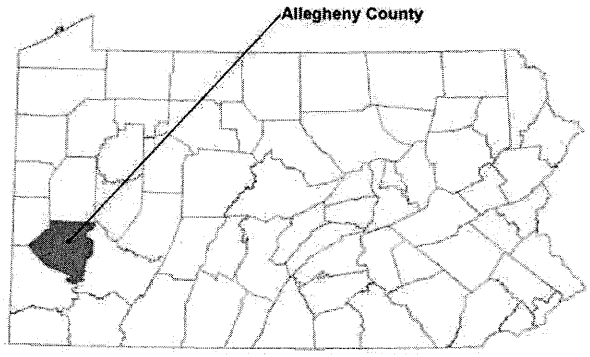
FLOOD INSURANCE STUDY

VOLUME 1 OF 6



ALLEGHENY COUNTY, PENNSYLVANIA
(ALL JURISDICTIONS)

COMMUNITY NAME	COMMUNITY NUMBER	COMMUNITY NAME	COMMUNITY NUMBER	COMMUNITY NAME	COMMUNITY NUMBER	COMMUNITY NAME	COMMUNITY NUMBER
ALEPPO, TOWNSHIP OF	421266	*EAST McKEESPORT, BOROUGH OF	420029	LINCOLN, BOROUGH OF	420049	ROSSLYN FARMS, BOROUGH OF	420069
ASPINWALL, BOROUGH OF	420005	EAST PITTSBURGH, BOROUGH OF	422662	MARSHALL, TOWNSHIP OF	421080	SCOTT, TOWNSHIP OF	421100
AVALON, BOROUGH OF	420006	*EDGEWOOD, BOROUGH OF	422663	MCCANDLESS, TOWN OF	421081	SEWICKLEY, BOROUGH OF	420070
BALDWIN, BOROUGH OF	420007	EDGEWORTH, BOROUGH OF	420032	MCDONALD, BOROUGH OF	420855	SEWICKLEY HEIGHTS, BOROUGH OF	420071
BALDWIN, TOWNSHIP OF	422650	ELIZABETH, BOROUGH OF	421263	MCKEESPORT, CITY OF	420051	SEWICKLEY HILLS, BOROUGH OF	420072
BELL ACRES, BOROUGH OF	420008	ELIZABETH, TOWNSHIP OF	420033	MCKEES ROCKS, BOROUGH OF	420052	SHALER, TOWNSHIP OF	421101
BELLEVUE, BOROUGH OF	420009	EMSWORTH, BOROUGH OF	420034	MILLVALE, BOROUGH OF	420053	SHARPSBURG, BOROUGH OF	420073
BEN AVON, BOROUGH OF	420010	ETNA, BOROUGH OF	421062	MONROEVILLE, MUNICIPALITY OF	420054	SOUTH FAYETTE, TOWNSHIP OF	421106
*BEN AVON HEIGHTS, BOROUGH OF	420011	FAWN, TOWNSHIP OF	421285	MOON, TOWNSHIP OF	421082	SOUTH PARK, TOWNSHIP OF	421165
BETHEL PARK, MUNICIPALITY OF	420012	FINDLAY, TOWNSHIP OF	421286	*MOUNT OLIVER, BOROUGH OF	420055	SOUTH VERSAILLES, TOWNSHIP OF	421281
BLAWNOX, BOROUGH OF	420013	*FOREST HILLS, BOROUGH OF	420035	MT. LEBANON, MUNICIPALITY OF	421272	SPRINGDALE, BOROUGH OF	421282
BRACKENRIDGE, BOROUGH OF	420014	FORWARD, TOWNSHIP OF	421064	MUNHALL, BOROUGH OF	420056	SPRINGDALE, TOWNSHIP OF	420074
BRADDOCK, BOROUGH OF	420015	FOX CHAPEL, BOROUGH OF	420036	NEVILLE, TOWNSHIP OF	425385	STOWE, TOWNSHIP OF	421110
*BRADDOCK HILLS, BOROUGH OF	420016	FRANKLIN PARK, BOROUGH OF	420037	NORTH BRADDOCK, BOROUGH OF	420058	SWISSVALE, BOROUGH OF	420075
BRADFORD WOODS, BOROUGH OF	421262	FRAZER, TOWNSHIP OF	421288	NORTH FAYETTE, TOWNSHIP OF	421085	TARENTUM, BOROUGH OF	420076
BRENTWOOD, BOROUGH OF	420017	GLASSPORT, BOROUGH OF	420038	NORTH VERSAILLES, TOWNSHIP OF	421231	THORNBURG, BOROUGH OF	420077
BRIDGEVILLE, BOROUGH OF	420018	GLEN OSBORNE, BOROUGH OF	420061	OAKDALE, BOROUGH OF	420059	TRAFFORD, BOROUGH OF	420903
CARNEGIE, BOROUGH OF	420019	GLENFIELD, BOROUGH OF	420039	OAKMONT, BOROUGH OF	420060	TURTLE CREEK, BOROUGH OF	420079
CASTLE SHANNON, BOROUGH OF	420020	GREEN TREE, BOROUGH OF	420040	O'HARA, TOWNSHIP OF	421088	UPPER ST. CLAIR, TOWNSHIP OF	421119
*CHALFANT, BOROUGH OF	420021	HAMPTON, TOWNSHIP OF	420978	OHIO, TOWNSHIP OF	421089	VERONA, BOROUGH OF	422611
CHESWICK, BOROUGH OF	420022	HARMAR, TOWNSHIP OF	421068	PENN HILLS, MUNICIPALITY OF	421092	VERSAILLES, BOROUGH OF	420081
CHURCHILL, BOROUGH OF	420023	HARRISON, TOWNSHIP OF	420041	*PENNSBURY VILLAGE, BOROUGH OF	422665	WALL, BOROUGH OF	420082
CLAIRTON, CITY OF	420024	HAYSVILLE, BOROUGH OF	420042	PINE, TOWNSHIP OF	421094	WEST DEER, TOWNSHIP OF	421299
COLLIER, TOWNSHIP OF	421058	HEIDELBURG, BOROUGH OF	420043	PITCAIRN, BOROUGH OF	420062	WEST ELIZABETH, BOROUGH OF	420083
CORAOPOLIS, BOROUGH OF	420025	HOMESTEAD, BOROUGH OF	420044	PITTSBURGH, CITY OF	420063	WEST HOMESTEAD, BOROUGH OF	420084
CRAFTON, BOROUGH OF	420026	INDIANA, TOWNSHIP OF	421070	PLEASANT HILLS, BOROUGH OF	420064	WEST MIFFLIN, BOROUGH OF	420085
CRESCENT, TOWNSHIP OF	421060	*INGRAM, BOROUGH OF	420045	PLUM, BOROUGH OF	420065	*WEST VIEW, BOROUGH OF	420086
*DORMONT, BOROUGH OF	422630	JEFFERSON HILLS, BOROUGH OF	420046	PORT VUE, BOROUGH OF	420066	WHITEHALL, BOROUGH OF	420088
DRAVOSBURG, BOROUGH OF	420027	KENNEDY, TOWNSHIP OF	421072	RANKIN, BOROUGH OF	420067	WHITAKER, BOROUGH OF	420087
DUQUESNE, CITY OF	420028	KILBUCK, TOWNSHIP OF	421073	RESERVE, TOWNSHIP OF	420068	WHITE OAK, BOROUGH OF	420089
EAST DEER, TOWNSHIP OF	421061	LEET, TOWNSHIP OF	421075	RICHLAND, TOWNSHIP OF	421199	WILKINS, TOWNSHIP OF	420090
*No special flood hazard areas identified		LEETSDALE, BOROUGH OF	420047	ROBINSON, TOWNSHIP OF	421097	*WILKINSBURG, BOROUGH OF	422667
		LIBERTY, BOROUGH OF	420048	ROSS, TOWNSHIP OF	420979	WILMERDING, BOROUGH OF	420091

REVISED: September 26, 2014

Reprinted with corrections on August 27, 2021

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER

42003CV001B

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Prog ram have estab lished repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) m ay not contain all da ta available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and repub lished at any tim e. In addition, part of this FIS may be revised by the L etter of Map Revision pro cess, which does not involve republication or redistribution of the FIS. It is, therefore, the re sponsibility 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: October 4, 1995

Revised Countywide FIS Dates:

August 5, 1997	to remove community disclaimer note for the Borough of Trafford and to include the Borough of Trafford into the countywide Flood Insurance Study for Allegheny County, PA.
March 16, 1998	to add Base Flood Elevations, Special Flood Hazard Areas, and road, and road names; and to change Base Flood Elevations, Special Flood Hazard Areas, and zone designations.
July 5, 2000	to change Base Flood Elevations, Special Flood Hazard Areas, and floodways; and to incorporate previously issued Letters of Map Revision.
September 21, 2001	to change Special Flood Hazard Areas and to reflect updated topographic information.
May 15, 2003	to add Special Flood Hazard Areas and Base Flood Elevations and to change Special Flood Hazard Areas and zone designations.
September 26, 2014	to change Base Flood Elevations and Special Flood Hazard Areas, to update corporate limits and roads and road names, to incorporate previously issued Letters of Map Revision, and to reflect updated topographic information.

This FIS report was reissued on August 27, 2021 to make a correction; this version replaces any previous versions. See the Notice-to-User Letter that accompanied this correction for details.

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FLOOD INSURANCE STUDY
ALLEGHENY COUNTY, PENNSYLVANNIA (ALL JURISDICTIONS)

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and updates inform ation on the existence and severity of flood hazards in th e geographic area of Allegheny County, including the Cities of Clairton, D uquesne, McKeesport, and Pittsburgh; the Boroughs of Aspinwall, Avalon, Ba ldwin, Bell Acres, Bellevue, Ben Avon, Ben Avon Heights, Blawnox, Brackenridge, Braddock, Braddock Hills, Bradford Woods, Brentwood, Bridgeville, Carnegie, Castle Shannon, Chalfant, Cheswick, Churchill, Coraopolis, Crafton, Dorm ont, Dravosburg, East McKeesport, East Pittsburgh, Edgewood, Edgeworth, Elizabeth, Emsworth, Etna, Forest Hills, Fox Chapel, Franklin Park , Glassport, Glen Osb orne, Glenfield, Green Tree, Haysville, Heidelberg, Homestead, Ingram, Jefferson Hills, Leetsda le, Liberty, Lincoln, McDonald, McKees Rocks, Mi llvale, Mount Oliver, Munhall, North Braddock, Oakdale, Oakmont, Pennsbury Village, Pitcairn, Pleasant Hills, Plum , Port Vue, Rankin, Rosslyn Farm s, Sewickley, Sewickley Heights, S ewickley Hills, Sharpsburg, Springdale, Swissvale, Tarentum, Thornburg, Trafford, Turtle Creek, Verona, Versailles, Wall, West Elizabeth, West Homestead, West Mifflin, West View, Whitaker, White Oak, Whitehall, Wilkensburg, and Wilmerding; the Municipalities of Bethel Park, Monroeville, Mt. Lebanon, and Penn H ills; the Town of McCandless; and the Townships of Aleppo, Baldwin, Collier, Crescent, East Deer, Elizabeth, Fawn, Findla y, Forward, Frazer, Ham pton, Harmar, Harrison, Indiana, Kennedy, Kilbuck, L eet, Marshall, Moon, Neville, North Fayette, North Versailles, O'Hara, Oh io, Pine, Reserve, Richland, Robinson, Ross, Scott, Shaler, South Fayette, S outh Park, South Versailles, Springdale, Stowe, Upper St. Clair, West Deer, and Wilkins (referred to collectively herein as Allegheny County), and aids in the ad ministration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood-risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to prom ote sound floodplain management. Minim um floodplain management requirements for participa tion in the Na tional Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

Please note that the Borough of McD onald is geographi cally located in Allegheny, and Washington Counties. The Borough of McDonald is included in its entirety in this FIS report. Please not e that the Borough of Trafford is located in Allegheny and W estmoreland Counties. Only the portion of Borough of Trafford located in Allegheny County is incl uded in this FIS. See the separately published FIS reports and Flood Insurance Rate Maps (FIRMs) for countywide map dates and flood hazard information outside of Allegheny County.

Please note that on the effective date of this study, the Boroughs of Ben Avon Heights, Braddock Hills, Chalfant, Dormont, East McK eesport, Edgewood, Forest Hills, Ingram , Mount Oliver, Pennsburry Village, West View, and Wilkinsburg have no mapped Special Fl ood Hazard Areas (SFHAs). This does not preclude future determ inations of SFHAs that cou ld be necess itated 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 also note that the Borough of Osborne and Borough of Jeffers on have officially changed their names to the Borough of Glen Osborne and Borough of Jefferson Hills, respectively, since the last effective study for Allegheny County.

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

1.2 Authority and Acknowledgments

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

The original October 4, 1995, countywid e FIS was prepared to include all jurisdictions within Allegheny C ounty into a countywide for mat FIS. Information on the authority and acknowle dgments for each ju risdiction with a previously printed FIS report included in this countywide FIS is shown below.

Aspinwall, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated June 1979 were prepared by the U.S. Arm y Corps of Engineers (USACE), Pittsburgh District, for the Federal Insurance Administration (FIA), under Inter-Agency Agreement No. IAA-H-7-76, Project Order No. 25 and No. IAA-H-10-77, Project Order No. 4. That work was completed in June 1978.
Baldwin, Borough of:	The hydrologic and hydraulic analyses for the Monongahela River in the FIS report dated February 1978 were prepared by the USACE, Pittsburgh District. The hydraulic and hydrologic analyses for the rem ainder of the study were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract

	No. H-3812. That work was com pleted in February 1977.
Bell Acres, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated November 1, 1984, were prepared by Green International, Inc., for the Federal Emergency Management Agency (FEMA), during the course of the preparation of the FIS for the Borough of Economy. That work was completed in October 1979.
Ben Avon, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated January 16, 1981, were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-18-78. That w ork was completed in February 1980.
Bethel Park, Municipality of:	The hydrologic and hydraulic analyses for the FIS rep ort dated D ecember 15, 1981, were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4816. That work was com pleted in N ovember 1979.
Blawnox, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated March 1980 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21, and Amendment No. 1. That work was completed in August 1979.
Brackenridge, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated February 1980 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21, Amendment No. 1. That work was completed in June 1979.
Braddock, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated March 1980 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent

	No. IAA-H-10-77, Proj ect Order No. 21, and Amendment No. 1. That work was completed in March 1979.
Bridgeville, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated July 5, 1983, were prepared by the USACE, Pittsburgh District, for FEMA, under Inter-Agency Agreem ent No. IAA-H-9-79, Project Order No. 40. That work was completed in March 1982.
Carnegie, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated Novem ber 1977 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3812. That work was completed in February 1977.
Cheswick, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated Decem ber 1979 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21, and Amendment No. 1. That work was completed in June 1979.
Clairton, City of:	The hydrologic and hydraulic analyses for the FIS report dated April 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in June 1978.
Collier, Township of:	The hydrologic and hyd raulic analyses for the FIS report dated Septem ber 15, 1981, were prepared by GAI Consultants, Inc., for FEMA, under Contract No. H-4762. That work was completed in February 1980.
Coraopolis, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated Decem ber 1978 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3812. That work was com pleted in Nove mber 1977. The hydraulic and hydrologic analyses for the Ohio River were prepared by the USACE.

Crescent, Township of:	The hydrologic and hydraulic analyses for the FIS report dated January 16, 1981, were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-18-78, Proj ect Order No. 29. That work was completed in February 1980.
Dravosburg, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated Decem ber 1978 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was com pleted in January 1978. The hydrologic and hydraulic analyses for the Monongahela River were perform ed by the USACE.
Duquesne, City of:	The hydrologic and hydraulic analyses for the FIS report dated March 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in March 1978.
East Deer, Township of:	The hydrologic and hydraulic analyses for the FIS report dated February 1980 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21, Amendment No. 1. That work was completed in May 1979.
Edgeworth, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated Novem ber 1979 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21, and Amendment No. 1. That work was completed in January 1979.
Elizabeth, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated January 16, 1981, were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-18-78. That w ork was completed in January 1980.

Elizabeth, Township of:	The hydrologic and hydraulic analyses for the FIS report dated Septem ber 1976 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3727.
Emsworth, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated March 1980 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-7-76, Project Order No. 25, and Inter-Agency Agreement No. IAA-H-10-77, Project Order No. 4. That work was completed in January 1978.
Etna, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated March 1978 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3812. That work was completed in March 1977. The hydrologic and hydraulic analyses for the Allegheny River were prepared by the USACE, Pittsburgh District.
Fawn, Township of:	The hydrologic and hydraulic analyses for the FIS report dated July 18, 1983, were prepared by the USACE, Pittsburgh District, for FEMA, under Inter-Agency Agreem ent No. IAA-H-9-79, Project Order No. 40. That work was completed in August 1982.
Findlay, Township of:	The hydrologic and hydraulic analyses for the FIS report dated Novem ber 18, 1988, were prepared by the USACE, Pittsburgh District, for FEMA, under Inter-Agency Agreement No. EM W-85-E-1822, Project Order No. 1, Am endment No. 25. That work was completed in April 1987.
Forward, Township of:	The hydrologic and hydraulic analyses for the FIS report dated August 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was com pleted in Septem ber 1978. The hydrologic and hydraulic analyses for the Township of Forward were previously prepared by the USACE, Pittsburgh District.

Fox Chapel, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated October 15, 1976, were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3727.
Glassport, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated Decem ber 1978 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in January 1978. The hydrologic and hydraulic analyses for the Monongahela River were prepared by the USACE, Pittsburgh District.
Glen Osborne, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated May 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3812. That work was com pleted in Nove mber 1977. The hydrologic and hydraulic analyses for the Ohio River were prepared by the USACE.
Glenfield, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated Septem ber 1979 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21, Amendment No. 1. That work was completed in January 1979.
Green Tree, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated January 16, 1981, were prepared by GAI Consultan ts, Inc., for the FIA, under Contract No. H-4762. That work was completed in October 1979.
Hampton, Township of:	The hydrologic and hydraulic analyses for the FIS report dated Novem ber 1977 were prepared by Michael Baker, Jr., Inc, for the FIA, under Contract No. H-3812. That work was completed in February 1977.
Harmar, Township of:	The hydrologic and hydraulic analyses for the FIS report dated January 1980 were

	prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21, Amendment No. 1. That work was completed in April 1979.
Harrison, Township of:	The hydrologic and hydraulic analyses for the FIS report dated March 1978 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3812. That work was completed in April 1977.
Haysville, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated Septem ber 1979 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21, Amendment No. 1. That work was completed in January 1979.
Heidelberg, Borough of:	The hydrologic and hydraulic analyses for the FIS rep ort dated D ecember 15, 1980, were prepared by GAI Consultants, Inc., for the FIA, under Contract No. H-4762. Tha t work was completed in October 1979.
Indiana, Township of:	The hydrologic and hydraulic analyses for the FIS report dated A pril 18, 1983, were prepared by the USACE, Pittsburgh District, for FEMA, under Inter-Agency Agreem ent No. IAA-H-9-79, Proj ect Order No. 40, Amendment No. 1. That work was completed in May 1982.
Jefferson Hills, Borough of:	The hydrologic and hyd raulic analyses for the FIS report dated October 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in September 1978.
Kennedy, Township of:	The hydrologic and hydraulic analyses for the FIS report dated August 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in July 1978.

Kilbuck, Township of:	The hydrologic and hydraulic analyses for the FIS report dated August 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in April 1978.
Leet, Township of:	The hydrologic and hydraulic analyses for the FIS report dated March 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in January 1978.
Leetsdale, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated May 1980 were prepared by the USACE, Pittsburgh District, for FEMA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21, Amendment No. 1. That work was completed in January 1979.
Liberty, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated May 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was com pleted in March 1978. For the Youghiogheny River, the hydrologic analysis was prepared by the USACE, and the hydraulic analysis was prepared by Michael Baker, Jr., In c., and com pleted in December 1976.
Lincoln, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated March 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was com pleted in March 1978. The hydrologic and hydraulic analyses for the Monongahela River were prepared by the USACE.
Marshall, Township of:	The hydrologic and hydraulic analyses for the FIS report dated May 4, 1981, were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in October 1978.

McCandless, Town of:	The hydrologic and hydraulic analyses for the FIS report dated Decem ber 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in December 1978.
McDonald, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated February 15, 1983, were prepared by the USACE, Pittsburgh District, for FEMA, under Inter-Agency Agreement No. IAA-H-9-79, Project Order No. 40, Amendment No. 1. That work was completed in March 1982.
McKeesport, City of:	The hydrologic and hydraulic analyses for the FIS report dated July 1978 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3812. That work was com pleted in July 1977. The hydrologic analyses for the Youghiogheny and Monongahela Rivers were prepared by the USACE. That wor k was prepared in December 1976.
McKees Rocks, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated May 16, 1977, were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent Nos. IAA-H-19-74 and IAA-H-16-75, Project Order Nos. 18 and 6, respectively.
Millvale, Borough of:	The hydrologic and hyd raulic analyses for the FIS report dated January 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3812. That work was com pleted in Nove mber 1977. The hydrologic and hydraulic analyses for the Allegheny River and Girty's Run were prepared by the USACE.
Monroeville, Municipality of:	The hydrologic and hydraulic analyses for the FIS report dated February 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3812. That work was completed in November 1977.

Moon, Township of:	The hydrologic and hydraulic analyses for the FIS report dated February 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was com pleted in March 1978. The hydrologic and hydraulic analyses for the Ohio River were prepared by the USACE.
Neville, Township of:	The hydrologic and hyd raulic analyses for the FIS report dated S eptember 5, 1975, were prepared by the USACE, Pittsburgh District, for FEMA, under Inter-Agency Agreement No. IAA-H- 8-71, Contract No. 8610147. That work was com pleted in 1975. The hydrologic and hydraulic analyses for the revised FIS report dated September 30, 1988, were prepared by the USACE, Pittsburgh District, f or FEMA, under Inter-Agency Agreem ent No. EM W-85-E-1822, Project Order No. 1, Amendment No. 4. That work was completed in January 1987.
North Fayette, Township of:	The hydrologic and hydraulic analyses for the FIS report dated A pril 18, 1983, were prepared by the USACE, Pittsburgh District, for FEMA, under Inter-Agency Agreem ent No. IAA-H-9-79, Proj ect Order No. 40, Amendment No. 1. That work was completed in March 1982.
North Versailles, Township of:	The hydrologic and hydraulic analyses for the FIS report dated O ctober 1, 1980, were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was com pleted in Septem ber 1978. The hydrologic analyses for the Monongahela River were previously prepared by the USACE, Pittsburgh District.
Oakdale, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated August 15, 1983, were prepared by the USACE, Pittsburgh District, for FEMA, under Inter-Agency Agreem ent No. IAA-H-9-79, Proj ect Order No. 40,

	Amendment No. 1. That work was completed in March 1982.
Oakmont, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated July 16, 1980, were prepared by GAI Consultan ts, Inc., for the FIA, under Contract No. H-4762. That work was completed in July 1979.
O'Hara, Township of:	The hydrologic and hydraulic analyses for the FIS report dated January 1980 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21, Amendment No. 1. That work was completed in April 1979.
Ohio, Township of:	The hydrologic and hydraulic analyses for the FIS report dated Nove mber 4, 1988, were prepared by the USACE, Pittsburgh District, for FEMA, under Inter-Agency Agreement No. EM W-85-E-1822, Project Order No. 1, Am endment No. 25. That work was completed in March 1987.
Penn Hills, Municipality of:	The hydrologic and hyd raulic analyses for the FIS rep ort dated D ecember 15, 1980, were prepared by GAI Consultants, Inc., for the FIA, under Contract No. H-4762. Tha t work was completed in August 1979.
Pitcairn, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated October 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in October 1978.
Pittsburgh, City of:	The hydrologic and hyd raulic analyses for the FIS report dated June 15, 1981, were prepared by the USACE, Pittsburgh District, for FEMA, under Inter-Agency Agreem ent No. IAA-H-16-75, Proj ect Order No. 17, and Inter-Agency Agreement No. IAA-H-7-76, Project Order No. 1. That work was completed in June 1977.

Plum, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated March 16, 1981, were prepared by GAI Consultan ts, Inc., for the FIA, under Contract No. H-4762. That work was completed in September 1979.
Port Vue, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated March 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was com pleted in March 1978. The hydrologic analysis for the Youghiogheny River was prepared by the USACE. That work was completed in December 1976.
Rankin, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated January 1980 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21, Amendment No. 1. That work was completed in March 1979.
Reserve, Township of:	The hydrologic and hydraulic analyses for the FIS report dated October 1976 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3727.
Robinson, Township of:	The hydrologic and hydraulic analyses for the FIS report dated A ugust 3, 1981, were prepared by GAI Consultants, Inc., for FEMA, under Contract No. H-4762. That work was completed in March 1980.
Ross, Township of:	The hydrologic and hydraulic analyses for the FIS report dated June 1979 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-7-76, Proj ect Order No. 16, Amendment No. 2. That work was completed in February 1978.
Rosslyn Farms, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated Novem ber 19, 1980, were prepared by GAI Consultants, Inc., for the FIA, under Contract No. H-4762. Tha t

	work was completed in October 1979. The hydrologic and hydraulic analyses for Chartiers Creek were prepared by the USACE.
Scott, Township of:	The hydrologic and hydraulic analyses for the FIS report dated November 3, 1981, were prepared by GAI Consultants, Inc., for FEMA, under Contract No. H-4762. That work was completed in January 1980. A portion of the hydrologic and hydraulic analyses for Chartiers Creek was prepared by Michael Baker, Jr., Inc.
Sewickley, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated March 1979 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreement No. IAA-H-7-76, Project Order No. 25, and Inter-Agency Agreement No. IAA-H-10-77, Project Order No. 4. That work was completed in October 1977.
Shaler, Township of:	The hydrologic and hydraulic analyses for the FIS report dated September 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in November 1978.
Sharpsburg, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated March 1978 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3812. The hydrologic and hydraulic analyses for the Allegheny River were prepared by the USACE. That work was completed in March 1977.
South Fayette, Township:	The hydrologic and hydraulic analyses for the original FIS report were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4816. That work was completed in February 1980. The hydrologic and hydraulic analyses for the FIS report dated April 3, 1989, were prepared by Kozel and Associates, for

	FEMA. That work was completed in December 1987.
South Park, Township of:	The hydrologic and hydraulic analyses for the FIS report dated May 1980 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in May 1979.
South Versailles, Township of:	The hydrologic and hydraulic analyses for the FIS report dated February 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in January 1978.
Springdale, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated January 1980 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21, Amendment No. 1. That work was completed in May 1979.
Springdale, Township of:	The hydrologic and hydraulic analyses for the FIS report dated January 1980 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21, Amendment No. 1. That work was completed in May 1979.
Stowe, Township of:	The hydrologic and hydraulic analyses for the FIS report dated August 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was com pleted in July 1978. The hydrologic and hydraulic analyses for the Ohio River were prepared by the USACE, Pittsburgh District.
Tarentum, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated February 1980 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21,

	Amendment No. 1. That work was completed in June 1979.
Trafford, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated March 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in March 1978.
Turtle Creek, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated May 1980 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was com pleted in Decem ber 1978. The USACE, Pittsbur gh District, provided hydrologic and hydraulic design data for detailed study streams.
Upper St. Clair, Township of:	The hydrologic and hydraulic analyses for the FIS report dated Septem ber 15, 1983, were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreement No. IAA-H-9-79, Project Order No. 40. That work was completed in March 1982. The hydraulic analysis for Chartiers Creek in the FIS report dated April 17, 1989, was prepared by Kozel and Associates for FEMA. That work was completed in December 1987.
Verona, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated July 16, 1980, were prepared by GAI Consultan ts, Inc., for the FIA, under Contract No. H-4762. That work was completed in July 1979.
Versailles, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated October 18, 1988, were prepared by the USACE, Pittsburgh District, for FEMA, under Contract No. EMW-85-E-1822, Project Order No. 1, Am endment No. 25. That work was com pleted in January 1987.
West Deer, Township of:	The hydrologic and hydraulic analyses for the FIS report dated A pril 18, 1983, were

	prepared by the USACE, Pittsburgh District, for FEMA, under Inter-Agency Agreem ent No. IAA-H-9-79, Proj ect Order No. 40, Amendment No. 1. That work was completed in May 1982.
West Elizabeth, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated March 1978 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3812. The hydrologic and hydraulic analyses for the Monongahela River were prepared by the USACE, Pittsburgh District. That work was completed in June 1977.
West Homestead, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated February 1980 were prepared by the USACE, Pittsburgh District, for the FIA, under Inter-Agency Agreem ent No. IAA-H-10-77, Proj ect Order No. 21, Amendment No. 1. That work was completed in March 1979.
West Mifflin, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated August 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was com pleted in July 1978. The hydrologic and hydraulic analyses for the Monongahela River were prepared by the USACE, Pittsburgh District.
White Oak, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated March 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-4553. That work was completed in April 1978.
Wilkins, Township of:	The hydrologic and hydraulic analyses for the FIS report dated March 1978 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3812. That work was completed in April 1977.
Wilmerding, Borough of:	The hydrologic and hydraulic analyses for the FIS report dated February 1979 were prepared by Michael Baker, Jr., Inc., for the FIA, under Contract No. H-3812. That work was completed in November 1977.

There are no previous FISs or FIR Ms for the Boroughs of Avalon, Ben Avon Heights, Brentwood, Bellevue, Braddock Hills, Bradford W oods, Chalfant,

Crafton, Dormont, East McKeesport, Ea st Pittsburg, Edgewood, Forest Hills, Franklin Park, Hom estead, Ingram, Mount Oliver, Munhall, North Braddock, Pleasant Hills, Sewickley Hills, S wissvale, Thornburg, Wall, W est View, Whitaker, Whitehall, and W ilkinsburg; the Townships of Aleppo, Baldwin, Frazer, Pine, and Rich land; and the Munici pality of Mt. Lebanon; th erefore, the previous authority and acknowledgm ents for these communities are not included in this FIS.

For the October 4, 1995, countywide FI S, revised hydrologic and hydraulic analyses for the Monon gahela River were prepared by the USACE, Pittsbu rgh District, for FEMA, under Inter-Agency Agreem ent No. EMW -90-E-3263, Project Order No. 4. That work was completed in October 1992.

For the August 5, 1997, countywide revision, the community disclaimer note for the Borough of Trafford was removed. The borough is now included in this FIS.

For the March 16, 1998, countywide revisi on, revised hydrol ogic and hydraulic analyses for Gourdhead Run, Harts Run, Little Pine Creek East, Little Pine Creek West, McCaslin Run, Montour Run No. 1, and Pine Creek were prepared by Pinto Engineering, for F EMA, under Contract No. EMW-93-C-4123. That work was completed in October 1993. The Boroughs of Etna a nd Franklin Park; the Town of M cCandless; and the Township s of Ha mpton, Indiana, O'H ara, Ross, and Shaler were affected by that revision.

For the July 5, 2000, countywide revi sion, revised hydrologic and hydraulic analyses for the Allegh eny River were prepared by the USACE, Pi ttsburgh District, for FEMA, under In ter-Agency Agreement No. EMW-94-E-4371. This work was com pleted in October 1997. The Boroughs of Aspinwall, Blawnox, Brackenridge, Cheswick, Etna, Fox Chapel, Millvale, Oakm ont, Plum, Sharpsburg, Springdale, Tarentum , and Ve rona; the Townships of East Deer, Harmar, Harrison, O'Hara, Shaler, and Springdale; the Municipality of Penn Hills and the City of Pittsburgh are affected by the July 5, 2000, revision.

For the Septem ber 21, 2001, countywid e revision, revised topographic information was prepared by Chester E ngineers, Inc., for the Borough of Fox Chapel. The Township of O'Hara was also affected by this revision.

For the May 15, 2003, countywide revision, the hydraulic and hydrologic analyses for Chartiers Creek were p erformed by the USACE, Pittsbu rgh District, for FEMA under Inter-Agency Agreem ent No. (IAA) H-9-79, Project Order No. 40 and Amendm ent No. 1. This work was completed in October 1982. This revision affects the Boroughs of Craft on, Rosslyn Farms, and Thornburg, and the Township of Robinson.

For this countywide revision the hydrol ogic and hydraulic analyses were performed by RAMPP, a joint venture of Dewberry, URS Corporation, and ESP,

for FEMA, under Contract No. H SFEHQ-09-D-0369, Project Order No. HSFE03-09-J-003B. This study was completed in September 2010. This revision affects all jurisdictions in Allegheny County.

Base map information shown on the FIRM was provided in digital f ormat by Allegheny County Geographic Information Systems Group. This information was photogrammetrically compiled at a s cale of 1:2,400 from aerial photography dated 2004.

The coordinate system used for the production of this FIRM is Pennsylvania State Plane Coordinate System South (FIPS Zone 3702), North Am erican Datum of 1983 (NAD 83) GRS 80 spheroid. C orner coordinates shown on the FIRM are in latitude and longitude referenced to Stat e Plane Pennsylvania. Differences in the datum and spheroid used in the production of FIRMs for adjacen t counties may result in slight positional differences in map features at the county boundaries. These differences do not affect the accuracy of information shown on the FIRM.

1.3 Coordination

An initial Consultation Coordination Offi cer's (CCO) meeting is held typically with representatives of FEMA, the co mmunity, and the study contractor to explain the nature and purpose of an FIS, and to identify the streams to be studied by detailed m ethods. A fina l CCO m eeting is held typically with the sam e representatives to review the results of the study.

The dates o f the pre-co untywide initial and f inal CCO meetings held for the communities within Allegheny County are sh own in Table 1, "Initial and Final CCO Dates."

TABLE 1 – INITIAL AND FINAL CCO DATES

Community Name	Initial CCO Date	Final CCO Date
Borough of Aspinwall	April 21, 1976	December 5, 1978
Borough of Baldwin	October 29, 1975	July 19, 1977
Borough of Bell Acres	*	June 11, 1984
Borough of Ben Avon	December 13, 1977	August 13, 1980
Municipality of Bethel Park	May 24, 1978	July 10, 1980
Borough of Blawnox	September 16, 1976	July 16, 1979
Borough of Brackenridge	September 15, 1976	August 30, 1979
Borough of Braddock	September 16, 1976	August 31, 1979
Borough of Bridgeville	January 19, 1979	October 4, 1982
Borough of Carnegie	October 28, 1975	April 25, 1977
Borough of Cheswick	September 15, 1976	July 6, 1979
City of Clairton	May 19, 1977	December 4, 1978
Township of Collier	April 5, 1978	February 3, 1981
Borough of Coraopolis	October 14, 1975	June 21, 1978

*Data not available

TABLE 1 – INITIAL AND FINAL CCO DATES – continued

Community Name	Initial CCO Date	Final CCO Date
Township of Crescent	December 13, 1977	August 25, 1980
Borough of Dravosburg	May 18, 1977	June 22, 1978
City of Duquesne	June 2, 1977	September 13, 1978
Township of East Deer	September 16, 1976	August 30, 1979
Borough of Edgeworth	September 9, 1976	April 11, 1979
Borough of Elizabeth	December 13, 1977	August 13, 1980
Township of Elizabeth	October 22, 1974	October 14, 1975
Borough of Emsworth	April 22, 1976	November 7, 1979
Borough of Etna	October 16, 1975	July 20, 1977
Township of Fawn	December 5, 1978	March 4, 1983
Township of Findlay	May 22, 1985	November 30, 1987
Borough of Fox Chapel	October 23, 1974	October 16, 1975
Borough of Glassport	May 19, 1977	June 22, 1978
Borough of Glen Osborne	October 14, 1975	June 21, 1978
Borough of Glenfield	September 9, 1976	April 11, 1979
Borough of Green Tree	April 5, 1978	August 12, 1980
Township of Hampton	September 16, 1975	April 6, 1977
Township of Harmar	September 16, 1976	July 27, 1979
Township of Harrison	October 14, 1975	July 21, 1977
Borough of Haysville	September 9, 1976	April 11, 1979
Borough of Heidelberg	April 5, 1978	May 13, 1980
Township of Indiana	December 5, 1978	December 1, 1982
Borough of Jefferson Hills	June 1, 1977	May 16, 1979
Township of Kennedy	May 16, 1977	March 15, 1979
Township of Kilbuck	May 16, 1977	October 16, 1978
Township of Leet	May 16, 1977	August 3, 1978
Borough of Leetsdale	September 9, 1976	April 11, 1979
Borough of Liberty	May 19, 1977	October 24, 1978
Borough of Lincoln	May 17, 1977	October 24, 1978
Township of Marshall	May 17, 1977	April 10, 1979
Town of McCandless	May 17, 1977	May 24, 1979
Borough of McDonald	January 17, 1979	October 4, 1982
City of McKeesport	September 18, 1975	September 28, 1977
Borough of McKees Rocks	October 16, 1974	*
Borough of Millvale	October 16, 1975	February 5, 1978
Municipality of Monroeville	October 15, 1975	August 2, 1978
Township of Moon	May 16, 1977	September 11, 1978
Township of Neville	December 14, 1984	November 30, 1987
Township of North Fayette	January 17, 1979	December 2, 1982
Township of North Versailles	May 18, 1977	March 7, 1979
Borough of Oakdale	January 17, 1979	October 4, 1982
Borough of Oakmont	April 5, 1978	March 7, 1980
Township of O'Hara	September 16, 1976	July 16, 1979
Township of Ohio	May 22, 1985	November 30, 1987
Municipality of Penn Hills	April 4, 1978	May 13, 1980
Borough of Pitcairn	May 18, 1977	May 16, 1979

*Data not available

TABLE 1 – INITIAL AND FINAL CCO DATES – continued

Community Name	Initial CCO Date	Final CCO Date
City of Pittsburgh	May 22, 1975	November 9, 1979
Borough of Plum	April 5, 1978	October 21, 1980
Borough of Port Vue	May 19, 1977	September 12, 1979
Borough of Rankin	September 16, 1976	July 17, 1979
Township of Reserve	October 23, 1974	October 16, 1975
Township of Robinson	April 5, 1978	February 3, 1981
Township of Ross	November 18, 1975	December 5, 1978
Borough of Rosslyn Farms	April 5, 1978	May 13, 1980
Township of Scott	April 5, 1978	February 4, 1981
Borough of Sewickley	April 22, 1976	September 11, 1978
Township of Shaler	May 17, 1977	April 12, 1979
Borough of Sharpsburg	October 21, 1975	July 20, 1977
Township of South Fayette	May 25, 1978	February 6, 1981
Township of South Park	May 23, 1978	November 8, 1979
Township of South Versailles	May 18, 1977	August 2, 1978
Borough of Springdale	September 15, 1976	July 18, 1979
Township of Springdale	September 15, 1976	July 18, 1979
Township of Stowe	May 16, 1977	March 6, 1979
Borough of Tarentum	September 15, 1976	August 30, 1979
Borough of Trafford	May 18, 1977	October 24, 1978
Borough of Turtle Creek	May 17, 1977	April 10, 1979
Township of Upper St. Clair	January 19, 1979	March 3, 1983
Borough of Verona	April 5, 1978	March 7, 1980
Borough of Versailles	May 22, 1985	November 30, 1987
Township of West Deer	December 5, 1978	December 1, 1982
Borough of West Elizabeth	September 18, 1975	August 10, 1977
Borough of West Homestead	September 16, 1976	July 17, 1979
Borough of West Mifflin	July 1, 1977	March 7, 1979
Borough of White Oak	May 19, 1977	October 3, 1978
Township of Wilkins	October 15, 1975	August 10, 1977
Borough of Wilmerding	October 21, 1975	August 2, 1978

For the original October 4, 1995, countywid e FIS, initial CCO meetings were held during September 1989 and were attended by representatives of the USACE, all jurisdictions within Allegheny County, and FEMA. A final CCO meeting was held on May 23, 1994, and was attended by representatives of the USACE, FEMA, and the Boroughs of Avalon, Bellevue, Crafton, Franklin Park, Homestead, Munhall, North Braddock, and Whitaker.

For the March 16, 1998, countywide revision, initial CCO meetings were held for the communities shown in the followi ng tabulation and were attended by representatives of the respective communities, Pinto Engineering, and FEMA.

Community	Initial CCO
Borough of Etna	April 21, 1993
Borough of Franklin Park	July 26, 1996

Community		Initial CCO
Township of Hampton		April 22, 1993
Township of Indiana	July	26, 1996
Town of McCandless	May	6, 1993
Township of O'Hara	July	26, 1996
Township of Ross	July	26, 1996
Township of Shaler	April	22, 1993

For the July 5, 2000, countywid e revision, an initial CCO meeting was held in September 1993 and was attended by representatives of the affected communities, the county, the USACE, and FEMA, a nd a final CCO m eeting was held on April 21, 1998.

For the Septem ber 21, 2001 revision, the in itial and final CCO meeting dates were not available.

For the May 15, 2003, c ountywide revision, the final CCO m eeting was held on April 29, 2002, and was attended by representatives of the Borough of Thornburg and FEMA.

For this countywide revision, an ini tial CCO meeting was held on January 26, 2010, and attend ed by represen tatives of FEMA Region III, the City of Pittsburgh, Allegheny County, USACE, and RAMPP.

The final C CO meetings were held on September 6 and 7, 2011 and were attended by representatives of FEMA Region III, RAMPP, and representatives of numerous affected communities.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Allegheny County, Pennsylvania.

All or portions of the flooding sources li sted in Table 2, "Detailed Studied Streams," were studied by detailed m ethods. Li mits of detailed study are indicated on the Flood Profiles (Exhibit 1) and on the FIRM (Exhibit 2).

TABLE 2 – DETAILED STUDIED STREAMS

Abers Creek	Allegheny River	Bear Run
Becks Run	Big Sewickley Creek	Boston Hollow Run
Boyds Hollow Run	Brush Creek 1	Brush Creek 2
Bull Creek	Campbells Run	Chalfant Run
Chartiers Creek	Chartiers Creek-Diversion Channel	Crouse Run Tributary
Crooked Run	Crouse Run	Douglass Run
Deer Creek	Dirty Camp Run	East Thompson Run

TABLE 2 – DETAILED STUDIED STREAMS- (continued)

Douglass Run Tributary No. 1	Douglass Run Tributary No. 2	Gillespie Run
Fallen Timber Run	Georges Run	Graesers Run
Girty's Run	Gourdhead Run	Hoffman Run
Happy Hollow Run	Harts Run	Humms Run
Jacks Run	Leak Run	Lewis Run
Lick Run	Little Bull Creek	Little Deer Creek
Little Pine Creek East	Little Pine Creek West	Little Plum Creek
Lobbs Run	Long Run	Lowries Run
McCaslin Run	McClarens Run	McLaughlin Run
Millers Run	Monongahela River	Montour Run
Montour Run No. 1	Moon Run	North Branch
Robinson Run	North Fork Montour Run	Ohio River
Ohio River Back Channel	Painters Run	Peters Creek
Pidgeon Hollow Run	Piersons Run	Pine Creek
Piney Fork	Pitt Street Tributary	Plum Creek
Pucketa Creek	Robinson Run	Rochester Run
Sandy Creek	Saw Mill Run	Sawmill Run
Sandy Creek	Saw Mill Run	Sawmill Run
Scrubgrass Run	South Fork Montour Run	Spring Garden Run
Squaw Run	Squaw Run Tributary No. 1	Squaw Run Tributary No. 2
Squaw Run Tributary No. 4	Streets Run	Thompson Run
Tributary A	Tributary to Bull Creek	Tributary 1 to Piney Fork
Turtle Creek	Unnamed Stream Along	Moss Side Boulevard
West Branch Deer Creek	Whiskey Run	Wittmer Run
Wildcat Run	Wylie Run	Youghiogheny River

The following tabulation lists streams that have names in this countywide FIS other than those used in the previously printed pre-countywide FISs for the communities in which they are located:

Community	Old Name	New Name
Borough of Bridgeville	Chartiers Creek Auxiliary Channel	Chartiers Creek
Township of Elizabeth	Hayden Run	Fallen Timber Run
Borough of Emsworth	Ohio River-Main Channel	Ohio River
Borough of Etna	Little Pine Creek	Little Pine Creek West
Township of Findlay	North Fork Montour Run	Montour Run
Township of Hampton	Montour Run	Montour Run No. 1
Township of Marshall	Brush Creek	Brush Creek 2
Town of McCandless	Little Pine Creek	Little Pine Creek West
Municipality of Monroeville	Turtle Creek at Abers Creek	Turtle Creek
	West Thompson Run	Thompson Run
Township of Richland	Montour Run	Montour Run No. 1

Community	Old Name	New Name
Township of Ross	West Little Pine Creek	Little Pine Creek West
Borough of Trafford	Brush Creek	Brush Creek 1

As part of the October 4, 1995, countywide FIS, updated analyses were included for the Monongahela River for its entire length within the county.

For the March 16, 1998, countywide revision, limits of detailed study for the newly studied or revised streams are shown in the following tabulation.

Stream Name	Limits of Detailed Study
Gourdhead Run	From confluence with Pine Creek to a point approximately 0.6 mile upstream of Harts Run Road
Harts Run	From confluence with Gourdhead Run to a point approximately 350 feet upstream of Harts Run Road
Little Pine Creek East	From confluence with Pine Creek to a point approximately 1,850 feet upstream of Klein Road
Little Pine Creek West	From confluence with Pine Creek to a point approximately 40 feet upstream of Babcock Boulevard
McCaslin Run	From confluence with Gourdhead Run to a point approximately 300 feet upstream of McCully Road
Montour Run No. 1	From confluence with Pine Creek to a point approximately 1.6 mile upstream of Wildwood Road
Pine Creek	From confluence with the Allegheny River to a point approximately 150 feet upstream of Wildwood Road and from a point approximately 0.4 mile downstream of Kummer Road to a point approximately 900 feet upstream of confluence of Fish Run

The March 16, 1998, countywide revision al so incorporated changes to the backwater effects of Pine Creek on Crouse Run.

For the July 5, 2000, countywide revision, the Allegheny River was restudied, by detailed methods for its entire length within the county. In addition to backwater

effects from the Allegheny River on Herrs Island Back Channel, Fourteen Mile Island Back Channel, and Twelve Mile Island Back Channel, side channels along the Allegheny River were also studied by detailed methods. Girty's Run, Pine Creek, Sandy Creek, Plum Creek, and Pucketa Creek were also studied.

The July 5, 2000, countywide revision also incorporates the determinations of letters issued by FEMA resulting in map changes (Letter of Map Revision [LOMR]), as shown in the following tabulation.

Community	Flooding Source and Project Identifier	Date Issued
City of Pittsburgh	Allegheny River Updated analyses reflecting the construction of the Garrison Place sewer flap gate, bounded by 9th and 10th Streets, Fort Duquesne Boulevard, and Penn Avenue	March 12, 1997
Borough of Oakmont	Tributary to Plum Creek Updated analyses to reflect the channelization of the tributary in the vicinity of Oakmont Common	May 30, 1996
Borough of Oakmont	Plum Creek Updated topographic information from 1,000 feet upstream of CONRAIL bridge to the corporate limit	January 19, 1996

For the September 21, 2001, countywide revision, topographic information was updated for Squaw Run, Squaw Run Tributary Nos. 1, 2, and 4, Glade Run, and Stony Camp Run along their entire lengths. Detailed information was removed along Squaw Run Tributary No. 3.

For May 15, 2003, countywide revision, Chartiers Creek was studied by detailed methods from just upstream of Ingram Boulevard to approximately 300 feet downstream of Chartiers Avenue. This revision affected the Boroughs of Crafton, Rosslyn Farms, and Thornburg, and the Township of Robinson.

For this countywide revision, the majority of SFHAs designated as Zone AE maintained base flood elevations (BFEs) profiles from the previous FIS, with flood areas redelineated to new topography, with the exception of some areas that remain unchanged from the previous FIRM. Portions of Graesers Run, McLaughlin Run, and Plum Creek that were updated through new hydrologic and hydraulic analyses, for the revised detailed study limits, see Table 3, "Scope of Study." The majority of SFHAs designated as Zone A were updated through new hydrologic and hydraulic analyses, with the exception of some areas that remain unchanged from the previous FIRM.

TABLE 3 - SCOPE OF STUDY

Graesers Run	From the confluence with McLaughlin Run to a point approximately 1,720 feet upstream of Brookside Boulevard.
McLaughlin Run	From the confluence with Ch artiers Creek to a poin t approximately 1,330 feet upstream of Bethel Church Road.
Plum Creek	From the confluence with Allegheny River to a point approximately 260 feet upstream of Saltsburg Road.

The areas studied by detailed m ethods were selected with priority giv en to all known flood hazard areas and areas of projected develo pment and proposed construction through Allegheny County.

Numerous streams were studied by approxi mate analyses. Approximate analyses were used to study those areas having a low development potential or m inimal flood hazards. The scope and m ethods of study were pro posed to, an d agreed upon, by FEMA and Allegheny County.

For this countywide revision, floodplain boundaries for the stream s that had been previously studied by detailed m ethods were redelineated based on m ore up-to-date topographic data.

This countywide revision incorporates the following Letters of Map Revision (LOMRs) which are listed in Table 4 below.

TABLE 4 – INCORPORATED LETTERS OF MAP REVISION

Case Number	Effective Date	Flooding Source
00-03-111P	09/22/2000	Thompson Run
00-03-119P	08/07/2000	Peters Creek
02-03-009P	09/04/2002	Lowries Run
02-03-029P	10/15/2002	Sawmill Run
02-03-043P	01/14/2003	Montour Run
02-03-097P	05/17/2002	Montour Run
03-03-011P	02/13/2003	Jacks Run & Long Run
04-03-097P	08/25/2004	Sawmill Run
04-03-113P	12/29/2004	Graesers Run Tributary 1
09-03-0036P	12/31/2008	Unnamed Tributary Along Moss Side Boulevard
11-03-1924P	08/10/2012	Allegheny River

2.2 Community Description

Allegheny County is located in southweste rn Pennsylvania. It is bordered by Butler County to the north, Beaver Count y to the northwest, W ashington County to the southwest, Fayette County to th e south, and W estmoreland County to the east. The 2010 population of the county was 1,223,348, an increase of 0.4 percent from the 2000 population of 1,218,494, with the largest concentration in the City of Pittsburgh (Reference 1).

The climate of Allegheny County is te mperate with seasonal variation in temperature. Temperatures range from an average of 31 degrees Fahrenheit (°F) in January to 74 °F in July. The county is geogra phically located in a region of variable air mass activity, being subject to both polar and tropical continental and maritime air mass invasion. Measurable precipitation occurs approximately 149 days per year and averages 37 inches annually.

Allegheny County lies within the Alleghe ny Plateau physiographic region. The watersheds are characterized by V-shaped valleys and steep hillsides. Soils are generally silt and s ilty clay loams and exhibit low inf iltration capacities (References 2 and 3).

The Allegheny River, with a total drainage area of 11,778 square m iles at its confluence, joins the Monongahela River to form the Ohio River at P ittsburgh, Pennsylvania. The headwaters of the Allegheny River are in the northwestern slopes of the Appalachian Mountain Range in Potter County in northwestern Pennsylvania. It flows in a northwestern direction from its source until it reaches Portville, New York, near the New York-Pennsylvania border. It then flows west to Salamanca, New York, and southward into Pennsylvania to its confluence at Pittsburgh. The Allegh eny River m easures a total dis tance of 322 m iles. The average bed slope of the Allegheny River is 1.0 foot per m ile, and valley floor widths range from 550 to 2,200 feet. Local relief above the stream valley varies from approximately 300 to 400 feet to an average hilltop elevation of approximately 1,200 feet National Geodetic Vertical Datum of 1929 (NGVD 29).

2.3 Principal Flood Problems

Flooding on Abers Creek and its tribut ary, Humms Run, has been documented extensively in the study titled Urban Development and Small Watershed Flooding prepared by the Turtle Creek W atershed Association, Inc. (Reference 4). Major floods on Abers Creek since 1949, recorded at the USGS gaging station No. 840 near Murrysville, are listed in the following tabulation. Discharges are expressed in cubic feet per second (cfs).

ABERS CREEK AT STATION NO. 840

Date	Stage (feet)	Elevation (feet)	Discharge (cfs)	Recurrence Interval (years)
July 1950	6.09	942.82	1,600	31
August 1976	7.21	943.94	1,230	15
August 1959	6.98	943.71	1,100	10
June 1952	6.59	943.32	1,000	8
October 1954	6.68	943.41 950		6
June 1972	5.78	942.51 720		

Overbank flooding of the Allegheny Ri ver, including the backwater flooding from the Monongahela River, is the pr incipal flooding problem within the study area. The Allegheny and Monongahela Rive rs have a history of flooding dating from the 1800s. The highest flood of r ecord occurred in March 1936, the result of flooding on the Allegheny River and backwater flooding from the Monongahela River. This flood was caused by heavy rain and snowmelt from the 16th to the 18th of March. Although the m ain flood season is normally late winter to early spring, m ajor floods have occurr ed during the summ er or early fall months from the remnants of hurricanes.

The following tabulation shows the m ost significant floods of r ecord recorded at the Pittsburgh "Point" gage , located at the confluence of the Allegheny and Monongahela Rivers. The stages shown reflect the reductions that were provided by the USACE upstream dams and reservoirs that were in existence at the time of the flood.

FLOODS OF RECORD ON THE ALLEGHENY RIVER
(PITTSBURGH "POINT" GAGE)

Date	Stage[1] (feet)	Elevation (feet)	Discharge (cfs)
March 18, 1936	46.0[2]	740.2[3]	557,000
March 15, 1907	38.5[2]	732.7[3]	440,000
December 31, 1942	36.6[2]	730.8[3]	396,000
February 6, 1884	36.3[2]	730.5[3]	403,000
June 23, 1972	35.8[2]	730.0[3]	384,000
March 1, 1902	35.4[2]	729.6[3]	387,000
April 27, 1937	35.1[2]	729.3[3]	351,000
January 20, 1996	34.6[2]	728.8[3]	*

[1]Flood stage = 25.0 feet
[2]Stages prior to operation of all upstream dams
[3]Gage zero elevation = 694.2 feet, NGVD 29
*Data not computed

FLOODS OF RECORD ON THE ALLEGHENY RIVER
(PITTSBURGH "POINT" GAGE) – (continued)

Date	Stage[1] (feet)	Elevation (feet)	Discharge (cfs)
January 26, 1937	34.5[2]	728.7[3]	338,000
March 19, 1865	34.4[2]	728.6[3]	370,000
September 28, 1861	34.3[2]	728.5[3]	369,000
February 18, 1891	34.3[2]	728.5[3]	369,000
January 9, 1913	34.3[2]	728.5[3]	369,000

[1]Flood stage = 25.0 feet
[2]Stages prior to operation of all upstream dams
[3]Gage zero elevation = 694.2 feet, NGVD 29

The following tabulations lis t the most significant fl oods of record for the Allegheny River at Lo ck and Dam No. 2 (at Pittsbu rgh, River Mile 6.7), Lock and Dam No. 3 (at Acm etonia, River Mile 14.5), and Lock and Dam No. 4 (at Natrona, River Mile 24.2), showing the cres t stages and elevations that were actually experienced. The recurrence interval at Lock and Da m Nos. 2 and 3 is based on data recorded at Pittsburg h and reflects the n atural frequency of each flood, assuming no reductions from any flood control projects; however, the June 1972 crest was estim ated to be about 12.1 feet lower than it would have been without the 9 upstream flood-control projects (Reference 5).

ALLEGHENY RIVER AT LOCK AND DAM NO. 2

Date	Stage[1] (feet)	Elevation (feet)	Discharge[2] (cfs)	Recurrence Interval (years)
March 18, 1936	38.2[3]	748.1[4]	360,500	150
December 30, 1942	29.0[3]	738.9[4]	251,000	30
January 22, 1959	25.3[3]	735.2[4]	224,000	8
March 10, 1964	26.3[3]	736.2[4]	218,700	20
January 25, 1937	26.8[3]	736.7[4]	214,000	9
April 26, 1937	26.9[3]	736.8[4]	210,000	9

[1]Stage heights may be slightly higher for lower discharges on the Allegheny River due to the backwater effects from coincident flows on the Monongahela River
[2]Discharges are computed at Lock and Dam No. 4
[3]Flood stage (upper gage) = 23.0 feet
[4]Upper gage zero elevation = 709.85 feet

ALLEGHENY RIVER AT LOCK AND DAM NO. 2 (continued)

Date	Stage[1] (feet)	Elevation (feet)	Discharge[2] (cfs)	Recurrence Interval (years)
March 7, 1945	25.7[3]	735.6[4]	207,000	10
June 23, 1972	27.3[3]	737.2[4]	207,000	300
January 20, 1996	22.9[5]	734.9[6]	*	*
March 31, 1940	23.0[3]	732.9[4]	187,000	2
January 27, 1952	24.4[5]	733.3[4]	185,000	6
March 9, 1956	22.3[5]	732.2[4]	179,000	4

[1]Stage heights may be slightly higher for lower discharges on the Allegheny River due to the backwater effects from coincident flows on the Monongahela River
[2]Discharges are computed at Lock and Dam No. 4
[3]Flood stage (upper gage) = 23.0 feet
[4]Upper gage zero elevation = 709.85 feet
[5]Flood stage (upper gage) = 20.85 feet
[6]Upper gage zero elevation = 712.0 feet
*Data not computed

ALLEGHENY RIVER AT LOCK AND DAM NO. 3

Date	Stage (feet)	Elevation[1] (feet)	Discharge[2] (cfs)	Recurrence Interval (years)
March 18, 1936	33.9[5]	756.6[4]	360,500	1,000
December 30, 1942	26.1[5]	748.8[4]	251,000	100
January 22, 1959	23.9[5]	746.6[4]	224,000	50
March 10, 1964	24.2[5]	746.9[4]	218,700	45
January 25, 1937	24.3[5]	747.0[4]	214,000	35
April 26, 1937	24.4[5]	747.1[4]	210,000	*
March 7, 1945	23.5[3]	746.2[4]	207,000	*
June 23, 1972	23.7[3]	746.4[4]	207,000	30
January 20, 1996	19.1[5]	744.9[6]	*	*
March 31, 1940	22.0[3]	744.7[4]	187,000	*
January 27, 1952	22.0[3]	744.7[4]	185,000	*
March 9, 1956	21.7[3]	744.4[4]	179,000	*

[1]At Borough of Cheswick
[2]Discharges are computed at Lock and Dam No. 4
[3]Flood stage (upper gage) = 20.0 feet
[4]Upper gage zero elevation = 722.72 feet
[5]Flood Stage (upper gage) = 16.92 feet
[6]Upper gage zero elevation = 725.8 feet
*Data not available

ALLEGHENY RIVER AT LOCK AND DAM NO. 4

Date	Stage (feet)	Elevation[1] (feet)	Discharge[2] (cfs)	Recurrence Interval (years)
March 17, 1936	34.0[3,4]	770.7[4]	360,500	1,000
December 30, 1942	27.7[3]	764.4[4]	251,000	100
January 22, 1959	26.0[3]	762.7[4]	224,000	50
March 10, 1964	25.7[3]	762.4[4]	218,700	45
January 25, 1937	25.3[3]	762.0[4]	214,000	35
April 26, 1937	25.1[3]	761.8[4]	210,000	*
March 7, 1945	25.0[3]	761.7[4]	207,000	*
June 23, 1972	25.0[3]	761.7[4]	207,000	30
March 31, 1940	23.6[3]	760.3[4]	187,000	*
January 27, 1952	23.4[3]	760.1[4]	185,000	*
March 9, 1956	23.0[3]	759.7[4]	179,000	*
January 20, 1996	23.1[5]	759.5[6]	*	*

[1]At Township of East Deer
[2]Discharges are computed at Lock and Dam No. 4
[3]Flood stage (upper gage) = 20.0 feet
[4]Upper gage zero elevation = 722.72 feet
[5]Flood stage (upper gage) = 20.3 feet
[6]Upper gage zero elevation = 736.4 feet
*Data not available

Jacks Island, adjacent to the Township of Harrison; Twelvemile Island, located in the Township of Har mar; Sycamore Island, located in the Township of O'Hara; Ninemile Island, located in the Munici pality of Penn Hi lls; Sixmile Island, located in the Borough of Sharpsburg; a nd Herrs Island, located in the City of Pittsburgh are the only potential obstructions to flow on the Allegheny River.

Neville Island, located in the Township of Neville; Davis Island, located in the Township of Stowe; and Brunot Island, loca ted in the City of Pittsburg h are the only potential obstructions to flow on the Ohio River.

Major floods occurred on Chartiers Creek in 1912, 1915, 1920, 1922, 1936, 1945, 1956, 1961, 1963, and 1966. The flood of rec ord occurred in September 1912 and was estimated by high-water mark comparison by the USACE to have a flow of 20,000 cfs. Since 1916, discharges on Ch artiers Creek have been recorded at the U.S. Ge ological Survey (USGS) gaging station located in Carnegie. The largest discharges recorded at the gaging station were on June 17, 1920; March 6, 1945; and August 6, 1956. The following tabulation shows the peak discharges and elevation at the USGS gage and the app roximate recurrence intervals of 7 of the floods recorded at the gaging station (References 6, 7, 8, 9, and 10).

CHARTIERS CREEK AT CARNEGIE GAGE

Date	Stage (feet)	Elevation[1] (feet)	Discharge[2] (cfs)	Recurrence Interval (years)
September 1912	*	783.0[2]	20,000	100
June 17, 1920	*	*[3]	12,800	20
March 6, 1945	*	775.5	12,200	18
August 6, 1956	*	778.4	13,500	26
April 1961	*	773.3	7,180	5
March 1963	*	776.2	10,600	14
February 1966	*	775.9	9,190	9

[1]Location of Gage:

a) October 1, 1916 – December 15, 1931: Non-recording gage one-half mile downstream of Hammond Street bridge in the Borough of Carnegie, 8.4 miles upstream from mouth (Datum: Arbitrary)

b) January 8, 1932 – September 30, 1933: Non-recording gage one mile downstream of Hammond Street bridge in the Borough of Carnegie, 7.9 miles upstream from mouth (Datum: 757.91 feet)

c) November 20, 1941 – August 18, 1967: Water-stage recorded at site 400 feet upstream of Hammond Street bridge, 8.9 miles upstream from mouth (Datum: 762.03 feet)

d) August 19, 1967 – September 30, 1971: Non-recording gage at center of right span at downstream side of Hammond Street bridge, 8.9 miles upstream from mouth (Datum: 761.03 feet)

e) October 1, 1971 – September 30, 1975: Non-recording gage at site 4.6 miles downstream from Hammond Street bridge, 4.3 miles upstream from mouth (Datum: 725.99 feet)

f) October 1, 1975 – Present: Water-stage recorder and concrete weir control on left bank 60 feet downstream from Hammond Street bridge, 8.9 miles upstream from mouth (Datum: 755.45 feet)

[2]Approximate elevation 400 feet upstream of Hammond Street bridge
[3]No water-surface elevation for the June 17, 1920, flood is available in the USGS records, since gage datum at that time was arbitrary
*Data not available

The following tabulations show the major floods of record on the Monongahela River as measured at Lock and Dam No. 2 lower gage located in the Borough of Braddock, river mile 11.2, and Lock and Dam No. 3 located just upstream of the Borough of West Elizabeth, at river mile 23.8.

MONONGAHELA RIVER AT LOCK AND DAM NO. 2

Date	Stage (feet)	Elevation (feet)	Discharge (cfs)	Recurrence Interval (years)
March 1936	*	*	210,000	60
March 16, 1936	46.0	745.3	200,000	*
June 24, 1972	40.8	738.8[1]	180,000	20
October 16, 1954	41.7	735.7[2]	204,000	40
December 30, 1942	36.3	735.6[2]	150,000	*
November 6, 1985	41.3	735.3[1]	208,000	*
June 5, 1941	35.7	735.0[2]	201,000	40
April 27, 1937	34.6	733.9	166,000	*
March 7, 1967	39.2	733.2[1]	178,000	*
October 29, 1937	33.6	732.9	182,000	*
March 7, 1945	33.5	732.8[2]	138,000	*
August 6, 1956	38.6	732.6[2]	105,000	*

Note: Zero datum at the lower gage was 699.25 feet until November 1951
Zero datum at the lower gage was 694.0 feet from November 1951 to November 1967
Zero datum at the lower gage was 698.0 feet from November 1967 to October 1988
Zero datum at the lower gage was 694.0 feet from October 1988 to present
Lower gage heights are affected by backwater from the Ohio River at Pittsburgh

[1]Actual elevations are modified by present reservoir system
[2]Actual elevations are modified by existing reservoirs at time of flood
*Data not available

MONONGAHELA RIVER AT LOCK AND DAM NO. 3

Date	Stage[1] (feet)	Elevation (feet)	Discharge (cfs)	Recurrence Interval (years)
March 18, 1936	32.5[2]	750.8[3]	153,000[4]	23[5]
June 23, 1972	29.0[2]	746.9[3]	137,000	11
October 16, 1954	28.5[2]	746.4[3]	141,000	14
March 7, 1967	28.3[2]	746.2[3]	158,000	30

[1]Stages prior to November 1967 were adjusted to present gage zero
[2]Upper gage zero elevation = 717.9 feet
[3]Flood stage (upper gage) = 20.0 feet
[4]Before construction of Tygart Dam and lake
[5]Recurrence intervals for floods occurring prior to flood control measures

MONONGAHELA RIVER AT LOCK AND DAM NO. 3 – (continued)

Date	Stage[1] (feet)	Elevation (feet)	Discharge (cfs)	Recurrence Interval (years)
June 5, 1941	27.9[2]	745.8[3]	143,000	15
March 5, 1963	26.5[2]	744.4[3]	154,000	25
August 6, 1956	26.1[2]	744.0[3]	133,000	10
October 29, 1937	25.9[2]	743.8[3]	130,500	9[5]
May 25, 1968	25.6[2]	743.5[3]	127,000	7
March 25, 1936	25.0[2]	742.9[3]	133,000	10[4]
December 30, 1942	24.8[2]	742.7[3]	111,000	4

[1]Stages prior to November 1967 were adjusted to present gage zero
[2]Upper gage zero elevation = 717.9 feet
[3]Flood stage (upper gage) = 20.0 feet
[4]Before construction of Tygart Dam and lake
[5]Recurrence intervals for floods occurring prior to flood control measures

Ice jams and/or debris collection at hydr aulic structures often aggravate flooding along the Monongahela River.

The following tabulations list major floods experienced on the Ohio River.

OHIO RIVER AT EMSWORTH

Date	Stage (feet)	Elevation (feet)	Discharge (cfs)	Recurrence Interval (years)
March 19, 1936	44.4[1]	723.0[2]	557,000	150
December 31, 1942	37.3[1]	715.9[2]	396,000[3]	30
June 23, 1972	34.4[1]	713.0[2]	372,000[3]	230
April 27, 1937	34.0[1]	712.6[2]	351,000	10
March 7, 1945	33.5[1]	712.1[2]	343,000[3]	11
January 26, 1937	32.9[1]	711.5[2]	338,000	9
October 16, 1954	32.8[1]	711.4[2]	327,000[3]	45
March 11, 1964	31.4[1]	710.0[2]	313,000[3]	20
January 23, 1937	31.0[1]	709.6[2]	310,000	6
January 28, 1952	30.4[1]	709.0[2]	283,000[3]	6
January 23, 1959	30.2[1]	708.8[2]	275,000[3]	8

[1]Flood stage (upper gage) = 26.0 feet
[2]Upper gage zero elevation = 678.6 feet
[3]Discharges affected by flood control project

OHIO RIVER AT EMSWORTH

Date	Stage[1] (feet)	Elevation[2] (feet)	Discharge (cfs)	Recurrence Interval (years)
March 19, 1936	43.0	723.0	557,000	150
December 31, 1942	35.9	715.9	396,000[3]	30
June 23, 1972	33.0	713.0	372,000	230
April 27, 1937	32.6	712.6	351,000	10
March 7, 1945	32.1	712.1	343,000	11
January 26, 1937	31.5	711.5	338,000[3]	9
October 16, 1954	31.4	711.4	327,000[3]	45
March 11, 1964	30.0	710.0	313,000[3]	20
January 23, 1937	31.0	709.8	310,000	6
January 28, 1952	29.0	709.0	283,000[3]	7
January 23, 1959	28.8	708.8	275,000	8

[1]Flood stage (upper gage) = 24.6 feet
[2]Upper gage zero elevation = 680.0 feet
[3]Discharges affected by flood control projects

OHIO RIVER AT PITTSBURGH GAGE

Date	Stage[1] (feet)	Elevation[2] (feet)	Discharge (cfs)	Recurrence Interval (years)
March 18, 1936	46.0[3]	740.2	557,000	*
March 15, 1907	38.5[3]	732.7	440,000	*
December 31, 1942	36.6[3]	730.8	396,000	*
February 6, 1884	36.3[3]	730.5	403,000	*
June 23, 1972	35.8[3]	730.0	384,000	*
March 1, 1902	35.4[4]	729.6	387,000	*
April 27, 1937	35.1[3]	729.3	351,000	*
January 26, 1937	34.5[3]	728.7	338,000	*
March 19, 1865	34.4[3]	728.6	370,000	*
September 28, 1851	34.3[3]	728.5	369,000	*
February 18, 1891	34.3[3]	728.5	369,000	*
January 9, 1913	34.3[3]	728.5	369,000	*

[1]Flood stage = 25.0 feet
[2]Gage zero elevation = 694.2 feet
[3]Stages prior to the operation of all the upstream dams
[4]Stage after the operation of all presently operating upstream dams
*Data not available

The following tabulation lists the five largest floods on record for Turtle Creek.

TURTLE CREEK AT EAST PITTSBURGH GAGE

Date	Stage (feet)	Elevation[1] (feet)	Discharge (cfs)	Recurrence Interval[2] (years)
December 30, 1942	*	739.5	9,100	10
May 27, 1946	*	738.6	8,200	8
August 3, 1958	*	735.3	10,500	15
October 15, 1954	*	741.8	12,300	30
June 23, 1972	*	737.1	13,200	45

[1]Crest elevations at Cable Avenue (initial damage stage 735.0 feet)
[2]Determined by flow comparison
*Data not available

Flooding from the Youghiogheny River can occur at any time during the year. From December to April, it is usually the result of snowmelt or spring rains. Flooding from summer storms is also a frequent occurrence on the river. River flooding usually has a duration of several days (Reference 6).

There were three major floods on the Youghiogheny River: March 1936, October 1954, and June 1972. The October 1954 flood was the largest, with a recurrence interval of approximately 100 years and a discharge of 108,000 cfs. The March 1936 flood was approximately a 60-year flood with a discharge of 100,000 cfs. The June 1972 flood had a recurrence interval of approximately 30 years and a discharge of 91,500 cfs. These recurrence intervals are based on the log-Pearson Type III flow-frequency analysis of the flow records at the Sutersville gage, located approximately 12 miles upstream. The actual flow of the 1936 flood was compared to the flow-frequency analysis of the presently regulated watershed. High-water marks for the three major floods of the Youghiogheny River in the Borough of Liberty are as follows: March 1936 downstream corporate limits, 748.9 feet, upstream corporate limits, 750.3 feet; October 1954 downstream corporate limits, 744.8 feet, upstream corporate limits 747.6 feet; and June 1972 downstream corporate limits, 744.4 feet, upstream corporate limits, 746.7 feet. High-water marks in the Borough of Port View are as follows: March 1936 downstream corporate limits, 747.6 feet, upstream corporate limits, 748.9 feet; October 1954 downstream corporate limits, 742.5 feet, upstream corporate limits 744.8 feet; and June 1972 downstream corporate limits, 742.8 feet, upstream corporate limits, 744.4 feet (References 6 and 11).

Small streams, such as the following, are sensitive to short storms of high intensity: Abers Creek, Campbells Run, Georges Run, Gourdhead Run, Humms Run, Little Plum Creek, Long Run, Montour Run, Moon Run, Painters Run, Plum Creek, Pucketa Creek, Sandy Creek, Scrubgrass Run, Whiskey Run, and their tributaries. These storms generally occur during the summer months and may result in overbank flooding along the entire stream. Occasionally, erratic hurricane movement such as that associated with Tropical Storm Agnes, can cause flooding. Local flooding conditions may be worsened by channel constrictions caused by debris, ice, or man-made structures.

Becks Run has overflowed its banks duri ng heavy storms upstream of the Baj o Street bridge in the Borough of Baldwin. Several commercial and residential structures have been affected. Becks Run also affects some residential structures below Bajo Street near the terminus of Somerset Street.

Floods on Big Sewickley Creek are caused primarily by high-intensity storms of short duration. As a result of the short period of record, the only flood on record at the Big Sewickley Creek gage occurred in 1975. The flood had a discharge of 2,540 cfs and a recurrence interval of approximately 10 years.

The flood of June 30, 1974, is the highest known flood to occur on Bull Creek, and caused considerable damage through the basin in the Township of Fawn. Several high-water marks were obtained from this flood. Damage from Bull Creek in the Township of Harrison is relatively minor. Debris clogging in a bridge about a half mile downstream, in the Borough of Tarentum, can cause higher flood elevations in the Township of Harrison.

Damage from overflow from Chalfant Run occurs mainly near its confluence with Thompson Run. The Pennsylvania Department of Environmental Resources has issued a survey which includes damages caused by flooding from Chalfant Run during the flood of August 1956 (Reference 8). Eighteen residences were affected, and the total damage was $27,300 (1969 dollars). Also, hazardous velocities degrade channel banks, especially along several commercial establishments upstream of Baker Street.

On Crooked Run, the worst flood in recent years took place in 1956. Many houses along the stream were heavily damaged by the floodwaters. Crooked Run floods periodically as a result of heavy rains, and these floods can be expected to increase in frequency and severity, because the channel area is gradually being reduced by siltation. Crooked Run flows through a storm culvert along 5th Avenue, in the City of McKeesport, from its inlet at the intersection of Lincoln Way and 5th Avenue to its outlet at the Monongahela River. The entrance to this culvert frequently clogs with debris during storms and, as a result, the flood waters flow down 5th Avenue instead of entering the culvert. This creates a sheet flow problem along 5th Avenue.

High-water marks provided by the USACE on Crouse Run indicate that the July 1974 flood had approximately a 50-year recurrence interval on Crouse Run.

Davis Run enters a culvert at the upstream side of Ohio River Boulevard (State Route 65) in the Borough of Glen Osborne, between McKown Avenue and the Glen Osborne-Sewickley corporate limits, and flows through it to the Ohio River. As a result of the small size of its opening under Ohio River Boulevard (State Route 65), this culvert clogs easily with debris.

The highest known flood on Deer Creek, West Branch Deer Creek, and Little Deer Creek occurred on June 30, 1974. According to several high-water marks obtained from this flood, the estimated recurrence interval was approximately 50 years. Another high flood in the Deer Creek basin occurred on October 16, 1954.

Flooding on Dirty Camp Run has occurred periodically. The primary problems include basement flooding of approximately 30 commercial buildings and approximately 50 residential properties in the Borough of Pitcairn.

The highest known flood for Girty's Run and Lowries Run occurred in July 1950. The flood was caused by the saturation of ground by preceding rains and the downpour of a storm on the day of the flood (Reference 4). At that time, the discharge recorded for Girty's Run was 6,900 cfs. Damages along Lowries Run occurred mainly to basements, garages, vehicles, and livestock. No high-water marks are available for Lowries Run.

The Township of Hampton experienced one of its first major floods on August 13, 1896, when five people were killed by flooding from Gourdhead Run. Destruction was largely caused by the narrowness of the valley in the area where the Old State Route 8 bridge is now located (Reference 12). The floodplain, because of the construction of the highway, bridges, and buildings, has been altered significantly since this flood.

In the Township of Reserve, Hoffman Run and Spring Garden Run flow through many culverts, some of which constrict flow due to siltation and lack of regular maintenance. Flooding in the streets has occurred many times during periods of intense rainfall. The most recent occurrence of flooding was on February 24, 1975. Spring Garden Road was closed due to flooding, and many homes had flooded basements.

Except for a few scattered residences and residential concentrations, development in the floodplains of Lick Run and Lobbs Run has been minimal in the Borough of Jefferson Hills, resulting in only minor flood problems in the past. There is, however, considerable development along Lewis Run. Damages along this stream could be fairly heavy in the event of a severe flood. The other streams in the borough generally have drainage areas less than five square miles and therefore present only minor flood problems.

The Norfolk and Western Railway culvert causes considerable constriction of the flow on Lick Run in the Borough of Baldwin. This constriction creates serious backwater effects on both Lick Run and Lick Run Tributary upstream of the railroad. Lick Run has also flooded the area immediately downstream of the railroad culvert between Curry Road and Sixth Avenue extending south to North Way. Residential structures on both sides of Sixth Avenue in this area have experienced flooding problems (Reference 13).

Flooding on Little Bull Creek has occurred in October 1954, during Hurricane Hazel, and in July 1974. Although no detailed high-water marks were available for the 1954 flood, local residents stated that the depth of flow was approximately 8 feet, which is approximately bank-full flow (Reference 14). The USACE provided a detailed list of high-water marks on the July 1974 flood. According to these high-water marks, the flood has approximately a 35-year return. Floodplain

development has increased the elevations of large floods in th e Birdville section of Little Bull Creek.

In the Borough of Bridgeville and the Town ship of Upper St. Clair, there are no high-water marks on McLaughlin Run fo r the S eptember 1912 or August 1956 floods. It is probable that backwate r flooding from Chartiers C reek was responsible for considerable dam age along McLaughlin Run. The most recen t flood on McLaughlin Run occurred on August 18, 1980. The flood caused some damage to the comm unity and was the re sult of a short duration, high-intensity storm with rainfall of approxim ately 3 inches. There is also no hig h-water information pertaining to this flood.

Major floods occurred on Peters Creek in Septem ber 1912, July 1943, October 1954, August 1956, and March 1963. Accurate records for these floods are not available. The August 1969 flood had a re corded discharge of 4,400 cfs and an estimated recurrence interval of 10 year s (Reference 15). High-water m arks for the August 1969 flood on Peters C reek were recorded at the CONRAIL bridge (739.0 feet), the Ravensburg Boulevard bridge (742.8 f eet), and the downstream Borough of Jefferson Hills corporate lim its (743.2 feet) (Reference 15). Flood damages have been relatively m inimal as very little developm ent has occurred within the floodplain (Reference 15). The constrictive nature of the railroad culvert located just downstream from the Sta te Route 8 37 bridge r esults in storage of part of the flood flow in th e channel and overba nk areas upstream of the culvert. During a flood with a recurren ce interval of 100 years or m ore, flood elevations in this area could reach as high as 758 feet (Refe rence 15). However, since development in this area has been minimal, damages occurring as a result of such a flood would be relatively minor.

Flooding on Pine Creek occurred in June 1972 during Tropical Storm Agnes, and in July 1974. The July 1974 flood is estimated to be a 10-year flood, according to high-water marks provided by the USACE. The majority of flooding along Little Pine Creek East has occurred in th e area of the confluence with Pine Creek. Minimal flooding in recent years has o ccurred on Girty's Run and Little Pine Creek West. According to r esidents in the To wnship of Shaler, damage is to contents rather than structures. Th e Penn Hills Comm unity Park, located along Plum Creek, was inundated during T ropical Storm Agnes. Other locations along Plum Creek were also dam aged by this flood. Tropical Storm Agnes also caused flooding on Sandy Creek. The bridge for the Jam es Volk W ater Pollution Control Plant was overtopped. S andy Creek Road between the bridge and Allegheny River Boulevard (State Route 130) was inundated.

Backwater flooding from large flows on the Allegheny River has affected the downstream reaches of Plum Creek. The storms producing the high riv er flows, however, do not necessarily cause flooding in the upper portions of Plum Creek. The downstream reach of Pucketa Creek is also subject to backwater flooding from the Allegheny River. Floods on Pl um Creek or P ucketa Creek are not systematically recorded. However, high-water m arks at 16 location s along Pucketa Creek, for the June 30, 1974, fl ood were m easured by the Pittsburgh District of the USACE. This flood wa s caused by a localized convection storm .

Precipitation for this storm, measured at Pittsburgh, totaled 1.47 inches in three hours. Based on the high-water marks and the results of this study, the discharge was estimated to be 4,500 cfs which corresponds to a recurrence interval of approximately 50 years.

Flooding on Robinson Run occurred on August 18, 1980. Several high-water marks obtained from this flood indicate it may have been greater than a 10-year flood. Based on high-water data for the Borough of Oakdale, the highest flood on Robinson Run probably occurred in June 1904. Other floods on Robinson Run occurred in July and September 1912, June 1928, and August 1956. There are no high-water data available for Montour Run and its tributaries. According to local residents, however, the highest known flood was that of either July 1943 or July 1950. It is probable that flooding occurred on Montour Run during flooding on Robinson Run.

Several culverts located under commercial establishments on Sawmill Run can clog with debris, causing flow onto Allegheny River Boulevard (State Route 130), which runs along the stream for most of its length. Hazardous velocities caused by the extremely steep bottom slope of this mountain stream cause rapid deterioration during high flow of the channel banks along parts of the stream. Bank degradation is especially significant along Wilbur Avenue near the downstream boundary of the Township of Wilkins.

In May 1950, a flood flow was recorded for Streets Run. This was the only flow ever recorded for that stream and its recurrence interval was less than one in 10 years (Reference 6). The area near the intersection of Streets Run Road and Brentwood Road is susceptible to flooding from Streets Run in the Borough of Baldwin. There are several commercial and residential structures there that have been affected by flooding. Downstream of this area, to the City of Pittsburgh corporate limits, floods have also flowed out-of-banks. Although the stream is out of the Borough of Baldwin's corporate limits in part of this area, the floodplain is wide enough that it extends into the borough (Reference 10). A tributary to Streets Run that originates in Elm Leaf Park and flows in an easterly direction frequently causes problems at the culverts under CSX Transportation and Streets Run Road. Logs, brush, and debris swept downstream from Elm Leaf Park often block up these two culverts and cause both the railroad tracks and Streets Run Road to be inundated. The stream along Brentwood Road that flows easterly to Streets Run occasionally causes problems at the Brentwood Road bridge. The opening to that bridge is sufficiently constricting to cause backup behind the bridge and sheet flooding on Brentwood Road and adjacent areas below the bridge (Reference 13).

The major flooding problem on Thompson Run occurs in the vicinity of the wastewater treatment plant on the upstream side of the CONRAIL tracks. During the flood of June 1972, high flows on the Monongahela River contributed to significant backwater effects on Thompson Run and flooding of the treatment plant. The water-surface elevation during June 1972 was approximately 741 feet at the wastewater plant and there was severe stream bank erosion and inundation of the area around the plant; a monetary estimate of damages is not available.

Flooding in the Municipality of Bethel Park is caused primarily by local, intense, spring and summer thunderstorms. The steep slopes and high degree of urbanization which characterize the area, allow for rapid runoff from these thunderstorms. The resultant flash flooding is compounded by some inadequate storm drainage systems. Debris blockage of small culverts, catch basins, and stream channels causes some impoundment. While these flash floods can cause high channel velocities with resulting scour and bank erosion, the major problems are property and basement flooding (Reference 16). Flooding damage in Bethel Park is usually minor although widespread. It primarily affects landscape and basement contents rather than structures and roadways.

Principal flood problems in the Borough of Coraopolis are caused by overbank flooding from the Ohio River, Montour Run, and McCabe Run, inadequate drainage of McCabe Run Tributary at Maple Street, and storm sewer backup in the low-lying areas.

Throughout the Township of Marshall, local intense summer thunderstorms can cause occasional flash floods. The accompanying high channel velocities result in scouring and erosion. Overbank flooding is primarily the result of debris blockage of the bridge openings and constrictive culverts. The ponding areas created behind these obstructions and floodwaters are usually shallow and can affect areas normally not subject to flooding. This type of flooding affects shallow property and results in basement flooding. Damages from this type of flooding tend to be to property and contents, rather than structural damages. According to local residents, areas prone to this type of flooding are along Brush Creek 2 at Northgate Drive, along Big Sewickley Creek at Warrendale and Ambridge Road, and along Dutihl Road.

In general, watersheds of the Municipality of Monroeville have experienced flood flows which have been increased because of development or denudation in their watersheds.

The principal flood problem in the Townships of Ohio and Ross is the potential for flash flooding.

Flooding is not systematically recorded on Montour Run, Moon Run, Campbells Run, or the smaller streams within the Township of Robinson. However, a flow of 1,170 cfs in July 1974 was recorded by the USGS for Campbells Run through high-water mark comparison (Reference 7). This discharge corresponds to a recurrence interval of approximately 10 years. A discharge measurement of,4,500 cfs was also recorded on Montour Run near Coraopolis on July 5, 1950 (Reference 6). This corresponds to a recurrence interval of approximately five years.

The Borough of Turtle Creek has a history of recorded flooding dating from the early 1900s. The clearing of land because of coal mining, manufacturing, and home-building in the area caused increased storm runoff and siltation of the stream channels. Each spring, the melting of snow and ice combined with heavy

rains caused streams to top their banks and flood businesses, industries, and nearby residences. In the spring of 1907, a devastating flood inundated the entire valley, causing extensive flood damages (Reference 17). In March 1936, the worst flood in the history of the Borough of Turtle Creek occurred, resulting in damages estimated at $329,000 (1969 dollars) (Reference 11). Another serious flood occurred in October 1954.

The current effective study provided description of historic flood events up to the year 1980. This section provides descriptions of major floods since 1980. There were several flooding occurrences including January 1996, September 2004, and June 2009 with flash flooding and property damages. In recent years flooding has been reported on Bull Creek, Big Sewickley Creek, Brush Creek, Catfish Run, Chartiers Creek, Deer Creek, Fall Run, Flaugherty Run, Girtys Run, Lowries Run, McLaughlin Run, Little Pine Creek and Pine Creek, Plum Creek, Sawmill Run, Flaugherty Run, Piney Fork, Thompson Run and Thorn Run. Flaugherty Run and Thorn Run reported 12 large storm events in last 17 years.

High flow events were observed on Chartiers Creek in November 1985, July 1990, January 1994, September 2004 and January 2005. In September 2004 the highest recorded peak discharge of 27,400 cfs was seen on Chartiers Creek.

On the Youghiogheny River at Sutersville, Pennsylvania the high flooding occurrence was recorded on January 1996. High flood events were recorded on Monongahela River at Elizabeth, Pennsylvania and Braddock, Pennsylvania in January 1986, January 1996 and February 2000.

The USGS gaging station on Little Pine Creek near Etna, Pennsylvania reported high flooding events in May 1986 and September 2004. In May 1986 the highest peak discharge recorded on Little Pine Creek was 7,190 cfs.

At the USGS gaging station on the Allegheny River near Natorna, Pennsylvania high flooding events were recorded in January 1996 and September 2004. Along the Ohio River September 2004 was one of the highest flow events in recent years.

There was also flooding in June 2009 flooding along Chalfont Run, Sawmill Run and Thompson Run which caused flooding damages in Wilkins Township.

2.4 Flood Protection Measures

There are twelve upstream flood-control dams and reservoirs operated by the USACE that are effective in reducing flood levels in Allegheny County. Nine of these are in the Allegheny River basin and three are in the Monongahela River basin. Table-5 below, "Flood Control Dams and Reservoirs," presents pertinent data for the dams and reservoirs.

TABLE 5 - FLOOD CONTROL DAMS AND RESERVOIRS

Dam and Reservoir	Miles Upstream From Pittsburgh	Drainage Area (sq. miles)	Date Placed in Operation
ALLEGHENY RIVER BASIN			
Crooked Creek Dam, Crooked Creek Lake	47	277	June 1940
Tionesta Creek Dam, Tionesta Lake	152	478	December 1940
Mahoning Creek Dam, Mahoning Creek Lake	79	340	June 1941
Loyalhanna Creek Dam, Loyalhanna Creek Lake	62	290	June 1942
East Branch Dam, East Branch Clarion River Lake	190	72	June 1952
Conemaugh River Dam, Conemaugh River Lake	65	1,351	November 1953
Kinzua Dam, Allegheny Reservoir	198	2,180	January 1967
Union City Dam, Union City Reservoir	197	222	October 1970
Woodcock Dam, Woodcock Creek Lake	165	46	February 1974
MONONGAHELA RIVER BASIN			
Tygart Dam, Tygart River Lake	152	1,184	February 1938
Youghiogheny River Dam, Youghiogheny River Lake	90	434	March 1948
Stonewall Jackson Dam, Stonewall Jackson Lake	203	102	January 1990

Flood impoundments in the Allegheny Rive r Basin reduce m ajor flood peaks on the Allegheny River at Natrona (Locks a nd Dam No. 4) by an average of 4 to 8 feet. Together, the dam s in the Alle gheny River Basin control approxim ately 5,250 square miles of drainage area or a bout 45% of the total watershed. These flood impoundments plus those in the Monongahela River Basin reduce m ajor flood peaks at P ittsburgh by an average of 5 to 8 feet. At Monongahela River Lock and Dam No. 2, the Monongahela Rese rvoirs provide an average reduction of approximately 4 to 5 feet. During the flood of June 23, 1972, this system of reservoirs reduced the flood crest at P ittsburgh by 12.1 feet, preventing a flood almost 2 feet higher than the flood of March 1936, the highest on record.

The effects of the flood flows in the lowe r part of Becks Run are lessened due t o the concrete-lined channe l between cross sections A and B. Although this channel has a significant am ount of sedim entation in it, it is still sufficient to contain even the m ost severe flood flow within its wa lls. The advantages of this

channel are somewhat lessened, however, due to the backwater flooding caused by the Monongahela River.

Chalfant Run is periodically dredged in the reach between the Larimer Avenue intersection with Rodi Road and Baker Street in the Township of Wilkins. This has served to deepen the channel and to clear it of debris. Upstream of this section retaining walls have been constructed in the area of the commercial establishments.

The Chartiers Creek Flood Protection Project was built by the USACE along Chartiers Creek in the vicinity of Carnegie, Heidelberg, and Bridgeville. Flood protection was provided by widening, deepening, and aligning approximately 59,000 feet of Chartiers Creek, deepening approximately 10,700 feet of Chartiers Creek-Diversion Channel, constructing concrete walls and drop structures, and protecting bank slopes with stone riprap. The project was designed to carry the maximum flood of record which occurred on September 2, 1912, with an estimated peak flow of 20,000 cubic feet per second (cfs). If the project had been constructed prior to the 1912 flood, flood elevations would have been approximately 8.5 feet lower within the portions of the studied streams.

The USACE also has installed the Campbells Run flood protection measures as part of the Chartiers Creek Flood Protection Project. In the Borough of Carnegie, a rectangular, concrete channel was constructed from the confluence with Chartiers Creek to the Railroad Street Bridge. Upstream of this bridge, to the Morrow Street Bridge, the channel sides were riprapped.

In 1936 and 1937, the Work Progress Administration constructed retaining walls along the banks of Girty's Run within the Borough of Millvale. In 1952, the Pennsylvania Department of Environmental Resources (formerly Department of Forest and Waters) dredged Girty's Run within the Borough of Millvale.

Portions of Graesers Run, Piney Fork, and Tributary 1 to Piney Fork were cleaned and repaired in 1974 as a flood protection measure (Reference 16).

Lick Run underwent a stream improvement project that was completed in the summer of 1977. The channel was dredged and the overbank areas were altered in the reach of stream below the Norfolk and Western Railway culvert. This project lessened the extent of flooding in the area between Curry Road and Sixth Avenue.

A man-made structure that affects the flood flows of Pine Creek is the North Park Lake Dam. This forms a recreation reservoir located in the Town of McCandless near the border with the Township of Hampton. Since it was designed as a recreation reservoir and controls only about 40 percent of the total drainage area, the attenuation, or lessening, effects on the peak flood flows in the Borough of Etna are small; they amount to approximately a 15-percent reduction on each of the floods considered in this study.

Near the State Route 2 8 overpass, Pine Creek has been channelized for several thousand feet. This project included a c oncrete channel and new bridges in this area. The channel provides an efficient conduit for flood flows, and lessens flood heights in this area considerably.

Little Pine Creek W est Floodwall (Upstream), in the Borough of Etna, has been provisionally accredited and m apped as prov iding protection from Little P ine Creek West for the 1-pe rcent–annual-chance flood event. To maintain accreditation, the levee owner or co mmunity is required to submit documentation necessary to com ply with 44 CFR Section 65.10. Because of the risk of overtopping or failu re of the s tructure, communities should take proper precautions to protect lives and m inimize damages in these areas, such as issu ing an evacuation plan and encouraging property owners to purchase flood insurance.

Rapid flood flows on Sawm ill Run have ne cessitated retaining walls at poin ts along the stream to protect the land along the channel. A concrete apron has been constructed near the downstream Township of Wilkins corporate limit at Wilbur Avenue. This serves to reduce channe l scour and bank degradation. Also, several debris catches have been constructed to reduce bridge clogging and damage.

From October 1962 to November 1967, the USACE constructed the Turtle Creek Flood Protection Project. This project c onsists of a concrete channel from the mouth at the Monongahela River to a poi nt approximately 860 feet upstream of the bridge to the Borough of W all and a dredged, uniformly sloped channel from this point to the confluence with Brush Creek. The design flow of the concrete channel is 20,000 cfs while th at of the dredged, unifo rmly sloped channel is 12,300 cfs, the approximate flow of the flood caused by Tropical Storm Hazel.

The construction of the concrete channel lowered the flood peak elevation of the design flood for Turtle Creek by approxim ately 10 feet in the Borough of Wilmerding.

Turtle Creek has been periodically dr edged in sections downstream of the Municipality of Monroeville; how ever, these periodic silt rem ovals have had minimal effect on flood levels in Monroeville.

In 1974, the Allegheny County Departm ent of Planning and Developm ent issued the Turtle Creek Watershed Erosion and Sedimentation Control Study (Reference 19). The buildup of sedim ents represents a continual problem for the Turtle Creek Valley, and this study was intended to serve as a guide for future actions to control soil erosion and sedimentation.

A floodgate is located on Turtle C reek at a point 1.03 miles upstream of its confluence with the Monongahela R iver. Owned and operated by W estinghouse Corporation, the gate is used to cont rol backwater effects from the Monongahela River. Designed on the 1936 flood and suspended over Turtle Creek and the adjoining access road, the gate, when lowered, has an elevation of 746 feet with 4

feet of freeboard. This enables it to control river backwater effectively up to an elevation of 750 feet.

Since the floodgate is used to control river backwater only, it is closed only after the peak discharge on Turtle Creek has passed, and before the Monongahela River peaks. The remaining Turtle Creek flow is then pumped around the gate to reduce its backwater elevations.

Flooding problems on Thompson Run have been alleviated by the construction of a concrete channel on the lower reaches of the stream. This channel construction, done in conjunction with the Turtle Creek Flood Protection Project, contains both the 500-year flood from Thompson Run and the 500-year backwater from Turtle Creek.

Extensive channel improvements were made on Thompson Run downstream of the Municipality of Monroeville. These improvements, however, will have no effect on flood damage in Monroeville.

The Youghiogheny River is regulated by two reservoirs. Deep Creek Reservoir was constructed in 1925 and controls 65 square miles. It is an earthfill embankment, owned and operated by the Pennsylvania Electric Company, used primarily to produce hydroelectric power. In 1948, the USACE built the Youghiogheny River Dam to regulate the upper 434 square miles of the Youghiogheny River. The dam is a rock-faced earth embankment. Its primary use is flood control and low flow augmentation. Together these dams control 28 percent of the watershed upstream of the Borough of Versailles. During the flood of June 1972, these dams reduced the peak flood elevations in the Borough of Versailles by approximately 1 foot.

In February 1976, the Municipality of Penn Hills enacted a floodplain management ordinance setting forth an administrative procedure for controlling activities in the floodplain (Reference 20). The ordinance establishes standards and provides for legal enforcement of these standards. The standards set forth in the ordinance cover the types of construction materials to be used in flood-prone areas. The installation of electrical and mechanical systems in flood-prone areas is also regulated. Structures to be placed in flood- prone areas are required to have minimal effect on flow. Potential obstructions to flow and/or debris are prohibited.

A flood forecasting and warning system is provided by the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service and the USACE to monitor weather conditions and flows in the Allegheny River basin. Emergency operations are coordinated through the Allegheny County Civil Defense Office.

A streambank restoration and stabilization project was undertaken by Allegheny County on Little Pine Creek East in the Township of Shaler, on Gourdhead Run and Harts Run in the Township of Hampton, and on Little Pine Creek West in the Town of McCandless.

In addition to the Up stream Floodwall, there is Mids tream Floodwall and Downstream Floodwall located along L ittle Pine Creek W est before its confluence with Pine Creek. Midstream and Downstream floodwal ls are not certified levees and th erefore they are not shown as protecting from the base flood on this edition of the FIS.

In Borough of Shaler there is an eart hen levee along Pine Creek upstream of confluence with Little Pine Creek East. The levee is not certified and therefore mapped as not providing protection from Pine Creek. In Borough of Etna two retaining walls exist on Pine Creek upstream of confluence with Little Pine Creek West.

FEMA specifies that all levees must have a minimum of 3 foot freeboard against 1-percent annual chance flooding to be considered a safe flood protection structure.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the county, standard hydrologic and hydraulic study m ethods were used to de termine the flood hazard d ata required for this FIS. Flood events of a m agnitude which are expected to be equaled or exceeded once on the average du ring any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insu rance rates. These events, comm only 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 experiencin g a rare flo od increases when perio ds greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 1-percent annual chan ce flood (1-percent chance of annual exceedance) in any 50-year period is appr oximately 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 ba sed on conditions existing in the county at the time of com pletion of this FIS. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried o ut to establish the peak discharge-frequency relationships for each flooding sou rce studied in detail affecting Allegheny, County.

Information on the m ethods used to determine peak discharge-frequency relationships for the streams studied by detailed methods is shown below.

Pre-countywide Analyses

This FIS was prepared by compiling flooding information for communities within Allegheny County. For approximate and detailed study streams, revised hydrologic analyses will be prepared as a part of this study however, for streams which will be redelineated, no hydrologic analysis will be performed.

Each community within Allegheny County, with the exception of the Boroughs of Avalon, Bellevue, Braddock Hills, Bradford Woods, Churchill, Crafton, Forest Hills, Franklin Park, Munhall, North Braddock, Sewickley Heights, Sewickley Hills, Swissvale, Wall, and West View; the Townships of Aleppo, Frazer, Pine, and Richland; and the Municipality of Mount Lebanon, has a previously printed FIS report. The hydrologic analyses described in those reports have been compiled and are summarized below. For streams that flow through two or more communities, each methodology described applies only to that portion of the stream studied by detailed methods within that particular community.

Hydrology for the following streams was developed using the log-Pearson Type III method as outlined by the Water Resources Council's Bulletins 15, 17, 17A, and 17B (References 16, 21 – 24).

Borough of Aspinwall:	Allegheny River
Borough of Baldwin:	Becks Run
Borough of Blawnox:	Allegheny River
Borough of Brackenridge:	Allegheny River
Borough of Bridgeville:	Chartiers Creek, Chartiers Creek - Diversion Channel
Borough of Carnegie:	Campbells Run, Chartiers Creek
Borough of Cheswick:	Allegheny River
City of Clairton:	Peters Creek
Township of Collier:	Campbells Run, Chartiers Creek, Chartiers Creek - Diversion Channel, Robinson Run
Township of East Deer:	Allegheny River
Township of Elizabeth:	Boston Hollow Run, Boyds Hollow Run, Douglass Run, Douglass Run Tributary No. 1, Douglass Run Tributary No. 2, Fallen Timber Run, Gillespie Run, Happy Hollow Run, Pidgeon Hollow Run, Pitt Street Tributary, Wildcat Run, Wylie Run, Youghiogheny River
Borough of Emsworth:	Lowries Run
Borough of Etna:	Allegheny River
Township of Hampton:	Crouse Run, Crouse Run Tributary
Township of Harmar:	Allegheny River
Township of Harrison:	Allegheny River, Bull Creek
Borough of Heidelberg:	Chartiers Creek
Borough of Jefferson Hills:	Lewis Run, Lobbs Run, Peters Creek
Township of Kennedy:	Chartiers Creek, Ohio River Back Channel
Township of Kilbuck:	Lowries Run

Township of Leet:	Big Sewickley Creek
Borough of Liberty:	Youghiogheny River
Borough of Lincoln:	Wylie Run, Youghiogheny River
Town of McCandless:	Lowries Run, Wittmer Run
Borough of McDonald:	Robinson Run
City of McKeesport:	Crooked Run, Long Run, Youghiogheny River
Borough of McKees Rocks:	Chartiers Creek
Borough of Millvale:	Allegheny River, Girty's Run
Municipality of Monroeville:	Abers Creek, Dirty Cam p Run, East Thompson Run, Leak Run, Piersons Run, Turtle Creek, Unnamed Stream along Moss Side Boulevard
Township of North Fayette:	North Branch Robinson Run, Robinson Run
Township of North Versailles:	Crooked Run, Thompson Run, Turtle Creek
Borough of Oakdale:	North Branch Robinson Run, Robinson Run
Borough of Oakmont:	Allegheny River
Township of O'Hara:	Allegheny River
Township of Ohio:	Lowries Run
Municipality of Penn Hills:	Allegheny River
Borough of Pitcairn:	Dirty Camp Run
City of Pittsburgh:	Allegheny River, Chartiers Creek
Borough of Plum:	Abers Creek, Allegheny River, Humms Run
Borough of Port Vue:	Youghiogheny River
Township of Robinson:	Campbells Run, Chartiers Creek
Borough of Rosslyn Farms:	Chartiers Creek
Township of Scott:	Chartiers Creek
Township of Shaler:	Allegheny River, Girty's Run
Borough of Sharpsburg:	Allegheny River
Township of South Fayette:	Chartiers Creek, Millers Run, Robinson Run
Township of South Park:	Peters Creek
Township of South Versailles:	Youghiogheny River
Borough of Springdale:	Allegheny River
Township of Springdale:	Allegheny River
Borough of Tarentum:	Allegheny River
Borough of Trafford:	Turtle Creek
Borough of Turtle Creek:	Turtle Creek
Township of Upper St. Clair:	Chartiers Creek
Borough of Verona:	Allegheny River
Borough of Versailles:	Long Run, Youghiogheny River
Borough of White Oak:	Youghiogheny River
Township of Wilkins:	Chalfant Run, Sawmill Run
Borough of Wilmerding:	Turtle Creek

Hydrology for the following streams was de veloped using the regional frequency method PSU III, which assumes flows for the selected recu rrence intervals using data obtained from other streams in the same hydrologic region (Reference 25). The flows are th en adjusted in accord ance with the m ethod outlined in th is

analysis. PSU III was judged to be the most applicable method to analyze these streams on the basis of the accuracy of its predictions in watersheds of this size.

Borough of Baldwin:	Streets Run
Municipality of Bethel Park:	Graesers Run, Piney Fork, Tributary 1 to Piney Fork
Borough of Coraopolis:	Montour Run
Township of Elizabeth:	Boston Hollow Run, Boyds Hollow Run, Douglass Run, Douglass Run Tributary No. 1, Douglass Run Tributary No. 2, Gillespie Run, Happy Hollow Run, Pidgeon Hollow Run, Pitt Street Tributary, Wildcat Run, Wylie Run
Township of Forward:	Fallen Timber Run
Borough of Fox Chapel:	Squaw Run, Squaw Run Tributary No. 1, Squaw Run Tributary No. 2, Squaw Run Tributary No. 4
Borough of Lincoln:	Wylie Run
Borough of Plum:	Pucketa Creek

Hydrology for the Ohio River was developed using natural discharge-frequency curves developed in accordance with methods presented in a publication by Leo R. Beard, Statistical Methods in Hydrology, in the following communities: Boroughs of Ben Avon, Coraopolis, Edgeworth, Emsworth, Glen Osborne, Glenfield, Haysville, Leetsdale, McKees Rocks, and Sewickley; the Townships of Crescent, Kilbuck, Moon, Neville, and Stowe; and the City of Pittsburgh (Reference 26). For the Ohio River Back Channel, natural discharge-frequency curves were used for the Townships of Kennedy, Neville, Robinson, and Stowe.

Hydrology for the following streams was developed using multiple regression formulae for rural watersheds with drainage areas between 0 and 25 square miles (Reference 27).

Borough of Bell Acres:	Big Sewickley Creek
Municipality of Bethel Park:	Graesers Run, Piney Fork, Tributary 1 to Piney Fork
Borough of Bridgeville:	McLaughlin Run
Township of Fawn:	Bull Creek, Tributary to Bull Creek
Township of Findlay:	Montour Run, McClarens Run, North Fork Montour Run, South Fork Montour Run
Township of Harrison:	Little Bull Creek
Township of Indiana:	Little Deer Creek
Borough of Jefferson Hills:	Lick Run
Borough of Leetsdale:	Big Sewickley Creek
Township of Marshall:	Brush Creek 2
Township of North Fayette:	Montour Run, South Fork Montour Run
Township of North Versailles:	Thompson Run
Township of Ohio:	Bear Run
Township of Ross:	Girty's Run, Lowries Run, Rochester Run

Township of South Park:	Lick Run
Borough of Turtle Creek:	Thompson Run
Township of Upper St. Clair:	McLaughlin Run
Township of West Deer:	Deer Creek, Little Deer Creek, West Branch Deer Creek
Borough of White Oak:	Jacks Run, Long Run
Township of Wilkins:	Thompson Run

Hydrology for the following streams was developed using Technical Release No. 55 (Reference 28). The procedure outlined in this release provides a systematic method for evaluating essential drainage and climatologic data for small watersheds. The variables that this method incorporated include daily rainfall data, soil permeability, degree of urbanization, channel velocity and slope, swampy and ponding areas, and the geometry of the watershed.

Borough of Baldwin:	Lick Run
Municipality of Bethel Park:	Graesers Run, Piney Fork, Tributary 1 to Piney Fork

In the Township of Reserve, hydrology for Hoffman Run and Spring Garden Run was developed using the rational method (Reference 29).

Hydrology for the following streams was developed using regional flood-flow frequency equations, developed by the USACE (Reference 30). This set of equations relates discharge to drainage area, channel slope, and watershed shape and is applicable to rural watersheds with drainage areas between 0 and 25 square miles.

Borough of Green Tree:	Whiskey Run
Borough of Oakmont:	Plum Creek
Municipality of Penn Hills:	Plum Creek, Sandy Creek
City of Pittsburgh:	Saw Mill Run
Borough of Plum:	Little Plum Creek, Plum Creek
Township of Robinson:	Montour Run, Moon Run, Tributary A
Township of Scott:	Georges Run, Painters Run, Scrubgrass Run, Whiskey Run
Borough of Verona:	Plum Creek

The following standard equation was used to transform the flows from the Abers Creek watershed to predict peak flows for the Becks Run, Big Sewickley Creek, Campbells Run, Chalfant Run, Crooked Run, Dirty Camp Run, Lewis Run, Lobbs Run, Lowries Run, Sawmill Run, Thompson Run, Turtle Creek, and Wittmer Run watersheds.

$$Q_1 = Q_2 \left(\frac{A_1}{A_2} \right)^a$$

where Q = peak discharge
A = drainage area
a = exponent

In the Township of Le et, the equation above was also used to transf orm flows from the Raccoon Creek watershed to predict peak flows for Big Sewickley Creek.

October 4, 1995, Countywide Analyses

Frequency flood flows for the Monongahela River at the mouth were based on statistical analyses of s tage discharge records covering 118-year record at the Pittsburgh "Point" gaging station located at th e confluence of the Monongahela and Allegheny Rivers. This gaging sta tion was operated jointly by the USACE, the USGS, and the National W eather Service (NWS). Gage r eadings have been obtained since 1762. During the period 1762 to 1854, the gage that was established on the Monongahe la River at the confluen ce of the two rivers was read by various personnel resulting in incomplete records. From May 1854 to May 1873, the Pittsburgh gage was read by the USACE personnel. In May 1873, the U.S. Weather Bureau (now the NWS) began reading the gage and made it the official Pittsburgh gage. These records are now maintained by the NWS.

Upstream of the m outh, stage-discharge records have been m aintained at Lock and Dam No. 2 located at Braddock, Pe nnsylvania, river m ile 11.2, c overing a 66-year period. The gaging station is jointly operated by the USGS and the USACE. Actual lower gage readings have been recorded at L ock and Dam No. 2 since 1905 and are generally affected by b ackwater from the Ohio River. All stage discharge records are maintained by the Pittsburgh District of the USACE. The actual peak flows at Lock and Dam No. 2 were adjus ted for the effect of upstream reservoirs that were constr ucted between 1938 and 1989 to compute a natural peak flow for each flood event.

The analyses of the natural peak discharge-frequency curves on the Monongahela River followed a standard log-Pearson Type III m ethod (Reference 24). The resulting flood flow frequencies devel oped at the m outh and at Lock and Da m No. 2 were modified by m eans of an average reduction curve in order to reflect flow reduction by the present upstream flood control reservoirs.

March 16, 1998, Countywide Analyses

Hydrology for the following streams was developed using the Penn State Runoff Model (Reference 31).

Borough of Etna:	Pine Creek, Little Pine Creek West
Borough of Franklin Park:	Pine Creek
Township of Hampton:	Pine Creek, Harts Run, Gourdhead Run, McCaslin Run, Montour Run No. 1
Township of Indiana:	Little Pine Creek East

Town of McCandless:	Pine Creek, Little Pine Creek West
Township of O'Hara:	Little Pine Creek East
Township of Ross:	Little Pine Creek West
Township of Shaler:	Pine Creek, Little Pine Creek East, Little Pine Creek West

July 5, 2000, Countywide Analyses

The Allegheny River was restudied through water year 1995 for the peak discharge-frequency relationships for the selected recurrence intervals. The flood frequency program was developed by the USACE based on a log-Pearson Type III analysis of the peak flood event partial series flow records. The program follows the methods outlined by the USGS Bulletin 17B (Reference 24).

Natural flows were calculated using the Reservoir Reduction Program for the Allegheny River and used to develop the peak-discharge frequencies. Average reduction curves were then developed from the difference between the natural flow and actual flow. The natural flood-flow frequencies developed were modified by means of the average reduction curves to reflect the reduction caused by existing upstream flood control reservoirs.

September 21, 2001, Countywide Revision

No new hydrologic analysis was performed as a part of this revision.

May 15, 2003, Countywide Revision

Peak flows for Chartiers Creek were obtained from the FIS for the City of Pittsburgh (Reference 32). A standard log-Pearson Type III analysis, using the recorded data at the USGS gaging station in Carnegie and estimates of the major floods prior to the installation of the gage, was employed to establish the discharge-frequency relationship.

September 26, 2014, Countywide Revision

Hydrologic analyses prepared for approximate and detailed study streams within Allegheny County were performed using Pennsylvania Regression Equations and the National Urban Regression Equations.

The peak discharge computation procedure for using Pennsylvania Regression Equations is presented in the publication 'Regression Equations for Estimating Flood Flows at selected Recurrence Intervals for Ungaged Streams in Pennsylvania' (Reference 33). Based on physiography, elevation, and geologic characteristics, the publication divided the state of Pennsylvania into four hydrologic regions. The eastern half of Allegheny County falls under hydrologic Region Four and western half of the county falls under Region Three.

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

No discharge info is available for the following streams: Boston Hollow Run, Breakneck Creek, Boyds Hollow Run, Dougl as Run, Douglas Run Tributary 1,

Douglas Run Tributary 2, Fourteen Mile Island Back Channel, Gillespie Run, Happy Hollow Run, He rrs Island Back Channel, Hoffman Run, Pidgeon Hollow Run, Pitt S treet, Spring Garden Run, Squaw Run Tributary 1, S quaw Run Tributary 2, Squaw Run Tributary 4, Twel ve Mile Island Back Channel, Wildcat Run.

TABLE 6 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
ABERS CREEK					
At confluence with Turtle Creek	10.60	2,150	3,700	4,450	6,500
At confluence of East Thompson Run	7.94	1,670	2,900	3,500	5,100
At confluence of Piersons Run	4.86	1,060	1,830	2,200	3,200
At Borough of Plum downstream corporate limits	4.60	1,050	1,800	2,150	3,200
At the confluence of Humms Run	1.70	450	800	950	1,450
ALLEGHENY RIVER					
At Borough of Verona upstream corporate limits	11,620	162,500	232,000	258,000	320,000
At Municipality of Penn Hills upstream corporate limit	11,560	162,500	232,000	258,000	320,000
At Lock and Dam No. 4, Natrona, Pennsylvania	11,410	170,000	227,000	253,000	317,000
BEAR RUN					
At confluence with Lowries Run	5.37	*	*	1,740	*

*Data not available

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding			
		10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
BECKS RUN					
At mouth	2.60	690	1,165	1,190	1,250
Approximately 0.18 mile upstream of confluence with the Monongahela River[1]	2.50	690	1,185	1,290	1,485
At upstream side of bridge near junction of Becks Run Road and Susquehanna Street	2.40	690	1,200	1,430	2,090
Approximately 0.12 mile upstream from centerline of Bajo Street bridge	1.80	525	905	1,080	1,600
BIG SEWICKLEY CREEK					
At confluence with the Ohio River	30.20	2,670	4,570	5,630	8,780
At Borough of Bell Acres downstream corporate limits	29.80	2,590	4,325	5,360	8,575
At Borough of Bell Acres upstream corporate limits	13.20	1,400	2,560	3,365	5,950
BREAKNECK CREEK					
At downstream Corporate limits	4.1	*	*	900	*
BRUSH CREEK 1					
At confluence with Turtle Creek	57.20	5,400	8,500	10,100	15,000
BRUSH CREEK 2					
At Township of Marshall downstream corporate limits	8.30	1,490	2,320	2,790	3,950
At confluence of Tributary No. 1 to Brush Creek 2	6.30	1,350	2,100	2,500	3,560
At Interstate Route 79 culvert	5.00	1,250	1,930	2,300	3,270
At Northgate Drive	3.40	1,070	1,680	2,000	2,850

[1]Discharges lowered due to flow on Becks Run Road

*Data not available

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding			
		10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
BULL CREEK					
At Township of Harrison downstream corporate limits	48.80	4,060	5,890	6,700	8,600
Above confluence of Little Bull Creek	37.20	3,460	5,010	5,700	7,540
At confluence of McDowell Run	*	3,300	5,570	6,900	10,650
At confluence of Lardintown Run	*	2,220	3,750	4,660	6,580
At confluence of Tributary to Bull Creek	*	2,070	3,500	4,360	6,580
CAMPBELLS RUN					
At confluence with Chartiers Creek	5.62	1,300	2,230	2,700	3,990
At Township of Robinson downstream corporate limits	5.40	1,260	2,170	2,620	3,875
At upstream end of culvert under Interstate Route 79	2.80	725	1,250	1,510	2,230
Upstream of parkway exit of Campbells Run Road	1.70	485	830	1,010	1,490
At intersection of McMichael Road and Campbells Run Road	0.90	300	510	615	910
CHARTIERS CREEK					
At Township of Robinson downstream corporate limits	269.00	9,800	17,000	21,500	37,000
At Borough of Rosslyn Farms downstream corporate limits	268.00	9,800	17,000	21,500	37,000
At Township of Scott downstream corporate limits	264.00	9,800	17,000	21,500	37,000
At Borough of Carnegie downstream corporate limits	263.00	9,800	17,000	21,500	37,000
At Township of Collier downstream corporate limits	257.00	9,800	17,000	21,500	37,000

*Data not available

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
CHARTIERS CREEK (continued)					
At confluence of Robinson Run	216.00	8,800	16,800	21,200	33,600
At confluence of Thoms Run	192.00	8,600	16,100	20,000	31,500
At confluence of Millers Run	163.80	8,050	15,000	18,700	29,200
At Township of Upper St. Clair downstream corporate limits	163.20	8,050	15,000	18,700	29,200
Downstream of McLaughlin Run	*	2,620	3,990	4,880	7,750
Upstream of McLaughlin Run	*	1,500	2,200	2,475	7,750
CHARTIERS CREEK – DIVERSION CHANNEL					
At inlet	*	7,300	14,600	18,725	25,865
CHALFANT RUN					
At confluence of Thompson Run	4.45	1,070	1,850	2,210	3,270
CROOKED RUN					
At mouth	3.50	885	1,530	1,835	2,680
Above confluence of unnamed tributary	2.60	690	1,190	1,430	2,085
At Township of North Versailles downstream corporate limits	2.01	560	980	1,170	1,710
At Arcannia Street bridge	1.59	470	810	970	1,420
CROUSE RUN					
At confluence with Pine Creek	4.32	1,040	1,810	2,180	3,200
Downstream of South Pioneer Road	2.39	640	1,110	1,330	1,980
At confluence of Crouse Run Tributary	1.31	400	690	830	1,210
CROUSE RUN TRIBUTARY					
At confluence with Crouse Run	1.08	340	590	710	1,040

*Data not available

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
DEER CREEK (continued)					
At Township of West Deer downstream corporate limits	17.31	3,380	4,790	6,000	9,290
Upstream of confluence of Dawson Run	12.61	2,280	3,270	4,070	6,340
At confluence of West Branch Deer Creek	3.84	720	1,030	1,350	2,100
DIRTY CAMP RUN					
At confluence with Turtle Creek	3.18	810	1,410	1,690	2,500
Near intersection of Wall Avenue and School Street	2.44	600	1,030	1,240	1,930
At Municipality of Monroeville downstream corporate limits	2.15	600	1,030	1,240	1,930
EAST THOMPSON RUN					
At confluence with Abers Creek	2.51	670	1,180	1,400	2,060
Approximately 1,550 feet above U.S. Route 22 bridge	1.80	520	850	1,070	1,570
FALLEN TIMBER RUN					
At Township of Forward downstream corporate limits	4.80	620	940	1,100	1,400
GEORGES RUN					
At confluence with Chartiers Creek	1.40	600	1,100	1,300	2,000
Approximately 600 feet downstream of Swallow Hill Road	1.10	510	935	1,105	1,700
GIRTY'S RUN					
At confluence with the Allegheny River	13.40	1,830	3,150	3,850	5,800
At Township of Shaler downstream corporate limits	11.10	1,830	3,150	3,850	5,800

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
GIRTY'S RUN (continued)					
At confluence of Wible Run	9.50	1,690	2,870	3,510	5,290
Upstream of confluence of Nelson Run	7.68	1,560	2,650	3,240	4,880
Upstream of confluence of Thompson Run	6.27	1,250	2,120	2,590	3,900
Upstream of confluence of McKnight Run	4.43	790	1,350	1,650	2,490
Upstream of confluence of Cemetery Run	3.66	640	1,090	1,330	2,000
Upstream of confluence of Rochester Run	2.15	390	660	810	1,220
Upstream of Three Degree Road	0.66	210	360	440	660
GOURDHEAD RUN					
At confluence with Pine Creek[1]	4.03	1,122	1,911	2,342	3,357
Upstream of confluence of McCaslin Run	2.46	694	1,168	1,433	2,064
GRAESERS RUN					
At confluence with McLaughlin Run	2.02	335	566	680	994
Approximately 50 feet upstream of Walther Lane	1.95	325	550	661	966
Approximately 570 feet downstream of Brookside Blvd	0.77	157	270	327	485
HARTS RUN					
At confluence with Gourdhead Run	1.16	374	659	817	1,194
HUMMS RUN					
At confluence with Abers Creek	2.50	650	1,100	1,350	2,000
Approximately 0.5 mile upstream of confluence with Abers Creek	2.20	570	965	1,185	1,755
Approximately 0.9 mile upstream of confluence with Abers Creek	2.00	530	890	1,100	1,625

[1]Discharges reduced due to flow on State Route 8

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
HUMMS RUN (continued)					
Approximately 1.2 miles upstream of confluence with Abers Creek	1.60	440	745	915	1,355
Approximately 1.7 miles upstream of confluence with Abers Creek	0.50	185	315	385	570
JACKS RUN					
At confluence with Long Run	4.37	675	1,235	1,555	2,545
LEAK RUN					
At confluence with Thompson Run	1.81	520	900	1,080	1,590
Approximately 770 feet upstream of Union Railroad tunnel	1.81	520	705[1]	765[1]	975[1]
Approximately 2,210 feet downstream of Old William Penn Highway bridge	1.81	520	900	1,080	1,590
Downstream side of Old William Penn Highway bridge	1.43	460	740	890	1,310

[1]Discharges reduced for out-of-bank divided flow

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
LEWIS RUN					
At confluence with Peters Creek	5.87	1,030	1,790	2,180	3,200
Approximately 1.51 miles upstream of confluence with Peters Creek	4.09	790	1,360	1,660	2,490
LICK RUN					
At confluence with Peters Creek	8.59	1,890	2,780	3,160	4,220
At McElhaney Road	7.46	1,760	2,610	2,920	3,870
At 2nd crossing of CSX Transportation	5.47	1,510	2,200	2,450	3,160
At Wilson Road	3.84	1,260	1,810	1,950	2,490
At Borough of Baldwin downstream corporate limits[1]	2.40	990	1,380	1,490	1,780
At upstream side of Norfolk and Western Railway bridge	2.20	1,080	1,610	1,780	2,360
At confluence of Lick Run Tributary	1.40	550	840	930	1,260
LITTLE BULL CREEK					
At confluence with Bull Creek	11.60	1,490	2,520	3,070	4,670
At limit of detailed study near Birdville	8.90	1,170	2,040	2,500	3,740
LITTLE DEER CREEK					
At Township of Indiana downstream corporate limits	13.40	2,120	2,950	3,555	5,850
At Township of West Deer downstream corporate limits	9.11	1,730	2,350	2,900	4,690
At confluence of unnamed tributary at stream mile 5.3	6.87	1,520	2,050	2,460	3,970

[1]Discharges reduced due to regulation by Norfolk and Western Railway culvert

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
LITTLE DEER CREEK (continued)					
Upstream of Bessemer and Lake Erie Railroad bridge	4.48	1,520	2,400[1]	2,970[1]	4,200[1]
LITTLE PINE CREEK EAST					
At confluence with Pine Creek	6.10	1,611	2,780	3,400	4,869
At Township of O'Hara downstream corporate limits	5.63	1,562	2,628	3,189	4,580
At Township of Indiana downstream corporate limit	3.89	1,047	1,902	2,339	3,371
LITTLE PINE CREEK WEST					
At confluence with Pine Cree	6.81	1,545	2,533	3,076	4,352
At Township of Shaler downstream corporate limits	6.60	1,532	2,512	3,048	4,327
Upstream of Vilsack Road	5.10	1,271	2,105	2,570	3,668
At Township of Ross downstream corporate limits	4.22	1,166	1,929	2,355	3,356
At confluence with Tributary No. 3	1.90	384	655	812	1,212
At Remington Drive	0.80	268	459	568	854
LITTLE PLUM CREEK					
At confluence of Plum Creek	8.0	1,100	1,800	2,200	3,350
Approximately 1.0 mile upstream of confluence with Plum Creek	7.1	1,000	1,650	2,025	3,075
LOBBS RUN					
At confluence with Monongahela River	3.92	760	1,320	1,610	2,410

[1]Flows downstream of the Bessemer and Lake Erie Railroad bridge are less than upstream flows due to bridge acting as a dam

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
LONG RUN					
At confluence with Youghiogheny River	13.20	1,690	2,805	3,395	4,960
Above confluence of unnamed tributary	12.40	1,625	2,705	3,280	4,805
At Borough of White Oak downstream corporate limits	11.63	1,540	2,625	3,210	4,625
At confluence of Jacks Run	6.03	920	1,575	1,910	2,870
At a point approximately 0.23 mile upstream of Rankin Road	3.8	660	1,145	1,395	2,095
LOWRIES RUN					
At USACE gage in Emsworth, at mile 0.571	16.96	2,250	4,400	5,780	10,300
At Township of Ohio downstream corporate limits	14.80	*	*	5,780	*
Upstream of confluence of Bear Run	7.83	*	*	2,440	*
At Township of Ross downstream corporate limits	7.00	910	1,870	2,440	4,440
At Town of McCandless corporate limits	3.10	400	830	1,080	1,970
At confluence of Wittmer Run	1.90	250	510	660	1,190
McCASLIN RUN					
At confluence with Gourdhead Run	*	326	547	678	978
McCLARENS RUN					
At confluence with Montour Run	6.50	*	*	2,020	*

*Data not available

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
McLAUGHLIN RUN					
At the confluence with Chartiers Creek	7.53	955	1,567	1,866	2,677
Approximately 610 feet downstream of Baldwin Street	7.30	937	1,540	1,835	2,635
Approximately 0.6 mile upstream of Baldwin St	6.90	892	1,467	1,748	2,511
Approximately 0.6 miles downstream of Lesnett Road	6.50	842	1,387	1,653	2,376
Approximately 250 feet downstream of Lesnett Road	5.51	742	1,225	1,462	2,106
Approximately 0.3 miles upstream of Morrow Road	4.61	644	1,068	1,276	1,842
Approximately 30 feet upstream of Old Washington Road	4.40	619	1,027	1,227	1,774
Approximately 0.20 miles downstream of Bethel Church Road	1.55	275	467	563	827
Approximately 0.1 miles upstream of Bethel Church Road	1.02	198	339	410	606
MILLERS RUN					
At confluence with Chartiers Creek	28.1	2,400	4,300	5,300	8,100
Above confluence with Tributary at Morgan Hill Road	24.6	2,130	3,800	4,700	7,100
Above confluence with Fishing Run	19	1,750	3,100	3,850	5,800
MONONGAHELA RIVER					
At confluence to Lock and Dam No. 2, at river mile 11.2	7,388 5,668[1]	168,500	212,000	231,000	275,000

[1]Reduced due to the Tygart, Stonewall Jackson, and Youghiogheny Dams

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
MONTOUR RUN					
At confluence with the Ohio River	36.5	6,000	9,100	10,700	14,900
Approximately 0.1 mile downstream of Beaver Grade Road	29.6	5,100	7,700	9,050	12,600
At Township of North Fayette downstream corporate limits	25.9	4,470	7,180	8,580	12,600
Upstream of confluence of McClarens Run	17.9	3,160	4,890	5,740	8,120
MONTOUR RUN NO. 1					
At confluence with Pine Creek	*	1,039	1,925	2,421	3,627
MOON RUN					
At confluence with the Ohio River	5.4	1,050	1 ,800	2,200	3,350
NORTH BRANCH ROBINSON RUN					
At Township of North Fayette downstream corporate limits	12.9	1,170	2,200	2,700	4,200
NORTH FORK MONTOUR RUN					
Upstream of confluence with South Fork Montour Run	2.30	*	*	1,010	*
OHIO RIVER					
At Dashields Lock and Dam, at river mile 13.3	19,522	282,000	362,000	394,000	480,000
At river mile 11.23	19,550	282,000	362,000	394,000	480,000
At river mile 10.0	19,480	186,120	238,920	260,000	316,800
At Emsworth Lock and Dam	19,428 186,120[1]	186,000 238,900[1]	242,000 260,000[1]	262,000 316,800[1]	324,000

*Data not available
[1]Computation includes modified upstream reservoirs

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
OHIO RIVER (continued)					
At river mile 4.25	19,400	282,000	362,000	394,000	480,000
At confluence of Allegheny and Monongahela Rivers	19,132	282,000	362,000	394,000	480,000
OHIO RIVER-BACK CHANNEL					
At Township of Robinson downstream corporate limits	19,500	95,880	123,080	134,000	163,200
At river mile 10.0	19,480	96,000	123,100	134,000	163,200
At Emsworth Dam, river	19,435	96,000	122,000	132,000	156,000
At Township of Stowe downstream corporate limits, river mile 6.5	19,430	96,000	122,000	132,000	156,000
At Emsworth Back Channel Dam	19,428	96,000 95,880[1]	122,000 123,100[1]	132,000 134,000[1]	156,000 163,200[1]
PAINTERS RUN					
At Township of Scott corporate limits	4.2	1,350	2,300	2,800	4,300
PETERS CREEK					
At downstream limit of detailed study in City of Clairton	50.82	4,200	7,400	9,300	14,000
Above confluence with Lewis Run	44.81	3,700	6,500	8,100	12,600
Above confluence with Beam Run	41.89	3,400	6,000	7,500	11,700
At confluence of Lick Run	31.84	2,700	4,800	6,000	9,100
At confluence of Piney Fork	17.60	1,600	2,850	3,450	5,200
PIERSONS RUN					
At confluence with Abers Creek	2.04	570	990	1,190	1,730

[1]Computation includes modified upstream reservoirs

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
PINE CREEK					
At confluence with Allegheny River	67.30	4,750	8,245	10,104	14,477
At Township of Shaler downstream corporate limits	59.60	4,346	7,548	9,274	13,332
At confluence of Little Pine Creek East	53.30	4,263	7,317	8,957	12,813
At Township of Hampton downstream corporate limits	47.44	4,060	6,959	8,521	12,204
Upstream of confluence of Gourdhead Run	43.06	3,636	6,289	7,719	11,114
Upstream of confluence of Crouse Run	37.10	2,855	4,961	6,261	9,690
At Town of McCandless downstream corporate limits	14.00	1,992	3,661	4,799	7,391
Upstream of confluence of Wexford Run	5.40	1,209	2,116	2,628	3,849
PINEY FORK					
At Municipality of Bethel Park downstream corporate limits	4.3	1,020	1,480	1,690	2,190
At confluence of Tributary 1 to Piney Fork	2.00	350	520	600	800
PLUM CREEK					
At confluence with Allegheny River	20.66	1,936	3,266	3,956	5,916
Approximately 0.30 miles Downstream of Allegheny River Blvd	20.32	1,910	3,225	3,906	5,843
Approximately 0.3 miles downstream of Plum Street	19.03	1,812	3,065	3,714	5,561
Approximately 0.7 miles downstream of Plum St	18.70	1,786	3,022	3,663	5,487
Approximately 1.6 miles downstream of Hulton Road	18.00	1,734	2,937	3,561	5,337

TABLE 6- SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding			
		10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
PLUM CREEK (continued)					
Approximately 0.7 miles downstream of Hulton Run	16.91	1,650	2,799	3,395	5,093
Approximately 0.4 miles downstream of Steurnagel Lane	16.66	1,631	2,767	3,357	5,037
Approximately 400 feet upstream of Boda Road	14.29	1,443	2,459	2,986	4,490
Approximately 0.31 feet upstream of Boda Road	13.99	1,419	2,419	2,938	4,420
Approximately of 0.4 miles downstream Mary Street	13.49	1,378	2,352	2,858	4,301
Approximately 60 feet downstream of Mary Street	12.31	1,281	2,191	2,655	4,016
Approximately 0.2 miles downstream of Leechburg	3.52	472	835	1,026	1,574
Approximately 310 feet downstream of Universal Road	2.39	347	620	763	1,178
Approximately 0.4 miles upstream of Millers Lane	1.61	253	457	565	877
Approximately 1.2 mile upstream of Millers Lane	0.77	141	259	322	505
PUCKETA CREEK					
At confluence with Allegheny River	36.50	3,400	5,160	6,000	8,100
At confluence of Little Pucketa Creek	25.60	2,700	4,050	4,725	5,940
ROBINSON RUN					
At confluence with Chartiers Creek	40.00	3,350	6,100	7,500	11,500
At confluence of Scotts Run	37.60	3,100	5,600	7,000	10,800
Approximately 0.2 mile downstream of confluence of Pinkertons Run	33.90	2,900	5,100	6,300	9,900
At confluence of Pinkertons Run	30.30	2,600	4,700	5,800	8,800
Above confluence of Fink Run	13.80	1,350	2,370	2,900	4,330

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
ROBINSON RUN (continued)					
Above confluence with unnamed tributary at Sturgeon Road	11.20	1,170	2,050	2,500	3,750
At downstream Borough of McDonald corporate limits	10.40	1,170	2,050	2,500	3,750
ROCHESTER RUN					
At confluence with Girty's Run	1.42	250	430	520	780
SANDY CREEK					
At confluence with Allegheny River	3.40	1,000	1,750	2,250	3,850
Approximately 0.8 mile upstream of confluence with Allegheny River	2.90	885	1,500	1,990	3,405
Approximately 1.1 miles upstream of confluence with Allegheny River	1.20	440	775	995	1,700
SAW MILL RUN					
At Alexander Street bridge	19.20	5,680	8,650	10,100	14,600
SAWMILL RUN					
At downstream Township of Wilkins corporate limits	1.89	540	930	1,110	1,640
Approximately 50 feet upstream of Moss Street	1.64	480	830	1,000	1,460
Approximately 200 feet upstream of second private road bridge	1.40	440	730	880	1,290
Approximately 150 feet Downstream of intersection Of Kingsdale road and Beulah Road	0.91	*	*	652	*
At the intersection of Thornbury Drive and Beulah Road	0.80	*	*	584	*

*Data not available

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
SAWMILL RUN (continued)					
Upstream of the Intersection Of Lewin Lane with Beulah Road	0.22	*	*	141	*
SCRUBGRASS RUN					
At confluence with Chartiers Creek	1.50	700	1,150	1,400	2,150
At confluence with tributary near intersection of Scrubgrass Road and Old Scrubgrass Road	0.8	430	700	850	1,310
SOUTH FORK MONTOUR RUN					
Upstream of confluence of North Fork Montour Run	2.6	930	1,320	1,480	2,020
STREETS RUN					
Approximately 0.23 mile downstream from downstream Borough of Baldwin corporate limits	6.2	1,220	1,830	2,130	2,680
Approximately 0.07 mile downstream from confluence of Streets Run with stream along Brentwood Road	4.8	965	1,450	1,690	2,125
Approximately 0.17 mile upstream from confluence of Streets Run with stream along Brentwood Road	3.2	670	1,010	1,175	1,480
Approximately 0.26 mile downstream from centerline of bridge near junction of Streets Run Road and Prospect Road	2.4	530	800	930	1,170
THOMPSON RUN					
At confluence with Turtle Creek	17.9	2,890	5,000	6,000	8,820

*Data not available

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
THOMPSON RUN (continued)					
At downstream Township of Wilkins corporate limits	15.42	2,890	3,905[1]	4,280[1]	5,850[1]
Approximately 50 feet upstream of the Union Railroad Spur bridge	15.42	2,890	5,000	6,000	8,820
At confluence of Chalfant Run	10.39	2,100	3,650	4,400	6,480
At U.S. Route 22	8.90	1,850	3,210	3,880	5,680
At confluence of Leak Run	5.81	1,320	2,300	2,750	4,080
At downstream side of Thompson Run Road bridge upstream of Frey Road	2.39	640	1,120	1,340	1,980
TRIBUTARY A					
At confluence with Chartiers Creek	1.10	300	550	700	1,150
TRIBUTARY TO BULL CREEK					
At confluence with Bull Creek	1.40	525	900	1,090	1,650
TRIBUTARY 1 TO PINEY FORK					
At confluence with Piney Fork	2.30	670	960	1,090	1,410
At tributary near Beagle Drive	1.90	550	790	900	1,150
TURTLE CREEK					
At East Pittsburgh gage n	146.00	9,550	13,800	15,500	20,500
At downstream Municipality of Monroeville corporate limits	120.00	9,550	13,800	15,500	20,500
At confluence of Brush Creek	155.90	4,600	6,500	7,400	9,400
Approximately 650 feet downstream of confluence of Abers Creek	41.60	3,600	5,200	5,820	7,400

[1]Discharges reduced for out-of-bank divided flow

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
TURTLE CREEK (continued)					
At confluence of Abers Creek	31.20	2,920	4,140	4,700	5,880
UNNAMED STREAM ALONG MOSS SIDE BOULEVARD					
At confluence with Turtle Creek	1.34	410	710	850	1,250
WEST BRANCH DEER CREEK					
At confluence with Deer Creek	7.54	1,570	2,130	2,730	4,230
WHISKEY RUN					
At downstream Township of Scott corporate limits	1.60	650	1,150	1,400	2,150
At downstream Borough of Green Tree corporate limits	1.20	650	1,150	1,400	2,150
Approximately 0.27 mile upstream of downstream Borough of Green Tree corporate limits	1.00	460	820	990	1,520
Approximately 0.45 mile upstream of downstream Borough of Green Tree corporate limits	0.60	280	500	610	930
WITTMER RUN					
At confluence with Lowries Run	1.10	140	290	380	690
WYLIE RUN					
At confluence with Monongahela River	3.97	580	860	1,000	1,250
Approximately 1,400 feet upstream from McKeesport-Glassport Road	3.80	550	830	960	1,200
At confluence of Happy Hollow Run	3.75	380	560	660	840

TABLE 6 - SUMMARY OF DISCHARGES – (continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	Annual Chance of Flooding 10-percent annual chance	2-percent annual chance	1- percent annual chance	0.2-percent annual chance
WYLIE RUN (continued)					
Approximately 400 feet downstream from Mill Hill Road	2.17	290	430	510	640
At Lovedale Road	1.59	280	420	490	620
YOUGHIOGHENY RIVER					
At confluence with Monongahela River	1,763.00	65,000	93,000	108,000	145,000
At downstream Township of South Versailles corporate limits	1,735.00	65,000	93,000	108,000	145,000
At Sutersville gage in the City of McKeesport	1,715.00	65,000	93,000	108,000	145,000

3.2 Hydraulic Analyses

Analyses of the hydrauli c 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 t o use the flood elevation data presented in t his FIS in c onjunction with the data shown on t he FIRM.

Locations of selected cross sections used in the hydraulic anal yses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross-se ction locations are also show n on the FIRM (Exhibit 2).

The hydraulic analyses for this county wide study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

Pre-countywide Analyses

Each community within A llegheny County, with the exception of the Boroughs of Avalon, Bellevue, Braddock Hills, Bradford Woods, Churchill, Crafton, Forest Hills, Franklin Park, M unhall, North Braddock, Sewickley Heights, Sewickley Hills, Swissvale, Wall, and West View; the Townships of Aleppo, Frazer, Pine

and Richland; and the Municipality of Mount Lebanon, has a previously printed FIS report. The hydraulic analyses described in those reports have been compiled and are summarized below.

Cross section and bridge data for the following streams were obtained by field survey and aerial photogramm etry: Ab ers Creek in the Borough of Plum ; Campbells Run and Robinson Run in th e Township of Collier; Humms Run, Little Plum Creek, Painters Run, Plum Creek, and Pucketa Creek in the Borough of Plum; Sandy Creek in th e Municipality of Penn Hills; Georges Run and Scrubgrass Run in the Township of Sco tt; and Whiskey Run in the To wnship of Scott and the Borough of Green Tree.

Cross sections for Bear R un were obtained from field checks and topographic maps at a scale of 1:1,200 (References 34 and 35).

In the Borough of Bell Acres, cross sect ions were obtained from topographic maps compiled from aerial photographs (Reference 36).

Cross sections for Bull Creek and Tributa ry to Bull Creek in the Township of Fawn were obtained from topographic m aps compiled from aerial photographs (Reference 37).

Cross section and bridge data for the following streams were obtained from field measurement and aerial photographs co mpiled by photogrammetric m ethods at a scale of 1:2,400 (Referen ce 36): Ca mpbells Run, Ch artiers Creek, Moon Run, Montour Run, and Tributary A in the Township of Robinson.

The channel cross section and bridge data for Chartiers Creek in the Boroughs of Carnegie, Crafton, Heidelberg, Rossl yn Farms, and Thornburg, and the Townships of Collier, Scott, and S outh Fayette; and Char tiers Creek-Diversion Channel in the Township of Collier were obtained from construction drawings for the Chartiers Creek F lood Protection Pr oject (Reference 38). The overbank stations and elevations of the cross sections were d etermined by aerial photogrammetry.

For the following streams, cross-section data were obtained from aerial photographs (Reference 39). Chartiers Creek, in the Bo rough of Bridgeville and the Townships of South Fayette and U pper St. Clair; a nd Millers Run and Robinson Run in the Township of South Fayette.

For the following stream s, cross sections were obtained from field surveys and topographic maps: Crooked Run, Thom pson Run, and Turtle Creek in the Township of North Versailles; and Brush Creek and Turtle Creek in the Borough of Trafford.

Cross sections for Deer Creek, Little Deer Creek, and West Branch Deer Creek in the Township of W est Deer were ta ken from soundings and topographic m aps (Reference 40).

For Dirty Camp Run in the Borough of Pitcairn, cross sections were obtained using field surveys and topographic maps at a scale of 1:1,200 (Reference 41).

Cross-section data for Girty's Run in the Borough of Millvale were supplied by the USACE by use of design drawings, and by field survey.

For Graesers Run, Piney Fork, and Tributary 1 to Piney Fork, cross-section data were obtained from aerial photography flown in December 1978 at a scale of 1:800.

Cross sections for Little Deer Creek were obtained from soundings, topographic maps, and field checks (Reference 40).

Cross-section data for Lowries Run in the Township of Ohio were obtained from USACE field surveys and topographic maps at a scale of 1:1,200 (Reference 34).

For McLaughlin Run, cross-section data were taken from maps compiled from aerial photographs flown in September 1981 (Reference 42).

Cross-section data for the following streams were obtained from soundings, topographic maps, and field checks (References 42 and 43): Montour Run in the Townships of Findlay and North Fayette, South Fork Montour Run, North Branch Robinson Run, and Robinson Run in the Township of North Fayette, and South Fork Montour Run in the Township of Findlay.

In the Borough of Coraopolis, cross sections for Montour Run were obtained from field surveys and topographic maps at a scale of 1:2,400 with a contour interval of 5 feet (Reference 44).

Cross sections for the following streams were taken from soundings and topographic maps prepared by the USACE dated March 1964 (Reference 43): the Ohio River in the Boroughs of Ben Avon, Emsworth, Glenfield, Haysville, Leetsdale, Sewickley, and the Township of Crescent, Neville, and Stowe; Ohio River Back Channel in the Township of Neville.

Cross sections for the Ohio River in the Townships of Kilbuck and Moon and the Boroughs of Coraopolis and Glen Osborne, and cross sections for Montour Run in the Borough of Coraopolis were determined using topographic maps at a scale of 1:2,400 with a contour interval of 5 feet (Reference 44).

For the Ohio River in the City of Pittsburgh and Saw Mill Run, cross sections were obtained from USACE maps, City of Pittsburgh maps, USGS maps, and plane-table surveys conducted by the USACE (References 44, 45, 46, and 47).

Cross sections for the Ohio River Back Channel in the Townships of Robinson, Kennedy, and Stowe were taken from USACE topographic maps dated March 1964 (Reference 44).

Cross-section data for Peters Creek were taken from the USACE Floodplain Information Report (Reference 15). In the City of Clairton and the Township of South Park, cross sections for Peters Creek were obtained from field surveys and the USACE.

Dimensions for the Milltown Road bridge over Plum Creek, in Milltown, were obtained from construction drawings furnished by the Bridge Division of the Pennsylvania Department of Transportation.

Cross-section data for Robinson Run in the Borough of McDonald were taken from soundings and aerial photographs (Reference 43).

Cross sections for the following streams were obtained from field surveys, topographic maps at a scale of 1:1,200 with a contour interval of 2 feet, and USACE channel plans at a scale of 1:3,600 (References 41 and 48): Thompson Run in the Borough of Turtle Creek, and Turtle Creek in the Boroughs of Turtle Creek and Wilmerding and the Municipality of Monroeville.

Cross sections for the Youghiogheny River were obtained from the USACE and from topographic maps furnished by the USACE (Reference 49).

Cross-section data for all other flooding sources and for the backwater analyses were field surveyed. Cross sections for all the streams were located at close intervals above or below bridges and culverts in order to compute the significant backwater effects of these structures. All bridges and culverts were surveyed to obtain elevation data and structural geometry.

Water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (Reference 50).

There is one reach on Campbells Run, three reaches on Unnamed Stream along Moss Side Boulevard, one reach on Leak Run, two reaches on Sawmill Run, and one reach on Turtle Creek where supercritical flow occurs. This is a rapid flow (a high velocity) which is sometimes highly turbulent, and usually occurs in steep parts of a stream. Subcritical flow, the more common type, has a relatively low velocity, as it usually occurs on streams with low slopes.

The supercritical reach on Campbells Run occurs where the channel's hydraulic efficiency and steep slope enable the water to flow into Chartiers Creek quickly, thus reducing flood levels on Campbells Run. The supercritical reaches on Unnamed Stream along Moss Side Boulevard are:

1. From approximately 1,000 feet upstream of the CONRAIL bridge to the downstream side of State Route 130 bridge;

2. From approximately 250 feet upstream of the State Route 130 bridge to the downstream side of the private drive bridge; and

3. From approximately 50 feet upstream of the private drive bridge to the limit of detailed study.

The supercritical reach on Leak Run extends from approximately 200 feet upstream of the Union Railroad tunnel to the downstream side of the Old William Penn Highway culvert.

The supercritical reaches on Sawmill Run are:

1. From the downstream side of the Ivy Street bridge to the downstream corporate limit; and

2. From approximately 200 feet upstream of the culvert under State Route 130, between Sections D and E to the next private road bridge.

The supercritical reach on Turtle Creek occurs from approximately 1,560 feet upstream of the CONRAIL spur bridge to approximately 2,540 feet upstream of the CONRAIL spur bridge.

The flow transition between a supercritical and a subcritical region usually involves turbulence with an accompanying loss of energy. Furthermore, the length of this turbulent transition, called a hydraulic jump, is unpredictable, and is different for each flow. An effort has been made to define this transition length according to known lengths (Reference 51). However, an in-depth study of the length, position, and depths of this transition are, especially in a natural channel with a non-uniform shape, appears fruitless, and outside the scope of this report.

According to an accepted engineering procedure involving the velocity and depth of the upstream supercritical section, the hydraulic jumps that occur during the four floods for these streams are either the undular or weak type, which involve a relatively small turbulent energy loss, and represent a somewhat gradual transition between the two regimes (Reference 52). Therefore, a linear assumption between the subcritical elevation and the supercritical elevation of the next section upstream is a reasonable one.

In some of the more violent hydraulic jumps, the water-surface elevation decreases going upstream. In general, even though these decreases may occur in the channel, the elevations of the water surface of any overbank flow would be relatively unaffected; therefore, the elevations shown in the flood profiles in these areas have been adjusted to represent a more gradual transition.

Out-of-bank subcritical flow occurs only at two places on Sawmill Run for the 1% annual chance flood. This occurs at the second and the fourth private road bridges. Otherwise, sheet flow less than one foot deep will flow as out-of-bank flow, since there are no downstream controls to create subcritical flow. This situation is caused by the steepness of the stream and the valley, the presence of State Route 130 which runs along the stream for its entire length within the township, and the presence of three long culverts and a bridge on the stream.

The elevations of the 1% and 0.2% annual chance floods on the first long culvert (between Cross Sections D and E) reflect that sheet flow will occur. These elevations have been calculated by assuming normal flow down the road, and the profile elevations have been used in the calculation of reaches.

The elevations of the second long culvert (between Cross Sections J and K) for the 2% and 1% annual chance floods have been assumed to be at the top of the opening of the culvert. The lower part of this culvert cannot carry the full 1% chance annual flow as determined by a backwater analysis, but the depth of the sheet flow over the top of the culvert would not exceed one foot. Therefore, the 1% annual chance floodplain of this culvert is non-applicable, and the 0.2% annual chance floodplain on top of the culvert has been delineated by the use of field surveys and field experience. This culvert has not been treated in the same manner as the first long culvert because the cross sections over the top of the second culvert are not uniform, and the depth of the sheet flow over the top will not be the same across the whole cross section.

Sheet flow areas along Sawmill Run will occur when the water overtops culverts and a bridge. There will be no appreciable depths generated because of the steep slope of the valley and because there is insufficient flow over the culverts and the bridge, provided they are unobstructed. Much of this sheet flow area is on State Route 130, but there are other areas upstream and downstream of the Moss Street bridge and over the first, second, and third culverts where sheet flow occurs.

A shallow flooding area occurs along the Old William Penn Highway near Leak Run because of overflow from that stream at a low bank area about 2,150 feet upstream of the Union Railroad tunnel. The channel contains about a 10% annual chance flood, but for flows greater than this, a significant amount of water escapes the channel and flows down the road. The depth on the road, as indicated by a supercritical flow analysis, is slightly less than one foot for the 1% annual chance flood. The flow which leaves the channel was computed by using the standard weir flow equation with a transverse weir flow coefficient (Reference 53).

As part of the Chartiers Creek Flood Control Project, drop structures were constructed at the mouths of Georges Run and Scrubgrass Run. Flooding on Georges Run upstream of the CONRAIL embankment near its mouth was found to be controlled by the culvert beneath the railroads and State Route 50. However, the hydraulic analysis showed that only the 10% annual chance discharge would pass through the culvert, while the 2%, 1%, and 0.2% annual chance flows overtopped the embankment. A backwater analysis was performed to establish flood elevations along the embankment. This analysis indicated that the average depth of flooding caused by the 10% annual chance flood was less than 2.0 feet. Therefore, this portion of the stream was identified as a shallow flooding area. A separate analysis was also required for Scrubgrass Run in order to determine the flood elevations above the culvert at Green Tree Road.

Flooding on Chartiers Creek between the inlet and outlet of the Chartiers Creek-Diversion Channel has been significantly altered by the construction of the

diversion channel. The HEC-2 ana lysis on Chartiers Creek-Diversion Channel show that the 0.2% annual chance flood is contained within the banks. The flooding adjacent to the Char tiers Creek-Diversion Channel at its inlet is caused by overflow from Chartiers Creek. The flood water empties into the diversion channel via the two culverts.

The upstream junction of Chartiers Creek and the diversion channel, located approximately 850 feet downstream of Prestley Road, was designed to divide the flow as follows (Reference 38):

Total Discharge (cfs)	Chartiers Creek Discharge (cfs)	Chartiers Creek-Diversion Channel Discharge (cfs)
21,200	2,475	18,725
18,500	2,200	16,300
12,500	1,800	10,700
6,200	1,200	5,000
1,500	500	1,000
120	120	0

These flow divisions were achieved by placing a sm all weir in the diversion channel to divert low flows into Chartiers Creek and constructing a large culvert in Chartiers Creek to divert high flows into the diversion channel. In the analysis for this study, the flow division for each flood (10%, 2%, 1 %, and 0.2% annual chance) was determ ined by perform ing a backwater analysis for both the Chartiers Creek-Diversion Channel and Ch artiers Creek. The resu lting flow divisions at the upstream junction are:

Recurrence Interval (Years)	Total Discharge (cfs)	Chartiers Creek Discharge (cfs)	Chartiers Creek-Diversion Channel Discharge (cfs)
10	8,800	1,500	7,300
50	16,800	2,200	14,600
100	21,200	2,475	18,725
500	33,600	7,750	25,850

Hydraulic analyses determ ined that the 1% and 0.2% annual chance floods on Turtle Creek in the Borough of Turtle Creek are contained within the channel.

Flows for the Ohio River over Lock and Da m No. 3 were com puted to obtain elevations on the upstream side for the continuation of the backwater profiles. Variable weir coefficien ts were bas ed on head-breadth relationships and were corrected for subm ergence, when appropriate, using methods for "ungated" conditions (Reference 54).

Reliable rating curves were also a vailable for the Ohio River at the Dashields Lock and Dam and at the Em sworth Lock and Dam to ensure that all computed

frequency profiles were reasonable and consistent with the calibrated historical floods mentioned.

Aside from the exceptions noted below, starting water-surface elevations for the streams studied by detailed methods were determined using the slope/area method.

Starting water-surface elevations for the following streams were based on the coincident flow of the receiving stream: Allegheny River in the City of Pittsburgh, Big Sewickley Creek in the Borough of Leetsdale, Chartiers Creek, Chartiers Creek-Diversion Channel, and Rochester Run in the Township of Ross, and Tributary to Bull Creek and West Branch Deer Creek in the Township of West Deer.

Starting water-surface elevations for Campbells Run in the Borough of Carnegie were calculated assuming supercritical flow.

For the following streams, starting water-surface elevations were determined using the standard backwater analysis: Crooked Run; Tributary 1 to Piney Fork; and the Youghiogheny River in the Boroughs of Liberty, Lincoln, Port Vue, and Versailles; and the City of McKeesport.

Starting water-surface elevations for the following streams were based on stage-discharge rating curves, which were obtained from high-water marks and by a continuation of profile computations: the Allegheny River; Campbells Run in the Township of Collier; Girty's Run; Little Plum Creek; Lowries Run in the Town of McCandless and the Township of Ross; the Ohio River, except in the Boroughs of Coraopolis and Glen Osborneand the Township of Moon; Ohio River Back Channel, except in the Township of Robinson; Peters Creek; Plum Creek; and Tributary A.

Starting water-surface elevations for the following streams were calculated assuming critical depth: Bear Run, Deer Creek, Little Deer Creek, McLaughlin Run, and Sawmill Run in the Township of Wilkins.

In the Borough of Glen Osborne and the Township of Moon, starting water-surface elevations for the Ohio River were determined using a discharge-frequency curve.

For Lowries Run in the Borough of Emsworth and the Townships of Kilbuck and Ohio and Sawmill Run in the City of Pittsburgh, the starting water-surface elevations were based on combined frequency analyses with the Ohio River (Reference 55).

In the Township of Robinson, starting water-surface elevations for Ohio River Back Channel were taken from the FIS for the Borough of Coraopolis (Reference 56).

Starting water-surface elevations for the Youghiogheny River in South Versailles were derived by interpolating the river elevation for each flood at the stream mouth. The stream analysis was then started by slope/area method below this elevation.

October 4, 1995, Countywide Analyses

Cross sections for the Monongahela River were obtained from a digital 3-dimensional terrain model created by utilizing an Intergraph /Inroads (I/I) software design package with the digital design map files and hydrographic data developed in 1990 (Reference 57).

Water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (Reference 50).

Starting water-surface elevations for the Monongahela River were obtained from the FIS for the City of Pittsburgh (Reference 32). The elevations at the head of the Ohio River for the same recurrence intervals were used.

Roughness coefficients (Manning's "n") used in the hydraulic computations for the Monongahela River were chosen by calibration to high-water marks from actual floods.

March 16, 1998, Countywide Revision

Cross sections and bridge data for the following streams were determined from field measurement and use of a Digital Terrain Model (DTM) developed from aerial photographs compiled by photogrammetric methods at a scale of 1:6,000: Gourdhead Run in the Township of Hampton; Harts Run in the Township of Hampton; Little Pine Creek East in the Townships of Indiana, O'Hara, and Shaler; Little Pine Creek West in the Borough of Etna, Town of McCandless, and Townships of Ross and Shaler; McCaslin Run in the Township of Hampton; Montour Run No. 1 in the Township of Hampton; and Pine Creek in the Boroughs of Etna and Franklin Park, Town of McCandless, and Townships of Hampton and Shaler.

Water-surface elevations of floods of the selected recurrence intervals were computed using the USACE HEC-2 step-backwater computer program (Reference 49).

Starting water-surface elevations for Pine Creek in the Borough of Etna were based on the coincident flow of the receiving stream, the Allegheny River.

For Little Pine Creek East in the Township of Shaler; Little Pine Creek West in the Borough of Etna; and Gourdhead Run, Harts Run, McCaslin Run, and Montour Run No. 1 in the Township of Hampton, starting water-surface elevations were developed assuming critical depth.

July 5, 2000, Countywide Revision

Water-surface elevations of floods of th e selected recurrence in tervals were computed using the US ACE HEC-2 computer program (Reference 3 0). The HEC-2 model for the Allegheny River included tributary stream profiles for Herrs Island Back Channel, Twelve Mile Isla nd Back Channel, and Fourteen Mile Island Back Channel. Cr oss sections for the analyses of the Allegheny River were obtained from a digital 3-dim ensional terrain model created by the aforementioned I/I software design packag e. The m odel used digital design m ap files and hydrographic data developed during 1995 and 1996 (Reference 57).

Starting water-surface elevations for Em sworth pond of the Allegheny River at the "Point" in Pittsbu rgh were ob tained from the FIS f or the City of Pittsburgh (Reference 30). The starting water-surface elevations for Pool 2 of the Allegheny River were obtained from discharge rati ngs developed at D am 2. The starting elevations for Pool 3 were obtained from discharge ratings developed at Da m 3. The elevations at the head of the Ohio River (mouth of the Allegheny River) for the same recurrence intervals were used.

September 21, 2001, Countywide Revision

No new hydraulic analysis was perf ormed as a part of this revision. Floodplain boundaries were remapped for Squaw Run, Squaw Run Tributary Nos. 1, 2, and 4, Glade Run, and Stony Cam p Run base d on updated topographic inf ormation for Borough of Fox Chapel.

May 15, 2003, Countywide Revision

Water-surface profiles of floods of the selected recurrence intervals were developed using the USACE HEC-2 computer program (Reference 50). Starting elevations on Chartiers Creek were base d on coincidental flooding with the Ohio River.

This Countywide Revision

The analyses consisted of determ ining water surface elevations for the 50-, 20-, 10-, 2-, 1-, and 0.2-percen t-annual-chance flood events and floodways for detailed studies, and 1-percent-annu al-chance flood events for approxim ate studies within the County. The hydraulic m ethods used for this analysis include steady flow analysis using HEC-RAS version 4.0.0 (Reference 58). Cross-sections derived from state LiDAR data or field survey data were used to prepare the hydraulic analyses using RAMPP's GeoRAMPP software, for both detailed and approximate streams within an ESRI ArcMap GIS platform (Reference 59).

Channel roughness factors (Manning's "n") used in the hydraulic com putations were chosen by engineering judgment and field inspection of the floodplain areas. Roughness coefficients used in the hydrau lic computations for all stream s are listed in Table 7, "Summary of Roughness Coefficients."

TABLE 7 – SUMMARY OF ROUGHNESS COEFFICIENTS

Stream	Channel "n"	Overbank "n"
Abers Creek	0.022-0.050	0.035-0.120
Allegheny River	0.023-0.027	0.045-0.060
Allegheny River- Herrs Island Back Channel	*	*
Allegheny River- Fourteen Mile Island Back Channel	*	*
Allegheny River- Twelve Mile Island Back Channel	*	*
Bear Run	0.018-0.040	0.080
Becks Run	0.029-0.044	0.080
Big Sewickley Creek	0.035-0.040	0.045-0.120
Boston Hollow Run	0.040-0.050	0.080-0.100
Boyds Hollow Run	0.061	0.080-0.100
Breakneck Creek	0.045	0.080
Brush Creek 1	0.027-0.050	0.100-0.150
Brush Creek 2	0.018-0.045	0.050-0.100
Bull Creek	0.030-0.040	0.060-0.100
Campbells Run	0.011-0.045	0.035-0.090
Chalfant Run	0.030-0.052	0.023-0.100
Chartiers Creek	0.023-0.045	0.031-0.800
Chartiers Creek-Diversion Channel	0.030-0.036	0.045-0.080
Crooked Run	0.015-0.055	0.020-0.080
Crouse Run	0.020-0.050	0.060-0.120
Crouse Run Tributary	0.040	0.070-0.100
Deer Creek	0.035	0.080
Dirty Camp Run	0.025-0.045	0.020-0.150
Douglass Run	0.045-0.050	0.080-0.100
Douglass Run Tributary No. 1	0.045-0.050	0.080-0.100
Douglass Run Tributary No. 2	0.040-0.050	0.080-0.140
East Thompson Run	0.040-0.050	0.050-0.100
Fallen Timber Run	0.040	0.070-0.100
Georges Run	0.013-0.045	0.040-0.070
Gillespie Run	0.035-0.055	0.040-0.080
Girty's Run	0.012-0.048	0.020-0.080
Gourdhead Run	0.020-0.060	0.040-0.120
Graesers Run	0.031-0.040	0.030-0.12
Happy Hollow Run	0.045-0.048	0.080-0.100
Harts Run	0.035-0.040	0.020-0.080
Hoffman Run	0.020-0.045	0.070-0.100
Humms Run	0.035-0.040	0.035-0.120
Jacks Run	0.040	0.050-0.100
Leak Run	0.028-0.050	0.020-0.300
Lewis Run	0.030-0.055	0.020-0.110
Lick Run	0.025-0.060	0.020-0.130
Little Bull Creek	0.045-0.055	0.060-0.100
Little Deer Creek	0.035-0.040	0.080
Little Pine Creek East	0.032-0.047	0.055-0.200

*Data Not Available

TABLE 7 – SUMMARY OF ROUGHNESS COEFFICIENTS – (continued)

Stream	Channel "n"	Overbank "n"
Little Pine Creek West	0.020-0.060	0.040-0.150
Little Plum Creek	0.025-0.035	0.035-0.065
Lobbs Run	0.020-0.060	0.016-0.150
Long Run	0.015-0.045	0.040-0.120
Lowries Run	0.025-0.050	0.040-0.10
McCaslin Run	*	*
McClarens Run	0.035	0.080
McLaughlin Run	0.032-0.036	0.03-0.20
Millers Run	0.020-0.040	0.025-0.200
Monongahela River	0.025-0.028	0.060
Montour Run	0.025-0.045	0.050-0.100
South Fork Montour Run	0.035	0.080
Montour Run No. 1	0.05	0.1
Moon Run	0.013-0.040	0.040-0.075
North Branch Robinson Run	0.038	0.080
North Fork Montour Run	0.035	0.080
Ohio River	0.025-0.035	0.025-0.080
Ohio River Back Channel	0.025-0.035	0.025-0.160
Painters Run	0.037-0.040	0.050-0.085
Peters Creek	0.033-0.040	0.020-0.100
Pidgeon Hollow Run	*	*
Piersons Run	0.035-0.040	0.015-0.060
Pine Creek	0.020-0.060	0.030-0.400
Piney Fork	0.035-0.055	0.060-0.100
Pitt Street Tributary	*	*
Plum Creek	0.037-0.050	0.040-0.200
Pucketa Creek	0.030-0.035	0.055-0.150
Robinson Run	0.025-0.038	0.045-0.150
Rochester Run	0.040	0.080
Sandy Creek	0.025-0.038	0.030-0.150
Saw Mill Run	0.021-0.060	0.025-0.080
Sawmill Run	0.033-0.045	0.045-0.100
Scrubgrass Run	0.028-0.040	0.050-0.070
Spring Garden Run	0.012-0.050	0.070-0.100
Squaw Run	0.025-0.059	0.080-0.120
Squaw Run Tributary No. 1	0.055-0.059	0.070-0.120
Squaw Run Tributary No. 2	0.015-0.055	0.100-0.120
Squaw Run Tributary No. 4	0.055-0.059	0.070-0.120
Streets Run	0.046	0.120
Thompson Run	0.014-0.045	0.030-0.120
Tributary A	0.038	0.060-0.100
Tributary to Bull Creek	0.035-0.040	0.070-0.080
Tributary 1 to Piney Fork	0.035-0.040	0.050-0.080
Turtle Creek	0.014-0.055	0.022-0.150

*Data not available

TABLE 7 – SUMMARY OF ROUGHNESS COEFFICIENTS – (continued)

Stream	Channel "n"	Overbank "n
Unnamed Stream Along Moss Side Boulevard	0.028-0.035	0.060-0.100
West Branch Deer Creek	0.035	0.080
Whiskey Run	0.028-0.040	0.030-0.150
Wittmer Run	0.045	0.110
Wildcat Run	0.045	0.100
Wylie Run	0.048	0.070-0.100
Youghiogheny River	0.035	0.060

For FIRM panels, bench m arks within a given jurisdiction that are cataloged by the National Geodetic Survey (NGS) and entered in to the Nation al Spatial Reference System (NSRS) as First or S econd Order Vertical and have a vertical stability classification o f 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 ente red into the NSRS vary widely in vertical stability classification. NSRS ve rtical stability classifications are as follows:

- Stability A: Monum ents of the most reliable nature, expected to hold position/elevation well (e.g., mounted in bedrock)
- Stability B: Monum ents which genera lly 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 the 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 m arks, the FIRM may also show vertical control monuments established by a local jurisd iction; these m onuments will be shown on the FIRM with the approp riate designations. Local monuments will only be placed on the FIRM if the co mmunity has requested that they be included, and if the m onuments meet the aforementioned NSRS inclusion criteria.

  To obtain elevation, description, and /or location information for bench marks shown on the FIRM for this jurisdic tion, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their W eb 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 NGVD 29. With the finalization of the North American Vertical Datum of 1988 (NAVD 88), many FIS reports and FIRMs are being prepared using NAVD 88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD 88. Structure and ground elevations in the county must, therefore, be referenced to NAVD 88. It is important to note that adjacent counties may be referenced to NGVD 29. This may result in differences in BFEs across the county boundaries between the counties.

The average datum shift from NGVD 29 to NAVD 88 for Allegheny County used was -0.52 feet.

For information regarding conversion between the NGVD29 and NAVD88, visit the National Geodetic Survey web site at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3242

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,

and Floodway Data Tables. Users should refere nce the data presente d in the FIS as well as additional inform ation that m ay be avai lable at the loc al community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national sta ndard without regional di scrimination, 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 em ployed to indicate additional areas of flood risk in the community. For the stream s studied in detail, the 1-percent and 0.2-percent annual chan ce floodplains have been delineated using the flood elevations determined at each cross section.

For this countywide F IS, flood boundaries were interpolat ed using LiDAR acquired from Pennsylvania Map that was used to de velop a DTM (Reference 56).

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM. On this m ap, the 1-per cent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zon es A, AE, X), and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazard s. In cases where the 1- and 0.2-percent-annual-chance floodplain boundari es are close together, only the 1-percent-annual-chance floodplain bounda ry has been shown. Small areas within the floodplain boundaries m ay lie above the flood elevations, but cannot be shown due to lim itations of the m ap scale and/or lack of detailed topographic data.

For the stream s studied by approxim ate methods, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM (Exhibit 2).

4.2 Floodways

Encroachment on floodplains, su ch as stru ctures and fill, red uces flood-carrying capacity, increases flood heights and velo cities, and increases flood hazards in areas beyond the encroachm ent itself. One aspect of floodplain m anagement involves balancing the econom ic gain fr om floodplain develop m ent against the resulting increase in flood hazard. Fo r purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain m anagement. Under this concept, the ar ea of the 1-percent annual chance floodplain is divided into a floodway and a floodway fringe. Th e floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachm ent so that the 1-percent annual chance flood can be ca rried without substantial increases in flood heights. Minim um Federal standard s limit such incr eases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study

are presented to local agencies as a minimum standard that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study 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 in Table 8, "Floodway Data" (located in Volume 2). 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 widths for the Allegheny River, Big Sewickley Creek, the Monongahela River, Pucketa Creek, Turtle Creek, and the Youghiogheny River extend beyond the county boundary.

The floodway for all or portions of the following streams are contained within their channel banks: the Allegheny River, Boston Hollow Run, Boyds Hollow Run, Chartiers Creek, Dirty Camp Run, Douglass Run, Douglass Run Tributary No. 1, Fallen Timber Run, Gillespie Run, Happy Hollow Run, Hoffman Run, Pidgeon Hollow Run, Pitt Street Tributary, Pucketa Creek, Spring Garden Run, Squaw Run, Squaw Run Tributary No. 1, Squaw Run Tributary No. 2, Squaw Run Tributary No. 4, Turtle Creek, Wildcat Run, and Wylie Run.

Floodway data was not computed for all or portions of the Allegheny River, Squaw Run, Chartiers Creek-Diversion Channel, Lowries Run, McClarens Run, North Fork Montour Run, and Bear Run.

No cross section data is available for the floodways along Allegheny River – Twelve Mile Island Back Channel, Allegheny River – Fourteen Mile Island Back Channel, and a portion of Chartiers Creek within the Borough of Bridgeville and the Township of Collier. Therefore information for these flooding sources is not included in Table 8, "Floodway Data" (located in Volume 2).

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 8, "Floodway Data" (located in Volume 2). 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.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "Without Floodway" elevations presented in Table 8 (located in Volume 2) for certain downstream cross sections of the following streams are lower than the regulatory flood elevations in that area, which must take into account the 1-percent annual chance flooding due to backwater from other sources: Becks Run, Big

Sewickley Creek, Boston Hollow Run, Boyds Hollow Run, Campbells Run, Gourdhead Run, Lewis Run, Little Pine Creek East, Little Pine Creek West, Little Plum Creek, Lobbs Run, Long Run, Millers Run, Montour Run, Montour Run No. 1, Moon Run, Piersons Run, Pine Creek, Pucketa Creek, Robinson Run, Sandy Creek, Scrubgrass Run, Thompson Run, Wylie Run, and the Youghiogheny River.

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 1, "Floodway Schematic."

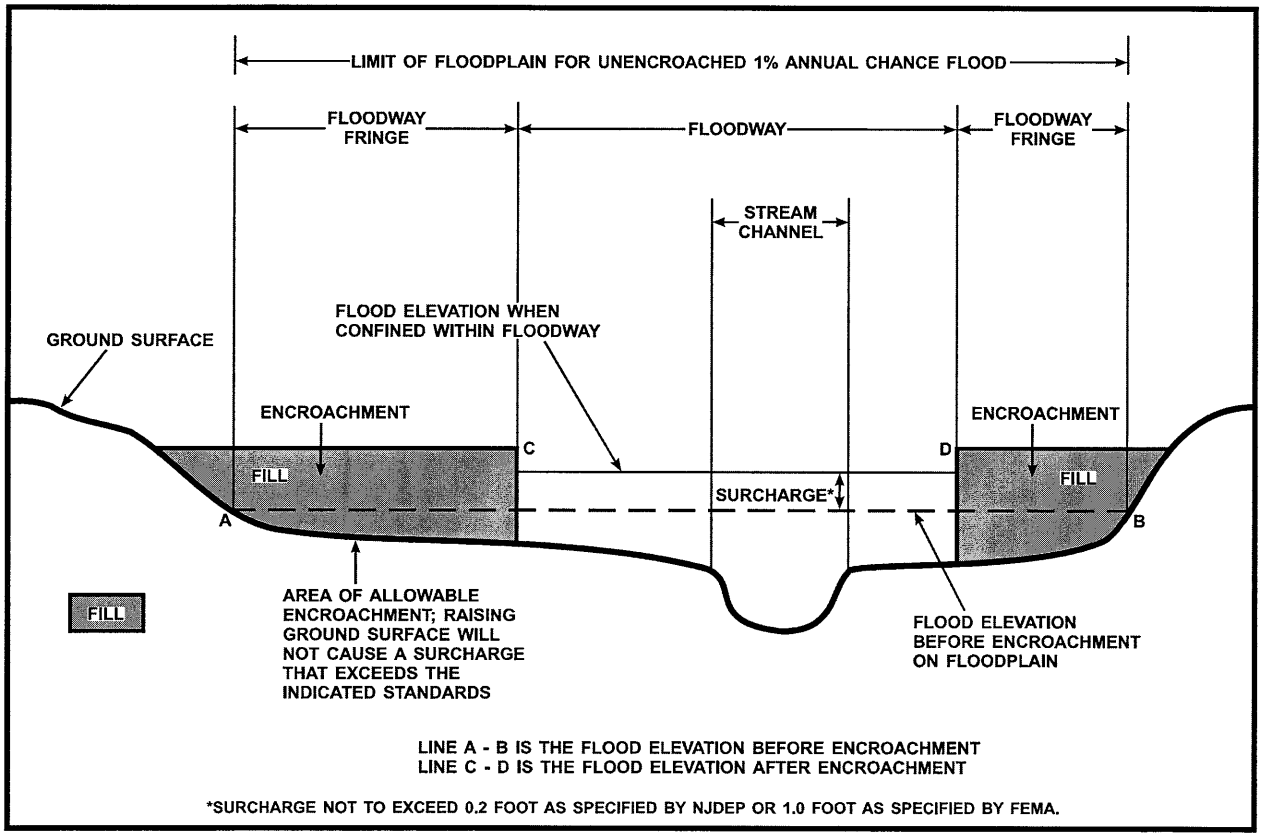

Figure 1: FLOODWAY SCHEMATIC

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insura nce zone designations are assigned to a community based on the results of the engineering analyses. These 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 determ ined in the FI S report by approxim ate methods. Because detailed hydraulic analyses are not perform ed for such ar eas no BFEs, 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 report by detailed methods. Whole-foot BFEs derived from the detailed hydraulic analyses ar e shown at selected in tervals 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, 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 (sq. mi.), and areas pr otected from the base flood by levees. No BFEs or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

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

For flood insurance applications, the m ap designates flood insurance rate zones as described in Section 5.0 and, in the 1-pe rcent-annual-chance floodplains that were studied by detailed m ethods, shows selected whole-foot BFEs or average depths. Insurance agents use zones and BFEs in conj unction 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 sym bols, the 1- and 0.2-percent-annual-chance floodpl ains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The current FIRM presents flooding information for the entire geographic area of Allegheny County. Historical map dates relating to the maps prepared for each community prior to the October 4, 1995 initial countywide FIS are presented in Table 9, "Community Map History."

7.0 OTHER STUDIES

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Allegheny County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS reports, and FIRMs for all of the incorporated jurisdictions within Allegheny 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 flood hazard data.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting Federal Insurance and Mitigation Division, FEMA Region III, One Independence Mall, Sixth Floor, 615 Chestnut Street, Philadelphia, PA 19106-4404.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Aleppo, Township of	May 10, 1974	April 23, 1976	September 1, 1986	
Aspinwall, Borough of	December 28, 1973	May 14, 1976	December 18, 1979	
Avalon, Borough of	February 1, 1974	January 2, 1976	December 15, 1978	
Baldwin, Borough of	December 17, 1976	None	August 15, 1978	
Baldwin, Township of[1]				
Bell Acres, Borough of	June 7, 1974	April 23, 1976	May 1, 1985	
Bellevue, Borough of	December 28, 1973	April 2, 1976	December 15, 1978	
Ben Avon, Borough of	December 28, 1973	June 4, 1976	July 16, 1981	
Ben Avon Heights, Borough of*[1]				
Bethel Park, Municipality of	December 10, 1976	None	June 15, 1981	
Blawnox, Borough of	June 14, 1974	May 7, 1976	September 3, 1980	
Brackenridge, Borough of	February 15, 1974	June 4, 1976	August 15, 1980	
Braddock, Borough of	March 29, 1974	June 18, 1976	September 30, 1980	
Braddock Hills, Borough of*	May 10, 1974	April 9, 1976	August 10, 1979	

*No Special Flood Hazard Areas Identified
[1]This community did not have a FIRM prior to the first countywide FIRM for Allegheny County

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALLEGHENY COUNTY, PA
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Bradford Woods, Borough of	January 3, 1975	None	November 6, 1981	
Brentwood, Borough of[1]				
Bridgeville, Borough of	February 8, 1974	April 9, 1976	January 5, 1984	
Carnegie, Borough of	February 8, 1974	May 7, 1976	May 1, 1978	
Castle Shannon, Borough of[1]				
Chalfant , Borough of*[1]				
Cheswick, Borough of	February 1, 1974	August 6, 1976	June 18, 1980	
Churchill, Borough of	December 10, 1976	None	December 15, 1978	
Clairton, City of	January 4, 1974	January 16, 1976	October 16, 1979	
Collier, Township of	July 19, 1974	April 30, 1976	March 15, 1982	
Coraopolis, Borough of	March 8, 1974	April 9, 1976	June 15, 1979	
Crafton, Borough of	February 1, 1974	April 30, 1976	December 19, 1980	

*No Special Flood Hazard Areas Identified
[1]This community did not have a FIRM prior to the first countywide FIRM for Allegheny County

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALLEGHENY COUNTY, PA
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Crescent, Township of	May 31, 1974	June 4, 1976	July 16, 1981	
Dormont , Borough of*[1]				
Dravosburg, Borough of	December 28, 1973	June 18, 1976	June 15, 1979	
Duquesne, City of	April 12, 1974	April 16, 1976	September 14, 1979	
East Deer, Township of	September 20, 1974	May 14, 1976	August 15, 1980	
East McKeesport, Borough of*[1]				
East Pittsburgh, Borough of [1]				
Edgewood, Borough of*[1]				
Edgeworth, Borough of	March 15, 1974	May 28, 1976	May 1, 1980	
Elizabeth, Borough of	January 9, 1974	April 16, 1976	July 16, 1981	
Elizabeth, Township of	March 29, 1974	June 18, 1976	March 15, 1977	March 16, 1979
Emsworth, Borough of	February 8, 1974	None	September 30, 1980	
Etna, Borough of	July 26, 1974	October 24, 1975	September 1, 1978	
Fawn, Township of	November 29, 1974	February 5, 1982	January 18, 1984	

*No Special Flood Hazard Areas Identified
[1]This community did not have a FIRM prior to the first countywide FIRM for Allegheny County

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALLEGHENY COUNTY, PA
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Findlay, Township of	September 20, 1974	June 4, 1976	November 18, 1988	
Forest Hills, Borough of	May 10, 1974	September 10, 1976	September 1, 1986	
Forward, Township of	July 19, 1974	May 7, 1976	February 1, 1980	
Fox Chapel, Borough of	July 26, 1974	August 6, 1976	April 15, 1977	
Franklin Park, Borough of	July 30, 1976	None	January 1, 1982	
Frazer, Township of	November 5, 1976	None	December 19, 1980	
Glassport, Borough of	December 7, 1973	June 18, 1976	June 15, 1979	
Glen Osborne, Borough of	June 1, 1973	May 21, 1976	November 15, 1979	
Glenfield, Borough of	March 29, 1974	May 7, 1976	March 18, 1980	
Green Tree, Borough of	June 21, 1974	May 14, 1976	July 16, 1981	
Hampton, Township of	March 15, 1974	May 28, 1976	May 1, 1978	
Harmar, Township of	September 6, 1974	July 30, 1976	July 2, 1980	

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALLEGHENY COUNTY, PA
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Harrison, Township of	November 2, 1973	June 4, 1976	September 29, 1978	July 2, 1982
Haysville, Borough of	August 9, 1974	August 6, 1976	March 18, 1980	
Heidelberg, Borough of	February 1, 1974	June 4, 1976	June 15, 1981	
Homestead, Borough of[1]				
Indiana, Township of	September 6, 1974	May 14, 1976	October 18, 1983	
Ingram, Borough of*[1]				
Jefferson Hills, Borough of	June 14, 1974	June 25, 1976	April 1, 1980	
Kennedy, Township of	September 20, 1974	May 21, 1976	February 15, 1980	
Kilbuck, Township of	September 13, 1974	July 16, 1976	February 1, 1980	
Leet, Township of	May 31, 1974	May 28, 1976 November 12, 1976	September 14, 1979	
Leetsdale, Borough of	June 21, 1974	May 7, 1976	November 19, 1980	
Liberty, Borough of	December 28, 1973	May 14, 1976	November 1, 1979	

*No Special Flood Hazard Areas
[1]This community did not have a FIRM prior to the first countywide FIRM for Allegheny County

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALLEGHENY COUNTY, PA
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Lincoln, Borough of	December 28, 1973	April 23, 1976	September 28, 1979	
Marshall, Township of	September 20, 1974	September 24, 1976	November 4, 1981	
McCandless, Town of	September 20, 1974	June 4, 1976	June 18, 1980	
McDonald, Borough of	July 26, 1974	May 7, 1976	August 15, 1983	
McKeesport, City of	December 28, 1973	May 28, 1976	January 3, 1979	
McKees Rocks, Borough of	August 31, 1973	June 18, 1976	May 16, 1977	January 1, 1982
Millvale, Borough of	December 28, 1973	April 23, 1976	July 16, 1979	
Monroeville, Municipality of	July 26, 1974	May 28, 1976	August 1, 1979	
Moon, Township of	September 6, 1974	June 4, 1976	August 15, 1979	
Mount Oliver, Borough of*[1]				
Mt. Lebanon, Municipality of	September 6, 1974	January 2, 1976	June 30, 1976	
Munhall, Borough of	January 9, 1974	June 25, 1976	April 24, 1981	

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[1]This community did not have a FIRM prior to the first countywide FIRM for Allegheny County

TABLE 9

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ALLEGHENY COUNTY, PA
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Neville, Township of	March 24, 1971	None	July 7, 1972	July 1, 1974 September 5, 1975 September 30, 1988
North Braddock, Borough of	April 12, 1974	June 4, 1976	February 16, 1979	
North Fayette, Township of	September 20, 1974	June 18, 1976	October 18, 1983	
North Versailles, Township of	September 6, 1974	May 14, 1976	April 1, 1981	
Oakdale, Borough of	December 7, 1973	August 6, 1976	August 15, 1983	
Oakmont, Borough of	March 8, 1974	May 28, 1976	January 16, 1981	
O'Hara, Township of	September 20, 1974	November 14, 1975	July 2, 1980	
Ohio, Township of	September 20, 1974	June 4, 1976	November 4, 1988	

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALLEGHENY COUNTY, PA
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Penn Hills, Municipality of	September 20, 1974	December 26, 1975	June 15, 1981	
Pennsbury Village, Borough of*[1]				
Pine, Township of	August 2, 1974	July 2, 1976	September 22, 1978	
Pitcairn, Borough of	July 30, 1976	None	April 1, 1980	
Pittsburgh, City of	March 8, 1974	August 20, 1976	December 15, 1981	
Pleasant Hills, Borough of[1]				
Plum, Borough of	June 28, 1974	May 21, 1976	September 16, 1981	
Port Vue, Borough of	January 19, 1974	May 21, 1976	September 28, 1979	
Rankin, Borough of	March 15, 1974	June 18, 1976	July 2, 1980	
Reserve, Township of	April 15, 1977	None	April 15, 1977	
Richland, Township of	August 2, 1974	May 28, 1976	September 22, 1978	
Robinson, Township of	September 20, 1974	August 20, 1976	February 3, 1982	
Ross, Township of	June 7, 1974	October 3, 1975	December 18, 1979	

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[1]This community did not have a FIRM prior to the first countywide FIRM for Allegheny County

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALLEGHENY COUNTY, PA
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Rosslyn Farms, Borough of	January 4, 1974	May 21, 1976	May 19, 1981	
Scott, Township of	September 13, 1974	July 9, 1976	May 3, 1982	
Sewickley, Borough of	January 9, 1974	May 28, 1976	September 14, 1979	
Sewickley Heights, Borough of	March 22, 1974	May 17, 1974 June 4, 1976	May 1, 1986	
Sewickley Hills, Borough of	November 26, 1976	None	September 1, 1986	
Shaler, Township of	May 31, 1974	July 16, 1976	March 18, 1980	
Sharpsburg, Borough of	December 28, 1973	June 4, 1976	September 29, 1978	
South Fayette, Township of	September 13, 1974	January 2, 1976	February 3, 1982	April 3, 1989
South Park, Township of	June 28, 1974	August 6, 1976	November 5, 1980	

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALLEGHENY COUNTY, PA
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
South Versailles, Township of	August 2, 1974	July 2, 1976	August 1, 1979	
Springdale, Borough of	February 8, 1974	July 16, 1976	July 16, 1980	
Springdale, Township of	May 24, 1974	May 14, 1976	July 16, 1980	
Stowe, Township of	November 29, 1974	June 18, 1976	February 15, 1980	
Swissvale, Borough of	June 14, 1974	June 4, 1976	June 30, 1976	
Tarentum, Borough of	February 15, 1974	May 14, 1976	August 15, 1980	
Thornburg, Borough of[1]				
Trafford, Borough of[2]	August 30, 1974	December 19, 1975	September 28, 1979	
Turtle Creek, Borough of	February 1, 1974	May 28, 1976	November 19, 1980	
Upper St. Clair, Township of	May 31, 1974	June 18, 1976 May 23, 1980	March 15, 1984	April 17, 1989
Verona, Borough of	May 31, 1974	June 4, 1974	January 16, 1981	
Versailles, Borough of	March 29, 1974	May 28, 1976	October 18, 1988	

[1] This community did not have a FIRM prior to the first countywide FIRM for Allegheny County

[2]This community was not part of the October 4, 1995, countywide Flood Insurance Study. It became part of the countywide Flood Insurance Study in the August 5, 1997, revision.

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALLEGHENY COUNTY, PA
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Wall, Borough of	April 25, 1975	None	November 19, 1987	
West Deer, Township of	September 20, 1974	June 25, 1976	October 18, 1983	
West Elizabeth, Borough of	November 30, 1973	July 23, 1976	September 29, 1978	July 25, 1980
West Homestead, Borough of	December 28, 1973	June 18, 1976	August 15, 1980	
West Mifflin, Borough of	March 22, 1974	July 16, 1976	February 15, 1980	
West View, Borough of	May 31, 1974	May 21, 1976	June 30, 1976	
Whitaker, Borough of[1]				
Whitehall , Borough of[1]				
White Oak, Borough of	January 16, 1974	September 10, 1976	September 14, 1979	
Wilkins, Township of	May 10, 1974	June 25, 1976	September 29, 1978	
Wilkinsburg, Borough of*[1]				
Wilmerding, Borough of	May 3, 1974	May 21, 1976	August 1, 1979	

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[1]This community did not have a FIRM prior to the first countywide FIRM for Allegheny County

TABLE 9

FEDERAL EMERGENCY MANAGEMENT AGENCY

ALLEGHENY COUNTY, PA
(ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

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