152	126	2100	2.9	590.7	590.7	591.6	0.9
W	4546	168	2379	2.6	590.8	590.8	591.8	1.0
X	4780	186	2609	2.3	591.0	591.0	591.9	0.9
Y	5054	226	3470	1.8	591.2	591.2	592.2	1.0
Z	5422	290	4380	1.4	591.3	591.3	592.3	1.0

[1] Feet above confluence with Black Rock Canal

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SCAJAQUADA CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Scajaquada Creek (Continued)								
AA	5543	310	4642	1.3	591.3	591.3	592.3	1.0
AB	6265	241	2694	2.3	591.3	591.3	592.3	1.0
AC	6666	307	3644	1.7	591.4	591.4	592.4	1.0
AD	7054	319	3203	1.9	591.4	591.4	592.4	1.0
AE	7503	392	4756	1.3	591.5	591.5	592.5	1.0
AF	7854	269	3269	1.9	591.5	591.5	592.5	1.0
AG	8167	203	3039	2.0	591.6	591.6	592.6	1.0
AH	8429	222	2903	2.1	591.8	591.8	592.7	0.9
AI	8967	295	3578	2.0	591.8	591.8	592.8	1.0
AJ	9121	265	3877	1.6	592.0	592.0	593.0	1.0
AK	9332	299	5754	1.1	592.1	592.1	593.1	1.0
AL	10066	608	14928	0.4	592.1	592.1	593.1	1.0
AM	10921	455	10330	0.6	592.1	592.1	593.1	1.0
AN	11835	487	5888	1.0	592.1	592.1	593.1	1.0
AO	12017	553	6112	1.0	592.1	592.1	593.1	1.0
AP	12272	595	7177	0.9	592.1	592.1	593.1	1.0
AQ	12734	379	4260	1.4	592.1	592.1	593.1	1.0
AR	12989	333	3886	1.6	592.2	592.2	593.2	1.0
AS	13237	296	4493	1.4	592.3	592.2	593.2	1.0
AT	13600	347	3558	1.7	592.3	592.2	593.2	1.0
AU	13867	319	3669	1.7	592.3	592.3	593.3	1.0
AV	14174	249	2586	2.4	592.4	592.4	593.4	1.0
AW	14760	219	1186	5.1	592.5	592.5	593.5	1.0
AX	15255	72	531	11.5	592.5	592.5	593.2	0.7
AY	15449	69	693	8.8	596.3	596.3	597.3	1.0

[1] Feet above confluence with Black Rock Canal

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SCAJAQUADA CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Scajaquada Creek (Continued)								
AZ	15666[1]	82	499	12.2	596.8	596.8	597.4	0.6
BA	16170[1]	54	408	15.0	611.3	611.3	611.4	0.1
BB	47890[1]	77	603	3.6	650.2	650.2	650.2	0.0
BC	49843[1]	92	653	3.4	651.9	651.9	652.0	0.1
BD	53064[1]	67	479	4.6	654.9	654.9	655.3	0.4
BE	57702[1]	71	383	3.4	660.4	660.4	660.5	0.1
BF	60964[1]	57	377	3.1	662.6	662.6	663.1	0.5
BG	62836[1]	30	170	6.1	666.5	666.5	666.7	0.2
BH	69493[1]	41	172	3.7	679.3	679.3	679.4	0.1
BI	73420[1]	31	156	3.0	693.6	693.6	693.6	0.0
BJ	74860[1]	91	383	1.2	696.6	696.6	697.5	0.9
BK	76360[1]	70	254	1.8	700.1	700.1	701.1	1.0
BL	77950[1]	20	78	3.7	704.2	704.2	704.9	0.7
BM	79620[1]	25	68	4.2	708.6	708.6	709.4	0.8
Scajaquada Creek North Branch								
A	1015[2]	29	99	4.1	668.1	668.1	668.2	0.1
B	2087[2]	12	42	9.8	670.9	670.9	670.9	0.0
Scajaquada Creek Tributary T-1								
A	3928[2]	*	*	*	646.7	*	*	*

[1] Feet above confluence with Black Rock Canal
[2] Feet above confluence with Scajaquada Creek
* Data not available

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SCAJAQUADA CREEK - SCAJAQUADA CREEK NORTH BRANCH - SCAJAQUADA CREEK TRIBUTARY T-1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Slate Bottom Creek								
A	154	75	780	3.5	599.5	598.6[2]	599.3[2]	0.7
B	521	40	419	6.5	599.6	599.6	600.2	0.6
C	821	58	678	4.0	600.3	600.3	600.9	0.6
D	1086	71	749	3.6	600.5	600.5	601.1	0.6
E	1578	59	647	4.2	600.7	600.7	601.4	0.7
F	1995	28	343	7.9	600.6	600.6	601.2	0.6
G	3314	24	299	9.1	605.9	605.9	605.9	0.0
H	3508	55	580	4.7	607.3	607.3	607.3	0.0
I	3939	48	491	5.5	607.5	607.5	607.7	0.2
J	4853	43	469	5.8	608.5	608.5	609.1	0.6
K	5297	55	611	3.4	609.3	609.3	609.9	0.6
L	6135	64	470	4.4	609.5	609.5	610.3	0.8
M	6750	53	336	6.2	610.8	610.8	611.7	0.9
N	7090	51	303	6.9	611.7	611.7	612.7	1.0
O	7342	33	214	9.8	612.5	612.5	613.5	1.0
P	7920	42	271	7.7	618.3	618.3	619.2	0.9
Q	8652	48	287	7.3	623.1	623.1	623.2	0.1
R	9242	46	303	6.9	626.1	626.1	626.2	0.1
S	9955	36	188	11.1	630.4	630.4	630.7	0.3
T	10567	36	228	9.2	636.5	636.5	636.9	0.4
U	11022	74	463	4.5	638.7	638.7	639.2	0.5
V	11608	61	209	10.0	641.0	641.0	641.0	0.0
W	11992	39	199	10.5	645.7	645.7	646.0	0.3
X	12250	37	181	8.0	648.4	648.4	648.5	0.1
Y	13794	46	254	5.7	655.3	655.3	655.5	0.2
Z	15157	44	268	5.4	658.9	658.9	659.1	0.2

[1] Feet above confluence with Cayuga Creek
[2] Elevation computed without consideration of backwater effects from Cayuga Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SLATE BOTTOM CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Slate Bottom Creek (Continued)								
AA	15485	55	365	4.0	660.2	660.2	660.4	0.2
AB	16446	40	269	5.4	661.4	661.4	661.7	0.3
AC	17498	47	332	4.4	663.2	663.2	663.5	0.3
AD	17785	55	354	4.1	663.8	663.8	664.1	0.3
AE	18430	58	282	5.1	664.9	664.9	665.1	0.2
AF	18856	62	305	4.8	666.1	666.1	666.2	0.1
AG	19087	67	334	4.3	666.8	666.8	666.8	0.0
AH	19204	71	345	3.0	667.0	667.0	667.2	0.2
AI	19419	107	487	2.2	668.1	668.1	668.2	0.1
AJ	20115	39	171	6.2	668.6	668.6	668.6	0.0
AK	20333	92	398	2.6	669.3	669.3	669.5	0.2
AL	20539	64	293	3.6	670.7	670.7	670.9	0.2
AM	21483	84	518	2.0	671.4	671.4	671.6	0.2
AN	22295	35	190	5.5	671.7	671.7	671.9	0.2
AO	22382	31	135	7.8	672.5	672.5	672.5	0.0
AP	22671	40	190	5.5	674.2	674.2	674.4	0.2
AQ	23223	34	187	5.6	675.4	675.4	676.1	0.7
AR	24217	87	336	3.1	678.3	678.3	678.6	0.3
AS	25582	74	352	3.0	679.8	679.8	680.6	0.8
AT	25809	102	606	1.7	680.0	680.0	681.0	1.0
AU	26097	49	261	3.9	680.0	680.0	681.0	1.0
AV	26334	78	397	2.6	681.9	681.9	682.7	0.8
AW	26890	242	1141	0.9	682.1	682.1	682.9	0.8
AX	28047	90	314	2.7	682.3	682.3	683.0	0.7
AY	29413	73	273	3.2	684.8	684.8	685.5	0.7

[1] Feet above confluence with Cayuga Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SLATE BOTTOM CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Slate Bottom Creek (Continued)								
AZ	29977[1]	78	323	2.7	685.4	685.4	686.2	0.8
BA	30826[1]	54	227	2.9	686.3	686.3	687.2	0.9
BB	32137[1]	88	298	2.2	688.1	688.1	688.7	0.6
BC	32367[1]	41	161	4.0	688.3	688.3	688.9	0.6
BD	33391[1]	167	371	1.8	690.5	690.5	690.7	0.2
BE	34756[1]	164	311	2.1	692.5	692.5	692.5	0.0
BF	36132[1]	133	263	2.5	695.1	695.1	695.2	0.1
BG	37292[1]	51	150	4.3	698.1	698.1	698.3	0.2
BH	37666[1]	23	81	8.0	699.2	699.2	699.6	0.4
BI	38078[1]	45	154	4.2	702.1	702.1	702.3	0.2
BJ	38405[1]	134	577	1.1	703.1	703.1	703.9	0.8
BK	38644[1]	135	403	1.6	703.2	703.2	704.0	0.8
BL	38906[1]	105	277	2.3	703.8	703.8	704.4	0.6
BM	39312[1]	97	181	3.6	705.1	705.1	705.4	0.3
BN	39568[1]	114	693	0.9	708.5	708.5	709.5	1.0
BO	39969[1]	83	316	2.1	708.6	708.6	709.6	1.0
BP	40499[1]	25	94	6.9	709.3	709.3	709.9	0.6
BQ	40993[1]	32	137	4.7	711.7	711.7	712.6	0.9
BR	41208[1]	42	149	4.4	713.0	713.0	713.1	0.1
BS	41686[1]	46	142	4.6	714.7	714.7	715.7	1.0
Slate Bottom Creek North Branch								
A	2000[2]	52	152	3.9	669.8	669.8	670.2	0.4

[1] Feet above confluence with Cayuga Creek
[2] Feet above confluence with Slate Bottom Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SLATE BOTTOM CREEEK - SLATE BOTTOM CREEK NORTH BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Smokes Creek								
A	0	60	487	10.9	581.1	574.3[2]	574.3[2]	0.0
B	180	73	588	9.0	581.1	575.4[2]	575.4[2]	0.0
C	325	136	1131	4.7	581.1	576.7[2]	576.7[2]	0.0
D	1415	112	915	5.8	581.1	577.3[2]	577.3[2]	0.0
E	2110	111	841	6.3	581.1	577.9[2]	577.9[2]	0.0
F	2630	105	861	6.2	581.1	578.5[2]	578.5[2]	0.0
G	2795	78	456	11.6	581.1	578.5[2]	578.6[2]	0.1
H	3660	127	1156	4.6	581.1	580.5[2]	580.5[2]	0.0
I	4450	112	1216	4.4	581.1	580.9[2]	580.9[2]	0.0
J	4570	75	727	7.3	581.3	581.3	581.3	0.0
K	4705	138	1534	3.5	582.6	582.6	582.6	0.0
L	5065	134	1418	3.7	582.7	582.7	582.7	0.0
M	5245	65	1014	5.2	582.7	582.7	582.7	0.0
N	5445	120	1997	2.7	584.2	584.2	584.2	0.0
O	5585	80	1256	4.2	584.2	584.2	584.2	0.0
P	6020	122	1406	3.8	584.3	584.3	584.3	0.0
Q	6165	125	1470	3.6	584.6	584.6	584.6	0.0
R	6285	129	1565	3.4	584.6	584.6	584.6	0.0
S	6455	95	1050	5.0	584.7	584.7	584.7	0.0
T	6590	120	1362	3.9	585.1	585.1	585.1	0.0
U	7025	110	1221	4.3	585.2	585.2	585.2	0.0
V	7345	141	1499	3.5	585.4	585.4	585.4	0.0
W	7490	116	1176	4.5	585.5	585.5	585.5	0.0
X	7980	131	1417	3.7	585.7	585.7	585.7	0.0
Y	8450	120	1179	4.5	585.8	585.8	585.8	0.0
Z	8580	58	1157	4.6	587.1	587.1	587.1	0.0

[1] Feet above confluence with Lake Erie
[2] Elevation computed without consideration of backwater effects from Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SMOKES CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Smokes Creek (Continued)								
AA	8670	77	1131	4.7	587.5	587.5	587.5	0.0
AB	8740	53	580	9.1	587.5	587.5	587.5	0.0
AC	8910	106	1551	3.4	588.3	588.3	588.3	0.0
AD	9000	113	1610	3.3	588.3	588.3	588.3	0.0
AE	9080	108	1424	3.7	588.3	588.3	588.3	0.0
AF	9230	123	1612	3.3	588.9	588.9	588.9	0.0
AG	9370	114	1454	3.6	588.9	588.9	588.9	0.0
AH	9485	56	1041	5.1	589.1	589.1	589.1	0.0
AI	9695	132	2510	2.1	589.7	589.7	589.7	0.0
AJ	9805	92	1351	2.1	589.7	589.7	589.7	0.0
AK	10115	54	943	3.0	589.8	589.8	589.8	0.0
AL	10225	54	908	3.1	590.1	590.1	590.1	0.0
AM	10340	75	1172	2.4	590.9	590.9	590.9	0.0
AN	10510	112	921	3.1	590.9	590.9	590.9	0.0
AO	10650	108	1457	1.9	591.0	591.0	591.0	0.0
AP	11350	94	1115	2.5	591.0	591.0	591.0	0.0
AQ	11560	119	1448	2.0	591.2	591.2	591.2	0.0
AR	11850	98	1140	2.5	591.2	591.2	591.2	0.0
AS	12580	40	622	4.6	591.2	591.2	591.2	0.0
AT	12770	80	973	2.9	591.5	591.5	591.5	0.0
AU	13030	110	1196	2.4	591.7	591.7	591.7	0.0
AV	13380	104	1005	2.8	591.7	591.7	591.7	0.0
AW	13680	86	840	3.4	591.7	591.7	591.7	0.0
AX	13870	92	820	3.5	592.2	592.2	592.2	0.0
AY	14500	118	1021	2.8	592.4	592.4	592.4	0.0

[1] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SMOKES CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Smokes Creek (Continued)								
AZ	15845[1]	91	640	4.4	592.7	592.7	592.7	0.0
BA	16850[1]	62	307	9.2	593.3	593.3	593.3	0.0
BB	16965[1]	63	324	8.7	593.8	593.8	593.8	0.0
BC	17425[1]	90	507	5.6	595.6	595.6	595.6	0.0
BD	17620[1]	71	413	6.8	596.3	596.3	596.3	0.0
BE	19085[1]	70	422	6.7	599.0	599.0	599.0	0.0
BF	20540[1]	78	329	8.6	604.3	604.3	604.3	0.0
BG	20730[1]	80	461	6.0	606.7	606.7	606.7	0.0
BH	21750[1]	105	814	3.4	607.5	607.5	607.8	0.3
BI	22440[1]	250	1459	4.3	610.9	610.9	611.3	0.4
BJ	24235[1]	250	1760	3.4	613.6	613.6	614.2	0.6
BK	26242[1]	350	1968	3.3	616.8	616.8	617.4	0.6
BL	30202[1]	150	378	9.6	624.8	624.8	624.8	0.0
BM	33264[1]	150	677	6.6	635.4	635.4	636.3	0.9
Smokes Creek Northeast Branch								
A	1381[2]	47	175	10.5	754.4	754.4	754.4	0.0
B	2566[2]	41	203	9.1	764.1	764.1	764.7	0.6
C	3595[2]	120	313	5.9	772.4	772.4	772.7	0.3
D	5026[2]	96	785	2.3	780.9	780.9	781.9	1.0
E	5665[2]	112	677	2.7	781.3	781.3	782.3	1.0
F	6705[2]	35	176	10.4	782.6	782.6	783.2	0.6
G	7466[2]	67	308	6.0	787.7	787.7	788.2	0.5
H	7747[2]	120	994	1.9	791.7	791.7	791.8	0.1

[1] Feet above confluence with Lake Erie
[2] Feet above confluence with Smokes Creek Northwest Branch

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SMOKES CREEK - SMOKES CREEK NORTHEAST BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Smokes Creek Northeast Branch (Continued)								
I	8496[1]	80	407	4.5	791.7	791.7	792.2	0.5
J	8820[1]	167	1217	1.5	795.4	795.4	795.7	0.3
K	10648[1]	101	293	6.3	809.2	809.2	809.8	0.6
L	12015[1]	75	342	5.4	820.4	820.4	821.2	0.8
M	13429[1]	224	841	2.2	826.0	826.0	827.0	1.0
N	14533[1]	65	197	9.4	832.8	832.8	832.8	0.0
O	15925[1]	76	479	3.8	839.4	839.4	840.3	0.9
P	17431[1]	80	228	5.2	855.3	855.3	855.6	0.3
Q	17718[1]	100	722	1.6	858.9	858.9	859.7	0.8
R	18196[1]	22	129	9.2	858.9	858.9	859.7	0.8
S	18266[1]	77	432	2.7	871.7	871.7	872.2	0.5
T	18625[1]	415	4432	0.3	871.8	871.8	872.3	0.5
U	20182[1]	64	383	3.1	871.8	871.8	872.3	0.5
V	20611[1]	100	492	2.4	872.1	872.1	872.8	0.7
W	21600[1]	100	227	5.2	875.0	875.0	875.8	0.8
X	23600[1]	132	511	1.4	884.3	884.3	885.3	1.0
Y	25600[1]	90	154	4.8	890.2	890.2	891.1	0.9
Smokes Creek Northwest Branch								
A	38860[2]	150	404	8.4	689.1	689.1	689.6	0.5
B	42370[2]	159	817	3.7	706.7	706.7	707.7	1.0
C	43065[2]	125	515	5.8	708.3	708.3	709.0	0.7
D	44768[2]	170	696	4.3	715.3	715.3	716.2	0.9

[1] Feet above confluence with Smokes Creek Northwest Branch
[2] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SMOKES CREEK NORTHEAST BRANCH - SMOKES CREEK NORTHWEST BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Smokes Creek Northwest Branch (Continued)								
E	45580	90	469	6.4	718.4	718.4	719.4	1.0
F	46340	68	399	7.5	725.7	725.7	726.1	0.4
G	46542	65	330	9.1	726.2	726.2	726.9	0.7
H	47171	120	918	3.3	734.0	734.0	734.3	0.3
I	47660	139	632	4.7	734.0	734.0	734.3	0.3
J	48100	120	464	6.5	734.9	734.9	735.7	0.8
K	48275	150	1074	2.8	739.8	739.8	739.9	0.1
L	48885	140	639	4.7	739.8	739.8	740.1	0.3
M	49700	80	293	6.2	747.5	747.5	747.5	0.0
N	50650	51	262	7.0	754.6	754.6	755.6	1.0
O	51555	55	206	8.9	762.4	762.4	763.1	0.7
P	51932	40	185	9.9	768.0	768.0	768.3	0.3
Q	52026	72	484	3.8	771.8	771.8	772.7	0.9
R	52116	65	408	4.5	772.1	772.1	773.1	1.0
S	52341	74	437	4.2	774.3	774.3	775.3	1.0
T	52526	68	414	4.4	774.6	774.6	775.4	0.8
U	52650	120	752	2.4	775.2	775.2	776.2	1.0
V	54400	110	257	7.1	778.9	778.9	778.9	0.0
W	55300	121	492	3.7	783.4	783.4	784.0	0.6
X	55520	194	1324	1.4	788.3	788.3	789.3	1.0
Y	58755	70	268	6.8	808.6	808.6	809.2	0.6
Z	59470	190	1079	1.7	813.4	813.4	814.4	1.0
AA	61070	52	174	10.5	823.3	823.3	823.3	0.0
AB	62160	35	213	8.6	830.5	830.5	831.4	0.9

[1] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SMOKES CREEK NORTHWEST BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Smokes Creek Northwest Branch (Continued)								
AC	63058	60	521	3.5	844.8	844.8	844.8	0.0
AD	63900	60	232	7.9	845.3	845.3	845.3	0.0
AE	64828	23	167	10.9	851.8	851.8	852.8	1.0
AF	64983	93	867	2.1	855.9	855.9	856.8	0.9
AG	65731	200	1448	1.3	856.1	856.1	857.1	1.0
AH	66208	110	806	1.9	856.2	856.7	857.7	1.0
AI	66770	282	2330	0.6	862.3	862.3	863.3	1.0
AJ	67345	214	975	1.5	862.3	862.3	863.3	1.0
AK	68230	142	587	2.6	862.7	862.7	863.7	1.0
AL	69070	42	314	4.8	866.4	866.4	866.8	0.4
AM	69710	150	822	1.8	866.9	866.9	867.5	0.6
AN	70232	180	566	2.6	867.1	867.1	867.9	0.8
AO	71210	187	527	2.8	868.1	868.1	869.0	0.9
AP	71320	155	448	3.3	869.6	869.6	869.8	0.2
AQ	73789	105	506	3.0	875.0	875.0	875.2	0.2
AR	75090	106	198	7.6	876.6	876.6	877.8	1.2
AS	76889	291	831	1.8	883.4	883.4	884.3	0.9
AT	77708	118	289	5.2	888.9	888.9	889.2	0.3
AU	78859	150	449	3.3	893.8	893.8	894.3	0.5
AV	80840	110	205	7.3	903.6	903.6	903.6	0.0
AW	82170	46	226	6.6	913.7	913.7	914.7	1.0
AX	83960	50	158	9.5	931.0	931.0	931.7	0.7
AY	85080	38	164	5.2	940.1	940.1	941.1	1.0
AZ	87120	50	111	7.8	960.8	960.8	961.0	0.2

[1] Feet above confluence with Lake Erie

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SMOKES CREEK NORTHWEST BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Smokes Creek Northwest Branch (Continued)								
BA	89550[1]	50	109	7.9	1003.2	1003.2	1003.2	0.0
BB	90150[1]	40	111	7.8	1009.8	1009.8	1010.4	0.6
BC	90285[1]	86	443	1.9	1013.5	1013.5	1014.5	1.0
BD	90920[1]	50	120	7.2	1022.1	1022.1	1022.1	0.0
Smokes Creek South Branch								
A	80[2]	62	1148	2.4	589.8	589.8	589.8	0.0
B	280[2]	115	1576	1.7	590.1	589.9[3]	589.9	0.0
C	390[2]	50	946	2.9	590.9	590.4[3]	590.4[3]	0.0
D	520[2]	101	1532	1.8	590.9	590.4[3]	590.4[3]	0.0
E	670[2]	108	1713	1.6	591.0	590.4[3]	590.4[3]	0.0
F	830[2]	95	1446	1.9	591.0	590.5[3]	590.5[3]	0.0
G	1250[2]	110	1395	2.0	591.0	590.5[3]	590.5[3]	0.0
H	1650[2]	98	1107	2.5	591.0	590.5[3]	590.5[3]	0.0
I	1830[2]	135	1614	1.7	591.0	590.6[3]	590.6[3]	0.0
J	2120[2]	95	1221	2.3	591.0	590.6[3]	590.6[3]	0.0
K	2230[2]	104	1182	2.3	591.0	590.6[3]	590.6[3]	0.0
L	2405[2]	109	1193	2.3	591.0	591.0	591.0	0.0
M	2640[2]	99	948	2.9	591.0	591.0	591.0	0.0
N	2830[2]	107	991	2.8	591.0	591.0	591.0	0.0
O	3040[2]	107	1065	2.6	591.5	591.5	591.5	0.0
P	4160[2]	120	979	2.8	591.7	591.7	591.7	0.0
Q	6135[2]	85	516	5.3	593.4	593.4	593.6	0.2
R	9455[2]	79	448	6.1	596.4	596.4	596.9	0.5

[1] Feet above confluence with Lake Erie
[2] Feet above confluence with Smokes Creek
[3] Elevation computed without consideration of lateral flow effects from Smokes Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SMOKES CREEK NORTHWEST BRANCH - SMOKES CREEK SOUTH BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Smokes Creek South Branch (Continued)								
T	9745	68	517	5.3	599.2	599.2	599.2	0.0
U	9825	45	402	6.8	599.2	599.2	599.2	0.0
V	9975	38	456	6.0	599.6	599.6	599.6	0.0
W	10385	86	464	5.9	599.6	599.6	600.0	0.4
X	10785	60	529	5.2	600.3	600.3	600.5	0.2
Y	11175	75	736	3.7	600.9	600.9	601.2	0.3
Z	11365	60	281	9.8	600.9	600.9	601.0	0.1
AA	11700	55	367	7.1	602.3	602.3	602.9	0.6
AB	12530	120	450	5.8	605.9	605.9	606.1	0.2
AC	13420	71	435	6.0	609.0	609.0	609.9	0.9
AD	13936	68	414	6.3	610.2	610.2	611.2	1.0
AE	14070	80	419	6.2	610.8	610.8	611.6	0.8
AF	14480	90	439	5.9	613.0	613.0	613.5	0.5
AG	15766	109	623	4.2	620.0	620.0	620.4	0.4
AH	16240	110	346	7.5	620.4	620.4	620.8	0.4
AI	16990	100	373	6.2	625.4	625.4	625.6	0.2
AJ	18220	91	385	6.0	629.7	629.7	630.3	0.6
AK	19150	116	295	7.8	634.3	634.3	634.3	0.0
AL	19975	46	245	9.4	641.0	641.0	641.0	0.0
AM	20670	66	590	3.6	649.2	649.2	649.2	0.0
AN	21220	49	315	6.8	649.2	649.2	649.4	0.2
AO	21800	54	273	7.9	650.4	650.4	651.2	0.8
AP	22050	46	401	5.4	657.2	657.2	657.6	0.4
AQ	22250	39	250	8.6	657.2	657.2	657.6	0.4
AR	22290	49	191	11.2	661.0	661.0	661.0	0.0

[1] Feet above confluence with Smokes Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SMOKES CREEK SOUTH BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Smokes Creek South Branch (Continued)								
AS	23090	55	290	7.4	665.8	665.8	666.0	0.2
AT	23930	40	202	10.6	668.2	668.2	669.1	0.9
AU	25680	36	210	10.3	681.0	681.0	681.8	0.8
AV	25980	90	826	2.6	690.1	690.1	690.1	0.0
AW	26220	48	367	5.9	690.1	690.1	690.1	0.0
AX	26660	63	314	6.9	690.9	690.9	691.0	0.1
AY	26930	78	251	8.6	692.2	692.2	692.2	0.0
AZ	27620	60	272	7.9	696.9	696.9	697.4	0.5
BA	28780	83	358	6.0	703.1	703.1	704.1	1.0
BB	29630	44	181	8.3	709.3	709.3	710.0	0.7
BC	30490	40	160	9.3	718.3	718.3	718.3	0.0
BD	32080	37	101	9.1	738.7	738.7	738.7	0.0
BE	32660	25	107	8.6	743.9	743.9	744.8	0.9
BF	32960	60	270	3.4	748.1	748.1	748.1	0.0
BG	33660	60	141	6.5	754.3	754.3	754.3	0.0
BH	34640	34	133	6.9	762.2	762.2	763.1	0.9
BI	35550	42	166	5.5	766.9	766.9	767.9	1.0
BJ	36950	48	208	4.4	773.9	773.9	774.9	1.0
BK	37440	39	259	3.6	779.2	779.2	779.9	0.7
BL	37660	36	227	4.0	780.5	780.5	781.0	0.5
BM	38260	28	82	9.8	782.4	782.4	782.4	0.0
BN	38410	21	81	9.9	785.3	785.3	785.3	0.0
BO	39350	27	98	8.2	795.4	795.4	795.9	0.5
BP	39725	29	92	8.7	801.0	801.0	801.0	0.0
BQ	40375	17	79	10.2	807.5	807.5	807.9	0.4

[1] Feet above confluence with Smokes Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SMOKES CREEK SOUTH BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Smokes Creek South Branch (Continued)								
BR	40520	40	185	4.3	813.1	813.1	813.6	0.5
BS	40960	22	49	8.6	815.8	815.8	815.8	0.0
BT	41260	50	202	3.5	835.4	835.4	836.0	0.6
BU	43140	67	473	1.5	845.3	845.3	845.4	0.1
BV	43290	69	526	1.3	846.2	846.2	846.2	0.0
BW	43941	45	149	4.7	848.4	848.4	848.7	0.3
BX	44850	30	77	9.1	853.1	853.1	853.1	0.0
BY	45740	58	218	3.2	858.8	858.8	859.8	1.0
BZ	46280	107	141	5.0	860.4	860.4	861.2	0.8
CA	46580	55	229	3.1	864.0	864.0	864.5	0.5
CB	47630	26	93	7.5	868.7	868.7	869.7	1.0
CC	47740	50	202	3.5	871.7	871.7	872.3	0.6
CD	48660	28	112	6.3	875.1	875.1	875.1	0.0
CE	49400	29	102	6.8	878.3	878.3	878.6	0.3
CF	50820	22	100	7.0	885.1	885.1	886.1	1.0
CG	51520	54	181	5.9	893.1	893.1	893.4	0.3
CH	52040	43	118	5.9	896.5	896.5	896.5	0.0
CI	52400	30	126	5.6	898.6	898.6	898.6	0.0
CJ	54140	23	70	10.0	913.1	913.1	913.2	0.1
CK	54400	22	79	4.6	915.7	915.7	916.4	0.7
CL	54750	38	172	2.1	918.4	918.4	918.8	0.4
CM	57360	21	49	7.4	949.5	949.5	949.8	0.3
CN	58270	26	48	7.4	962.3	962.3	962.4	0.1
CO	58730	24	64	5.6	969.6	969.6	969.9	0.3
CP	59450	32	50	7.2	981.7	981.7	981.7	0.0
CQ	60790	40	137	2.6	1008.5	1008.5	1008.5	0.0

[1] Feet above confluence with Smokes Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SMOKES CREEK SOUTH BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Smokes Creek South Branch South Tributary								
A	100	55	107	7.0	720.0	720.0	720.0	0.0
B	1250	34	93	8.1	729.9	729.9	729.9	0.0
C	2120	142	417	1.8	748.6	748.6	748.6	0.0
D	2750	41	172	4.4	754.6	754.6	754.6	0.0
E	3191	25	106	7.1	758.6	758.6	758.6	0.0
F	3237	36	181	4.1	759.8	759.8	759.8	0.0
G	4380	35	88	8.6	767.9	767.9	767.9	0.0
H	5910	58	221	3.4	775.6	775.6	776.6	1.0
I	7140	69	245	3.1	780.5	780.5	781.5	1.0
J	8570	48	60	6.5	790.0	790.0	790.0	0.0
K	9590	10	46	8.5	799.2	799.2	800.1	0.9
L	11560	40	79	4.9	816.9	816.9	817.5	0.6
M	12550	22	61	6.4	824.9	824.9	825.7	0.8
N	13065	34	134	2.9	831.7	831.7	831.7	0.0
O	13730	29	51	7.6	834.8	834.8	834.9	0.1
P	14430	28	82	4.7	838.9	838.9	839.4	0.5
Q	14550	59	283	1.4	842.4	842.4	843.3	0.9
R	15270	54	207	1.9	842.6	842.6	843.5	0.9
S	16320	40	60	6.5	845.1	845.1	845.3	0.2
T	17200	54	173	1.7	846.9	846.9	847.4	0.5
U	17728	50	169	1.8	850.2	850.2	850.2	0.0
V	18240	34	81	3.7	850.3	850.3	850.5	0.2

[1] Feet above confluence with Smokes Creek South Branch

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SMOKES CREEK SOUTH BRANCH SOUTH TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Smokes Creek South Branch Tributary 1								
A	50[1]	47	110	4.4	625.9	625.9	625.9	0.0
B	2171[1]	30	110	4.4	657.0	657.0	657.2	0.2
C	2672[1]	70	381	1.3	665.7	665.7	666.6	0.9
D	2736[1]	40	259	1.9	665.7	665.7	666.6	0.9
E	2882[1]	49	316	1.5	666.1	666.1	667.0	0.9
F	3200[1]	17	83	5.8	668.3	668.3	668.9	0.6
G	4201[1]	83	438	1.1	679.3	679.3	680.3	1.0
Smokes Creek South Branch Tributary 2								
A	70[1]	21	73	8.7	703.1	702.5[3]	703.5[3]	1.0
B	1620[1]	21	64	9.9	728.6	728.6	728.6	0.0
C	2970[1]	22	69	9.1	749.1	749.1	749.5	0.4
D	3095[1]	86	491	1.3	753.0	753.0	754.0	1.0
E	3880[1]	26	68	9.3	754.7	754.7	754.7	0.0
F	4400[1]	27	82	7.7	761.9	761.9	761.9	0.0
G	5550[1]	24	89	7.1	769.0	769.0	769.2	0.2
H	6100[1]	25	64	6.6	772.4	772.4	772.6	0.2
I	6550[1]	12	60	3.5	775.8	775.8	776.1	0.3
J	7250[1]	18	61	3.4	776.2	776.2	777.1	0.9
K	7850[1]	18	42	5.0	778.4	778.4	778.4	0.0
Spicer Creek								
A	152[2]	56	108	3.4	564.3	564.3	564.4	0.1
B	672[2]	42	103	3.6	566.0	566.0	566.0	0.0

[1] Feet above confluence with Smokes Creek South Branch
[2] Feet above confluence with Niagara River - Tonawanda Channel
[3] Elevation computed without consideration of backwater effects from Smokes Creek South Branch

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SMOKES CREEK SOUTH BRANCH TRIBUTARY 1 - SMOKES CREEK SOUTH BRANCH TRIBUTARY 2 - SPICER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Spicer Creek (Continued)								
C	912	22	101	3.6	566.6	566.6	566.6	0.0
D	1050	38	227	1.6	571.1	571.1	571.1	0.0
E	1502	49	438	0.8	571.1	571.1	571.1	0.0
F	1657	63	508	0.7	571.1	571.1	571.1	0.0
G	1831	26	174	2.1	571.1	571.1	571.2	0.1
H	2574	23	88	4.2	571.5	571.5	571.7	0.2
I	2929	32	118	3.1	572.1	572.1	572.5	0.4
J	3201	15	74	5.0	572.4	572.4	573.2	0.8
K	3751	31	117	3.1	574.0	574.0	574.6	0.6
L	4299	20	84	4.4	575.1	575.1	575.5	0.4
M	4452	19	106	3.4	575.8	575.8	576.3	0.5
N	4854	24	104	3.5	576.3	576.3	576.9	0.6
O	5135	26	128	2.6	576.7	576.7	577.3	0.6
P	5392	20	93	3.6	576.9	576.9	577.5	0.6
Q	6008	27	122	2.7	577.6	577.6	578.4	0.8
R	6812	44	182	1.8	578.6	578.6	579.5	0.9
S	7680	35	150	2.2	579.4	579.4	580.4	1.0
T	8571	23	105	3.2	580.3	580.3	581.1	0.8
U	8891	31	152	2.2	580.8	580.8	581.6	0.8
V	9670	42	153	2.2	581.3	581.3	582.1	0.8
W	10204	22	97	3.5	581.8	581.8	582.6	0.8
X	10308	33	178	1.7	581.9	581.9	582.9	1.0
Y	10660	60	317	1.0	584.3	584.3	585.0	0.7
Z	10972	56	317	1.0	584.3	584.3	585.1	0.8
AA	12102	39	215	1.4	584.5	584.5	585.2	0.7
AB	13694	30	145	2.1	585.0	585.0	585.9	0.9

[1] Feet above confluence with Niagara River - Tonawanda Channel

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SPICER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Spring Brook								
A	3250[1]	35	192	3.4	1337.6	1337.6	1337.7	0.1
B	5820[1]	20	75	8.7	1342.2	1342.2	1343.2	1.0
C	6370[1]	100	304	2.1	1346.0	1346.0	1346.4	0.4
D	8270[1]	130	621	1.0	1346.3	1346.3	1347.2	0.9
E	9923[1]	100	119	4.4	1353.9	1353.9	1353.9	0.0
F	11550[1]	100	141	3.8	1359.1	1359.1	1359.1	0.0
Spring Creek								
A	1100[2]	52	287	1.1	673.9	673.9	673.9	0.0
B	1505[2]	120	771	0.4	675.7	675.7	675.7	0.0
C	2495[2]	13	34	9.4	675.9	675.9	675.9	0.0
D	2873[2]	80	412	0.8	682.7	682.7	682.9	0.2
E	3049[2]	24	105	3.0	683.6	683.6	683.6	0.0
Tannery Brook								
A	470[3]	38	145	11.2	863.0	863.0	863.0	0.0
B	818[3]	36	410	3.9	890.1	890.1	890.3	0.2
C	1792[3]	56	467	3.5	898.1	898.1	899.1	1.0
D	2986[3]	155	456	3.5	902.7	902.7	903.4	0.7
E	3410[3]	95	566	2.9	905.5	905.5	906.1	0.6
F	4230[3]	100	314	5.2	905.9	905.9	906.6	0.7
G	4380[3]	109	696	2.3	909.7	909.7	910.5	0.8
H	5288[3]	75	409	4.0	911.0	911.0	911.6	0.6
I	5431[3]	90	489	3.3	913.1	913.1	913.8	0.7
J	5915[3]	45	377	3.3	916.1	916.1	916.8	0.7
K	6200[3]	180	815	1.5	916.6	916.6	917.4	0.8

[1] Feet above South Buffalo Street
[2] Feet above mouth
[3] Feet above confluence with Cazenovia Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

SPRING BROOK - SPRING CREEK - TANNERY BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tannery Brook (Continued)								
L	6586[1]	38	232	5.4	916.4	916.4	917.1	0.7
M	7061[1]	33	206	6.1	918.5	918.5	918.9	0.4
N	7220[1]	28	187	6.7	919.7	919.7	920.7	1.0
O	8762[1]	40	147	8.6	928.3	928.3	928.3	0.0
P	8877[1]	155	816	1.5	934.7	934.7	934.8	0.1
Q	9810[1]	38	123	10.3	936.6	936.6	936.6	0.0
R	10040[1]	59	288	4.4	942.6	942.6	942.6	0.0
S	10660[1]	34	113	11.1	943.7	943.7	943.7	0.0
Thatcher Brook								
A	100[2]	#	#	#	749.0[3]	#	#	#
B	470[2]	#	#	#	749.0[3]	#	#	#
C	2756[2]	#	#	#	753.3	#	#	#
D	3095[2]	#	#	#	756.3	#	#	#
E	3390[2]	#	#	#	759.8	#	#	#
F	3765[2]	#	#	#	760.3	#	#	#
G	4186[2]	#	#	#	764.6	#	#	#
H	4400[2]	#	#	#	767.0	#	#	#
I	4930[2]	#	#	#	772.4	#	#	#
J	4960[2]	#	#	#	773.2	#	#	#
K	5210[2]	#	#	#	773.5	#	#	#
L	5530[2]	#	#	#	774.7	#	#	#
M	5580[2]	#	#	#	781.5	#	#	#
N	5870[2]	#	#	#	784.0	#	#	#
O	6550[2]	#	#	#	789.4	#	#	#

[1] Feet above confluence with Cazenovia Creek
[2] Feet above mouth
[3] Elevation computed without consideration of backwater effects from Cattaraugus Creek
Floodway not computed

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

TANNERY BROOK - THATCHER BROOK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Thatcher Brook (Continued)								
P	7360[1]	#	#	#	799.0	#	#	#
Q	7500[1]	#	#	#	799.0	#	#	#
Tributary 1 to Niagara River - Tonawanda Channel								
A	1560[2]	93	429	0.8	573.7	573.7	573.7	0.0
B	2210[2]	36	63	3.9	573.8	573.8	573.9	0.1
C	3510[2]	18	46	5.4	577.8	577.8	578.8	1.0
Tonawanda Creek								
A	2290[2]	196[3]	3852	4.5	570.3	569.7[4]	570.7[4]	1.0
B	8140[2]	290[3]	3738	4.6	571.5	571.5	572.3	0.8
C	9145[2]	242[3]	4189	4.1	571.8	571.8	572.5	0.7
D	12036[2]	220[3]	3903	4.4	572.3	572.3	573.0	0.7
E	14486[2]	266[3]	4329	4.0	572.8	572.8	573.4	0.6
F	16909[2]	284[3]	4441	3.9	573.3	573.3	573.9	0.6
G	18209[2]	464[3]	5927	2.9	573.6	573.6	574.2	0.6
H	18928[2]	450[3]	6090	2.8	573.7	573.7	574.3	0.6
I	19659[2]	322[3]	4096	4.2	573.7	573.7	574.3	0.6
J	20166[2]	257[3]	4374	3.9	573.9	573.9	574.5	0.6
K	24500[2]	218[3]	4351	4.3	574.8	574.8	574.9	0.1
L	29500[2]	230[3]	3947	4.5	575.7	575.7	575.8	0.1
M	34540[2]	293[3]	4886	3.6	576.8	576.8	577.3	0.5
N	35870[2]	212[3]	4087	4.4	576.8	576.8	577.4	0.6
O	41360[2]	275[3]	4984	3.6	577.4	577.4	578.0	0.6

[1] Feet above mouth

Floodway not computed

[2] Feet above confluence with Niagara River - Tonawanda Channel

[3] Width extends beyond Erie County corporate limits

[4] Elevation computed without consideration of backwater effects from Niagara River - Tonawanda Channel

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

THATCHER BROOK - TRIBUTARY 1 TO NIAGARA RIVER - TONAWANDA CHANNEL - TONAWANDA CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tonawanda Creek (Continued)								
P	47220[1]	225[3]	4502	4.0	577.8	577.8	578.4	0.6
Q	51520[1]	309[3]	5892	3.0	578.2	578.2	578.9	0.7
R	55000[1]	249[3]	5088	2.3	578.6	578.6	579.2	0.6
S	59850[1]	193[3]	3151	3.6	579.2	579.2	579.8	0.6
T	63900[1]	200[3]	3083	3.7	581.0	581.0	581.6	0.6
U	69880[1]	211[3]	3155	2.1	583.1	583.1	584.1	1.0
V	73025[1]	153[3]	2610	2.5	583.5	583.5	584.5	1.0
W	76425[1]	120[3]	2081	3.2	584.5	584.5	585.4	0.9
X	80975[1]	197[3]	3174	2.1	585.2	585.2	586.2	1.0
Y	83625[1]	120[3]	2213	3.0	585.8	585.8	586.8	1.0
Z	89725[1]	213[3]	3443	1.9	587.0	587.0	588.0	1.0
AA	93475[1]	213[3]	3467	1.9	587.5	587.5	588.5	1.0
AB	98725[1]	182[3]	2557	2.6	588.4	588.4	589.4	1.0
AC	101825[1]	210[3]	2933	2.3	589.2	589.2	590.1	0.9
AD	105875[1]	230[3]	3384	2.0	589.9	589.9	590.8	0.9
AE	109275[1]	220[3]	3515	2.3	590.5	590.5	591.4	0.9
AF	115475[1]	573[3]	5957	1.4	591.2	591.2	592.1	0.9
AG	122625[1]	384[3]	3512	2.5	591.5	591.5	592.4	0.9
AH	128775[1]	153[3]	2241	4.0	592.0	592.0	592.9	0.9
AI	133800[1]	2916[3]	15823	0.6	592.7	592.7	593.7	1.0
AJ	144000[1]	2072[3]	32572	0.7	593.1	593.1	594.1	1.0
Waterfalls Village Creek								
A	256[2]	40	116	4.0	586.1	586.1	587.1	1.0
B	486[2]	67	205	2.2	586.9	586.9	587.9	1.0

[1] Feet above confluence with Niagara River - Tonawanda Channel
[2] Feet above confluence with Lake Erie
[3] Width extends beyond Erie County corporate limits

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

TONAWANDA CREEK - WATERFALLS VILLAGE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Waterfalls Village Creek (Continued)								
C	620[1]	40	116	4.0	586.1	586.1	587.1	1.0
D	800[1]	67	205	2.2	586.9	586.9	587.9	1.0
E	1402[1]	37	205	2.2	586.9	586.9	587.9	1.0
F	1460[1]	40	268	1.7	587.2	587.0	588.0	1.0
G	2077[1]	14	61	7.6	590.2	590.2	590.2	0.0
H	3130[1]	109	213	2.2	591.3	591.3	591.3	0.0
I	4030[1]	100	427	1.1	599.5	599.5	599.9	0.4
J	4478[1]	29	57	8.1	602.8	602.8	602.8	0.0
K	5490[1]	32	92	5.0	607.9	607.9	607.9	0.0
L	6172[1]	70	1129	0.4	626.6	626.6	627.6	1.0
M	6750[1]	68	408	1.1	626.6	626.6	627.6	1.0
N	7010[1]	50	304	1.5	634.8	634.8	634.9	0.1
O	7040[1]	68	716	0.6	649.9	649.9	650.9	1.0
P	7430[1]	58	458	1.0	649.9	649.9	650.9	1.0
Q	8020[1]	65	122	3.8	649.9	649.9	650.9	1.0
R	8357[1]	93	120	3.8	655.6	655.6	655.6	0.0
Woods Creek								
A	4749[2]	59	310	2.6	567.7	566.5[3]	567.4[3]	0.9
B	6627[2]	79	373	2.8	567.7	567.6[3]	568.5[3]	0.9
C	9177[2]	57	255	1.9	569.8	569.8	570.8	1.0
D	11227[2]	40	147	1.2	570.4	570.4	571.3	0.9
E	12452[2]	54	116	2.4	571.0	571.0	571.6	0.6
F	15262[2]	11	25	5.1	575.4	575.4	575.4	0.0
G	15522[2]	13	18	7.0	576.7	576.7	577.2	0.5
H	16372[2]	27	56	2.3	577.7	577.7	578.6	0.9

[1] Feet above confluence with Lake Erie
[2] Feet above confluence with Niagara River - Tonawanda Channel
[3] Elevation computed without consideration of backwater effects from Niagara River - Tonawanda Channel

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

WATERFALLS VILLAGE CREEK - WOODS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Woods Creek Tributary 1								
A	328	54	244	1.1	567.9	567.9	568.9	1.0
B	1228	49	109	2.4	568.2	568.2	569.1	0.9
C	2378	61	111	2.3	570.7	570.7	570.7	0.0
D	3628	61	144	1.8	571.7	571.7	571.8	0.1
E	6478	32	101	2.6	573.5	573.5	573.9	0.4
Woods Creek Tributary 3								
A	700	112	179	0.3	571.1	571.1	572.0	0.9
B	893	125	244	0.2	571.4	571.4	573.9	0.9

[1] Feet above confluence with Woods Creek

TABLE 10

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

FLOODWAY DATA

WOODS CREEK TRIBUTARY 1 - WOODS CREEK TRIBUTARY 3

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 base flood elevations 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 base flood elevations 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 base flood depths derived from the detailed hydraulic analyses are shown within this zone.

Zone AR

Zone AR is the flood insurance rate zone that corresponds to the 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 base flood elevations 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 waves. Because approximate

hydraulic analyses are performed for such areas, no base flood elevations 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 waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, and to 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 base flood elevations or depths are shown within this zone.

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 base flood elevations or average depths. Insurance agents use the zones and base flood elevations 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 Erie County. Previously, separate Flood Hazard Boundary Maps and/or FIRMs were prepared for each identified flood-prone jurisdiction in Niagara County. This countywide FIRM also includes flood hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFMs), where applicable. Historical data relating to the maps prepared for each community, prior to the countywide FIS, are presented in Table 11, "Community Map History."

Within the Villages of Depew and Lancaster, and the Towns of Amherst and Cheektowaga, there are one or more levees that have not been demonstrated by the community or levee owner(s) to meet the requirements of 44 CFR Part 65.10 of the NFIP regulations as it relates to the levees' capacity to provide 1-percent annual-chance flood protection. Please refer to the Notice to Flood Insurance Study Users page at the front of this FIS report for more information on how this may affect the FIRM.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Akron, Village of	May 31, 1974	September 19, 1975	November 19, 1980	
Alden, Town of	May 31, 1974	August 20, 1976	June 1, 1981	February 6, 1991
Alden, Village of	May 17, 1974	June 16, 1976 November 30, 1979	January 6, 1984	
Angola, Village of	December 6, 1974	None	May 18, 1979	December 2, 1982 August 6, 2002
Aurora, Town of	April 12, 1974	March 26, 1976	April 16, 1979	
Blasdell, Village of	November 22, 1974	None	June 25, 1976	
Boston, Town of	April 12, 1974	September 12, 1975	September 30, 1981	
Brant, Town of	June 14, 1974	July 30, 1976	January 6, 1984	
Cheektowaga, Town of	September 7, 1973	May 28, 1976	July 5, 1977	June 16, 1978 July 2, 1981 April 8, 1983 March 15, 1984
Colden, Town of	May 31, 1974	July 2, 1976	July 2, 1979	
Concord, Town of	August 2, 1974	August 27, 1976	February 27, 1984	September 4, 1986
Depew, Village of	February 22, 1974	July 30, 1976	August 3, 1981	

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
East Aurora, Village of	July 20, 1973	None	July 20, 1973	July 1, 1974 December 5, 1975 June 29, 1979 August 6, 2002
Eden, Town of	September 20, 1974	May 28, 1976	August 24, 1979	
Elma, Town of	September 21, 1973	None	June 1, 1977	June 22, 1998
Evans, Town of	May 31, 1974	August 20, 1976	September 30, 1977	September 16, 1982 February 2, 2002
Hamburg, Town of	August 30, 1974	December 26, 1975	November 19, 1980	October 4, 1994 December 20, 2001
Hamburg, Village of	October 29, 1976	March 25, 1977	January 20, 1982	
Lackawanna, City of	June 28, 1974	August 13, 1976	July 2, 1980	
Lancaster, Town of	May 24, 1974	May 21, 1976	December 1, 1981	February 23, 2001
Lancaster, Village of	April 12, 1974	May 14, 1976 March 4, 1977	July 2, 1979	
Marilla, Town of	May 17, 1974	None	September 20, 1978	
Newstead, Town of	April 12, 1974	August 20, 1976 April 22, 1977	November 19, 1980	May 4, 1992

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Orchard Park, Town of	August 9, 1974	August 20, 1976	March 16, 1983	
Orchard Park, Village of	June 7, 1974	October 17, 1975	September 2, 1981	
Sardinia, Town of	June 28, 1974	June 25, 1976	October 21, 1983	January 16, 2003
Springville, Village of	May 17, 1974	June 4, 1976	February 27, 1984	July 17, 1986
Williamsville, Village of	May 31, 1974	August 6, 1976	March 1, 1982	

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

ERIE COUNTY, NEW YORK (ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

A FIS is has been prepared for Niagara County, New York, All Jurisdictions, (FEMA, 2010). A FIS has been published for the Town of Arcade, Wyoming County (FEMA, March 1992). A FIS has been published for the Seneca Nation of Indians (FEMA, September 1988), which includes the Cattaraugus Reservation.

Information pertaining to each jurisdiction within Erie County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS report, FHBMs, FBFMs and FIRMs for all jurisdictions within Erie County.

This is a multi-volume FIS. Each volume may be revised separately, in which case it supersedes the previously printed volume. Users should refer to the Table of Contents in Volume 1 for the current effective date of each volume: volumes bearing these dates contain the most up-to-date hazard data.

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 1351, New York, New York 10278.

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