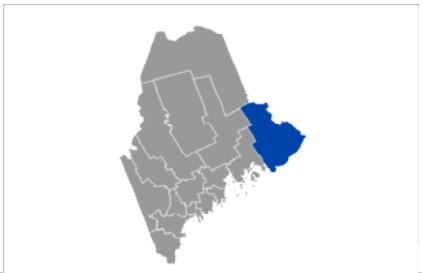
FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1



WASHINGTON COUNTY, MAINE

(ALL JURISDICTIONS)

COMMUNITY NAME	CID	COMMUNITY NAME	CID
TOWN OF ADDISON	230132	TOWNSHIP OF BROOKTON	230470
TOWN OF ALEXANDER	230303	CITY OF CALAIS	230134
TOWN OF BAILEYVILLE	230304	TOWNSHIP OF CATHANCE*	230569
BARING PLANTATION	230468	CENTERVILLE TOWNSHIP*	230306
TOWN OF BEALS	230133	TOWN OF CHARLOTTE	230437
TOWNSHIP OF BERRY*	230576	TOWN OF CHERRYFIELD	230135
TOWN OF BEDDINGTON*	230305	CODYVILLE PLANTATION*	230568
TOWNSHIP OF BIG LAKE*	230570	TOWN OF COLUMBIA	230307

*No Special Flood Hazard Areas Identified

FEMA

EFFECTIVE:
JULY 18, 2017

FLOOD INSURANCE STUDY
NUMBER 23029CV000A
Version Number 2.2.2.1

COMMUNITY NAME	CID	COMMUNITY NAME	CID
TOWN OF COLUMBIA FALLS	230308	TOWN OF PEMBROKE	230143
TOWN OF COOPER*	230438	TOWN OF PERRY	230319
TOWN OF CRAWFORD	230309	TOWN OF PRINCETON	230320
TOWN OF CUTLER	230310	TOWN OF ROBBINSTON	230321
TOWN OF DANFORTH	230136	TOWN OF ROQUE BLUFFS	230322
TOWNSHIP OF DAY BLOCK*	230580	TOWNSHIP OF SAKOM*	230822
TOWN OF DEBLOIS*	230311	TOWN OF STEUBEN	230323
TOWN OF DENNYSVILLE	230312	TOWNSHIP OF T11 R3 NBPP*	230826
TOWNSHIP OF DEVEREAUX*	230819	TOWNSHIP OF T18 MD BPP*	230827
TOWNSHIP OF DYER*	230820	TOWNSHIP OF T19 ED BPP*	230828
TOWN OF EAST MACHIAS	230313	TOWNSHIP OF T19 MD BPP*	230829
CITY OF EASTPORT	230137	TOWNSHIP OF T24 MD BPP*	230577
TOWNSHIP OF EDMUNDS	230471	TOWNSHIP OF T25 MD BPP*	230830
TOWNSHIP OF FOREST*	230571	TOWNSHIP OF T26 ED BPP*	230579
TOWNSHIP OF FOREST CITY*	230572	TOWNSHIP OF T30 MD BPP*	230831
TOWNSHIP OF FOWLER*	230821	TOWNSHIP OF T36 MD BPP*	230832
GRAND LAKE STREAM PLANTATION	230469	TOWNSHIP OF T37 MD BPP*	230833
TOWNSHIP OF GREENLAW CHOPPING*	230578	TOWNSHIP OF T42 MD BPP*	230834
TOWN OF HARRINGTON	230314	TOWNSHIP OF T43 MD BPP*	230835
TOWN OF JONESBORO	230315	TOWNSHIP OF T6 ND BPP*	230823
TOWN OF JONESPORT	230138	TOWNSHIP OF T6 R1 NBPP*	230824
TOWNSHIP OF KOSSUTH*	230573	TOWNSHIP OF T8 R3 NBPP*	230825
TOWNSHIP OF LAMBERT LAKE	230472	TOWNSHIP OF T8 R4 NBPP*	230575
TOWN OF LUBEC	230139	TOWN OF TALMADGE	230914
TOWN OF MACHIAS	230140	TOWN OF TOPSFIELD	230324
TOWN OF MACHIASPORT	230141	TOWNSHIP OF TRESCOTT	230473
TOWNSHIP OF MARION*	230574	TOWN OF VANCEBORO	230325
TOWN OF MARSHFIELD	230316	TOWN OF WAITE*	230326
TOWN OF MEDDYBEMPS*	230317	TOWN OF WESLEY	230327
TOWN OF MILBRIDGE	230142	TOWN OF WHITING	230328
TOWN OF NORTHFIELD	230318	TOWN OF WHITNEYVILLE	230329
PASSAMAQUODDY TRIBE AT PLEASANT POINT	231057	INDIAN TOWNSHIP RESERVATION*	

*No Special Flood Hazard Areas Identified

TABLE OF CONTENTS
Volume 1

TABLE OF CONTENTS *(continued)*
Volume 1 *(continued)*

Figures

Tables

TABLE OF CONTENTS *(continued)*

Volume 1 *(continued)*

Tables *(continued)*

Exhibits

Published Separately

FLOOD INSURANCE STUDY REPORT
WASHINGTON COUNTY, MAINE (ALL JURISDICTIONS)

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60.3, *Criteria for land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after

the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as "Post-FIRM" buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community's regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Washington County, Maine.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the 8-digit Hydrologic Unit Codes (HUC-8) sub-basins affecting each, are shown in Table 1. The Flood Insurance Rate Map (FIRM) panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

The location of flood hazard data for participating communities in multiple jurisdictions is also indicated in the table.

Jurisdictions that have no identified SFHAs as of the effective date of this study are indicated in the table. Changed conditions in these communities (such as urbanization or annexation) or the availability of new scientific or technical data about flood hazards could make it necessary to determine SFHAs in these jurisdictions in the future.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Town of Addison	230132	01050002	23029C1569E, 23029C1588E, 23029C1589E, 23029C1595E, 23029C1782E, 23029C1784E, 23029C1792E, 23029C1794E, 23029C1801E, 23029C1802E, 23029C1803E, 23029C1804E, 23029C1806E, 23029C1807E, 23029C1808E, 23029C1809E, 23029C1811E, 23029C1812E, 23029C1813E, 23029C1814E, 23029C1816E, 23029C1817E, 23029C1818E, 23029C1819E, 23029C1957E, 23029C1959E**, 23029C1970E, 23029C1976E, 23029C1977E, 23029C1978E, 23029C1979E, 23029C1981E, 23029C1982E, 23029C1983E, 23029C1984E, 23029C1987E**, 23029C1990E**, 23029C1992E, 23029C1995E**	
Town of Alexander	230303	01050002	23029C0670E, 23029C0690E, 23029C0693E, 23029C0880E, 23029C0885E, 23029C0895E, 23029C0905E, 23029C0910E, 23029C0915E, 23029C0920E, 23029C0940E	
Town of Baileyville	230304	01050002	23029C0520E, 23029C0540E, 23029C0656E, 23029C0660E, 23029C0676E, 23029C0677E, 23029C0678E, 23029C0679E, 23029C0683E, 23029C0685E, 23029C0690E, 23029C0691E, 23029C0692E, 23029C0693E, 23029C0694E, 23029C0713E, 23029C0714E, 23029C0910E, 23029C0930E	
Baring Plantation	230468	01050002	23029C0714E, 23029C0718E, 23029C0910E, 23029C0920E, 23029C0930E, 23029C0935E, 23029C0940E, 23029C0945E, 23029C0955E	
Town of Beals	230133	01050002	23029C1818E, 23029C1819E, 23029C1838E, 23029C1839E, 23029C1982E, 23029C1984E, 23029C1992E, 23029C1995E**, 23029C2001E, 23029C2002E, 23029C2003E, 23029C2004E, 23029C2006E, 23029C2008E, 23029C2009E**, 23029C2025E**	
Town of Beddington*	230305	01050002	23029C1275E**, 23029C1300E**	
Township of Berry*	230576	01050002	23029C1115E, 23029C1120E, 23029C1150E**, 23029C1360E, 23029C1370E, 23029C1380E, 23029C1385E	

*No Special Flood Hazard Areas Identified **Panel Not Printed

Table 1: Listing of NFIP Jurisdictions *(continued)*

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Township of Big Lake*	230570	01050002	23029C0635E, 23029C0640E, 23029C0645E, 23029C0653E, 23029C0665E, 23029C0875E**, 23029C0880E, 23029C0885E	
Township of Brookton	230470	01050002	23029C0135E, 23029C0145E, 23029C0155E, 23029C0160E, 23029C0165E, 23029C0170E, 23029C0190E**, 23029C0305E	
City of Calais	230134	01050001	23029C0708E, 23029C0709E, 23029C0716E, 23029C0717E, 23029C0718E, 23029C0719E, 23029C0736E, 23029C0737E, 23029C0740E, 23029C0741E, 23029C0742E, 23029C0743E, 23029C0744E, 23029C0775E**, 23029C0935E, 23029C0955E, 23029C0957E, 23029C0960E, 23029C0976E	
Township of Cathance*	230569	01050002	23029C1150E**, 23029C1155E, 23029C1160E, 23029C1165E**, 23029C1170E, 23029C1385E	
Centerville Township*	230306	01050002	23029C1340E, 23029C1345E, 23029C1365E, 23029C1370E, 23029C1580E, 23029C1585E, 23029C1590E, 23029C1595E, 23029C1605E**, 23029C1610E	
Town of Charlotte	230437	01050002	23029C0935E, 23029C0940E, 23029C0945E, 23029C0955E, 23029C0965E, 23029C1155E, 23029C1160E, 23029C1180E	
Town of Cherryfield	230135	01050002	23029C1519E, 23029C1520E**, 23029C1530E, 23029C1535E, 23029C1536E, 23029C1537E, 23029C1538E, 23029C1539E, 23029C1545E, 23029C1565E, 23029C1735E, 23029C1751E, 23029C1752E, 23029C1755E, 23029C1756E, 23029C1757E, 23029C1758E, 23029C1765E, 23029C1766E, 23029C1776E	
Codyville Plantation*	230568	01050002	23029C0190E**, 23029C0195E**, 23029C0215E**, 23029C0330E**, 23029C0335E**, 23029C0340E, 23029C0345E**, 23029C0355E, 23029C0365E**	
Town of Columbia	230307	01050002	23029C1535E, 23029C1545E, 23029C1555E, 23029C1560E, 23029C1565E, 23029C1569E, 23029C1570E, 23029C1588E, 23029C1590E, 23029C1776E, 23029C1777E	
Town of Columbia Falls	230308	01050002	23029C1560E, 23029C1570E, 23029C1580E, 23029C1585E, 23029C1588E, 23029C1589E, 23029C1590E, 23029C1595E	

*No Special Flood Hazard Areas Identified **Panel Not Printed

Table 1: Listing of NFIP Jurisdictions *(continued)*

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Town of Cooper*	230438	01050002	23029C0895E, 23029C0915E, 23029C0920E, 23029C0940E, 23029C1150E**, 23029C1155E	
Town of Crawford	230309	01050002	23029C0875E**, 23029C0880E, 23029C0885E, 23029C0890E, 23029C0895E, 23029C0915E, 23029C1085E, 23029C1105E, 23029C1110E**	
Town of Cutler	230310	01050002	23029C1445E**, 23029C1654E, 23029C1658E, 23029C1660E**, 23029C1662E, 23029C1664E, 23029C1666E, 23029C1667E, 23029C1668E, 23029C1669E, 23029C1680E, 23029C1684E, 23029C1685E, 23029C1686E, 23029C1687E, 23029C1688E, 23029C1689E, 23029C1691E, 23029C1692E, 23029C1695E**, 23029C1703E, 23029C1725E**, 23029C1877E, 23029C1879E**, 23029C1881E, 23029C1882E, 23029C1885E**, 23029C1900E**, 23029C1901E, 23029C1905E**, 23029C1925E**	
Town of Danforth	230136	01050002	23029C0040E, 23029C0045E, 23029C0065E, 23029C0070E, 23029C0090E, 23029C0130E, 23029C0135E, 23029C0155E, 23029C0160E, 23029C0180E	
Township of Day Block*	230580	01050002	23029C1075E**, 23029C1100E**	
Town of Deblois*	230311	01050002	23029C1275E**, 23029C1300E**, 23029C1520E**, 23029C1525E**, 23029C1530E, 23029C1535E, 23029C1536E, 23029C1537E	
Town of Dennysville	230312	01050002	23029C1160E, 23029C1170E, 23029C1180E, 23029C1186E, 23029C1187E, 23029C1188E, 23029C1189E	
Township of Devereaux*	230819	01050002	23029C1025E**, 23029C1050E**, 23029C1275E**, 23029C1300E**	
Township of Dyer*	230820	01050002	23029C0355E, 23029C0360E, 23029C0365E**, 23029C0370E**, 23029C0380E, 23029C0390E**, 23029C0400E**, 23029C0525E**, 23029C0550E**	
Town of East Machias	230313	01050002	23029C1360E, 23029C1370E, 23029C1380E, 23029C1385E, 23029C1390E, 23029C1395E, 23029C1415E, 23029C1627E, 23029C1631E, 23029C1632E, 23029C1633E, 23029C1634E, 23029C1651E**	

*No Special Flood Hazard Areas Identified **Panel Not Printed

Table 1: Listing of NFIP Jurisdictions *(continued)*

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
City of Eastport	230137	01050002	23029C1208E, 23029C1209E, 23029C1216E, 23029C1217E, 23029C1218E, 23029C1219E, 23029C1236E, 23029C1238E, 23029C1476E	
Township of Edmunds	230471	01050002	23029C1165E**, 23029C1170E, 23029C1186E, 23029C1187E, 23029C1188E, 23029C1189E, 23029C1191E, 23029C1193E, 23029C1194E, 23029C1425E**, 23029C1430E, 23029C1431E, 23029C1432E, 23029C1433E, 23029C1434E, 23029C1440E**, 23029C1441E	
Township of Forest*	230571	01050002	23029C0100E**, 23029C0160E, 23029C0170E, 23029C0180E, 23029C0185E**, 23029C0190E**, 23029C0195E**, 23029C0205E**, 23029C0215E**	
Township of Forest City*	230572	01050002	23029C0070E, 23029C0090E, 23029C0100E**, 23029C0180E, 23029C0185E**	
Township of Fowler*	230821	01050002	23029C0518E, 23029C0520E, 23029C0525E**, 23029C0540E, 23029C0550E**	
Grand Lake Stream Plantation	230469	01050002	23029C0470E, 23029C0490E, 23029C0495E, 23029C0610E, 23029C0620E, 23029C0630E, 23029C0635E, 23029C0640E, 23029C0645E	
Township of Greenlaw Chopping*	230578	01050002	23029C0620E, 23029C0640E, 23029C0645E, 23029C0850E**, 23029C0875E**	
Town of Harrington	230314	01050002	23029C1565E, 23029C1569E, 23029C1570E, 23029C1757E, 23029C1776E, 23029C1777E, 23029C1778E, 23029C1779E, 23029C1781E, 23029C1782E, 23029C1783E, 23029C1784E, 23029C1787E, 23029C1788E, 23029C1789E, 23029C1791E, 23029C1792E, 23029C1793E, 23029C1794E, 23029C1951E, 23029C1952E, 23029C1954E, 23029C1956E, 23029C1957E, 23029C1958E, 23029C1959E**, 23029C1962E**, 23029C1970E	
Indian Township Reservation*		01050002	23029C0490E, 23029C0495E, 23029C0514E, 23029C0515** 23029C0518E, 23029C0520E, 23029C0525** 23029C0635E, 23029C0651** 23029C0652E, 23029C0653E, 23029C0654E, 23029C0656E, 23029C0660E	

*No Special Flood Hazard Areas Identified **Panel Not Printed

Table 1: Listing of NFIP Jurisdictions *(continued)*

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Town of Jonesboro	230315	01050002	23029C1585E, 23029C1595E, 23029C1605E, 23029C1610E, 23029C1611E, 23029C1612E, 23029C1613E, 23029C1614E, 23029C1616E, 23029C1617E, 23029C1618E, 23029C1619E, 23029C1636E, 23029C1807E, 23029C1826E**, 23029C1827E, 23029C1831E	
Town of Jonesport	230138	01050002	23029C1613E, 23029C1614E, 23029C1807E, 23029C1809E, 23029C1817E, 23029C1819E, 23029C1826E, 23029C1827E, 23029C1828E, 23029C1829E, 23029C1831E, 23029C1832E, 23029C1833E, 23029C1834E, 23029C1836E, 23029C1837E, 23029C1838E, 23029C1839E, 23029C1841E, 23029C1842E, 23029C1843E, 23029C1844E, 23029C1851E, 23029C1853E, 23029C1854E, 23029C1856E, 23029C1858E, 23029C1861E, 23029C1862E, 23029C1865E**, 23029C1866E, 23029C1870E**, 23029C2002E, 23029C2006E, 23029C2007E, 23029C2008E, 23029C2009E**, 23029C2025E**	
Township of Kossuth*	230573	01050002	23029C0290E**, 23029C0300E**, 23029C0305E, 23029C0315E, 23029C0450E**, 23029C0455E	
Township of Lambert Lake	230472	01050002	23029C0215E**, 23029C0220E, 23029C0240E, 23029C0245E, 23029C0355E, 23029C0360E, 23029C0380E	
Town of Lubec	230139	01050002	23029C1212E, 23029C1213E, 23029C1214E, 23029C1216E, 23029C1218E, 23029C1219E, 23029C1238E, 23029C1451E, 23029C1452E, 23029C1453E, 23029C1454E, 23029C1456E, 23029C1457E, 23029C1458E, 23029C1459E, 23029C1464E, 23029C1465E, 23029C1466E, 23029C1467E, 23029C1468E, 23029C1469E, 23029C1476E, 23029C1478E, 23029C1479E, 23029C1486E, 23029C1487E, 23029C1490E**, 23029C1500E**, 23029C1725E**	
Town of Machias	230140	01050002	23029C1610E, 23029C1626E, 23029C1627E, 23029C1628E, 23029C1629E, 23029C1631E, 23029C1633E, 23029C1636E, 23029C1637E, 23029C1638E, 23029C1639E, 23029C1641E	

*No Special Flood Hazard Areas Identified **Panel Not Printed

Table 1: Listing of NFIP Jurisdictions *(continued)*

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Town of Machiasport	230141	01050002	23029C1629E, 23029C1632E, 23029C1633E, 23029C1634E, 23029C1637E, 23029C1639E, 23029C1641E, 23029C1642E, 23029C1643E, 23029C1644E, 23029C1651E**, 23029C1653E, 23029C1654E, 23029C1661E, 23029C1662E, 23029C1663E, 23029C1664E, 23029C1856E, 23029C1857E, 23029C1858E, 23029C1859E, 23029C1866E, 23029C1870E**, 23029C1876E, 23029C1877E, 23029C1878E, 23029C1879E**, 23029C1900E**	
Township of Marion*	230574	01050002	23029C1150E**, 23029C1165E**, 23029C1170E, 23029C1385E, 23029C1395E, 23029C1415E, 23029C1425E**	
Town of Marshfield	230316	01050002	23029C1370E, 23029C1390E, 23029C1610E, 23029C1626E, 23029C1627E, 23029C1631E	
Town of Meddybemps*	230317	01050002	23029C0920E, 23029C0930E, 23029C0935E, 23029C0940E, 23029C0945E, 23029C1150E**	
Town of Milbridge	230142	01050002	23029C1756E, 23029C1757E, 23029C1758E, 23029C1759E, 23029C1766E, 23029C1767E, 23029C1769E, 23029C1776E, 23029C1778E,23029C1779E, 23029C1786E, 23029C1787E, 23029C1788E, 23029C1789E, 23029C1791E, 23029C1932E, 23029C1934E, 23029C1942E, 23029C1944E, 23029C1951E, 23029C1952E, 23029C1953E, 23029C1954E, 23029C1961E, 23029C1962E**,23029C1963E, 23029C1964E**, 23029C1970E, 23029C2032E, 23029C2035E**, 23029C2051E, 23029C2055E**, 23029C2075E**	
Town of Northfield	230318	01050002	23029C1115E, 23029C1120E, 23029C1330E, 23029C1335E, 23029C1340E, 23029C1345E, 23029C1355E, 23029C1360E, 23029C1365E, 23029C1370E	
Passamaquoddy Tribe at Pleasant Point	231057	01050002	23029C1202E, 23029C1204E, 23029C1206E, 23029C1208E	
Town of Pembroke	230143	01050002	23029C0965E, 23029C0968E, 23029C1160E, 23029C1180E, 23029C1181E, 23029C1182E, 23029C1183E, 23029C1184E, 23029C1186E, 23029C1187E, 23029C1191E, 23029C1192E, 23029C1193E, 23029C1194E, 23029C1203E, 23029C1211E, 23029C1212E, 23029C1213E, 23029C1214E	

*No Special Flood Hazard Areas Identified **Panel Not Printed

Table 1: Listing of NFIP Jurisdictions *(continued)*

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Town of Perry	230319	01050002	23029C0967E**, 23029C0968E, 23029C0969E, 23029C0986E, 23029C0987E, 23029C0988E**, 23029C0989E, 23029C1000E**, 23029C1181E, 23029C1182E, 23029C1184E, 23029C1201E, 23029C1202E, 23029C1203E, 23029C1204E, 23029C1206E, 23029C1207E**, 23029C1208E, 23029C1209E, 23029C1211E, 23029C1212E, 23029C1216E	
Town of Princeton	230320	01050002	23029C0514E, 23029C0518E, 23029C0635E, 23029C0652E, 23029C0653E, 23029C0654E, 23029C0656E, 23029C0660E, 23029C0665E, 23029C0670E, 23029C0678E, 23029C0690E, 23029C0880E, 23029C0885E	
Town of Robbinston	230321	01050001	23029C0955E, 23029C0957E, 23029C0960E, 23029C0965E, 23029C0966E**, 23029C0967E**, 23029C0968E, 23029C0969E, 23029C0976E, 23029C0978E, 23029C0980E**, 23029C0986E, 23029C0987E	
Town of Roque Bluffs	230322	01050002	23029C1617E**, 23029C1618E, 23029C1619E, 23029C1636E, 23029C1638E, 23029C1639E, 23029C1643E, 23029C1831E, 23029C1832E, 23029C1851E, 23029C1852E, 23029C1853E, 23029C1854E, 23029C1856E, 23029C1858E	
Township of Sakom*	230822	01050002	23029C0425E**, 23029C0450E**, 23029C0575E**, 23029C0600E**	
Town of Steuben	230323	01050002	23029C1735E, 23029C1745E**, 23029C1751E, 23029C1752E, 23029C1755E, 23029C1763E, 23029C1764E, 23029C1765E, 23029C1766E, 23029C1767E, 23029C1768E, 23029C1769E, 23029C1926E, 23029C1927E, 23029C1928E, 23029C1929E, 23029C1931E, 23029C1932E, 23029C1933E, 23029C1934E, 23029C1937E, 23029C1939E, 23029C1941E, 23029C1942E, 23029C1943E, 23029C1944E, 23029C1953E, 23029C2032E, 23029C2035E**	
Township of T19 ED BPP*	230828	01050002	23029C0895E, 23029C0915E, 23029C1105E, 23029C1110E**, 23029C1115E, 23029C1120E, 23029C1150E**	

*No Special Flood Hazard Areas Identified **Panel Not Printed

Table 1: Listing of NFIP Jurisdictions *(continued)*

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Township of T26 ED BPP*	230579	01050002	23029C0850E**, 23029C0875E**, 23029C1085E, 23029C1100E**, 23029C1105E	
Township of T19 MD BPP*	230829	01050002	23029C1325E**, 23029C1340E, 23029C1560E, 23029C1580E	
Township of T24 MD BPP*	230577	01050002	23029C1050E**, 23029C1075E**, 23029C1300E**, 23029C1325E**	
Township of T25 MD BPP*	230830	01050002	23029C1075E**, 23029C1100E**, 23029C1325E**, 23029C1330E, 23029C1340E	
Township of T18 MD BPP*	230827	01050002	23029C1300E**, 23029C1325E**, 23029C1535E, 23029C1555E, 23029C1560E	
Township of T30 MD BPP*	230831	01050002	23029C1050E**, 23029C1075E**, 23029C1300E**	
Township of T36 MD BPP*	230832	01050002	23029C0800E**, 23029C0825E**, 23029C0850E**, 23029C1050E**, 23029C1075E**	
Township of T37 MD BPP*	230833	01050002	23029C0825E**, 23029C0850E**, 23029C0875E**, 23029C1075E**, 23029C1100E**	
Township of T42 MD BPP*	230834	01050002	23029C0575E**, 23029C0600E**, 23029C0800E**, 23029C0825E**	
Township of T43 MD BPP*	230835	01050002	23029C0600E**, 23029C0615E**, 23029C0620E, 23029C0825E**, 23029C0850E**	
Township of T6 ND BPP*	230823	01050002	23029C0450E**, 23029C0465E, 23029C0470E, 23029C0600E**, 23029C0605E**, 23029C0610E, 23029C0615E**, 23029C0620E	
Township of T6 R1 NBPP*	230824	01050002	23029C0450E**, 23029C0455E, 23029C0465E	
Township of T11 R3 NBPP*	230826	01050002	23029C0185E**, 23029C0205E**, 23029C0210E, 23029C0215E**, 23029C0220E	
Township of T8 R3 NBPP*	230825	01050002	23029C0125E**, 23029C0130E, 23029C0135E, 23029C0140E**, 23029C0145E, 23029C0165E, 23029C0275E**, 23029C0300E**, 23029C0305E	

*No Special Flood Hazard Areas Identified **Panel Not Printed

Table 1: Listing of NFIP Jurisdictions *(continued)*

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Township of T8 R4 NBPP*	230575	01050002	23029C0025E**, 23029C0040E, 23029C0045E, 23029C0125E**, 23029C0130E, 23029C0135E, 23029C0140E**	
Town of Talmadge	230914	01050002	23029C0320E, 23029C0340E, 23029C0455E, 23029C0460E, 23029C0465E, 23029C0470E, 23029C0480E, 23029C0490E	
Town of Topsfield	230324	01050002	23029C0165E, 23029C0170E, 23029C0190E**, 23029C0305E, 23029C0310E, 23029C0315E, 23029C0320E, 23029C0330E**, 23029C0340E, 23029C0455E, 23029C0460E	
Township of Trescott	230473	01050002	23029C1194E, 23029C1213E, 23029C1432E, 23029C1433E, 23029C1434E, 23029C1441E, 23029C1442E, 23029C1445E**, 23029C1451E, 23029C1453E, 23029C1454E, 23029C1464E, 23029C1465E, 23029C1468E, 23029C1684E, 23029C1685E, 23029C1701E, 23029C1702E, 23029C1703E, 23029C1704E**, 23029C1725E**	
Town of Vanceboro	230325	01050002	23029C0210E, 23029C0220E, 23029C0230E, 23029C0235E, 23029C0240E, 23029C0245E	
Town of Waite*	230326	01050002	23029C0340E, 23029C0345E**, 23029C0365E**, 23029C0370E**, 23029C0480E, 23029C0485E**, 23029C0490E, 23029C0495E, 23029C0515E**, 23029C0525E**	
Town of Wesley	230327	01050002	23029C1085E, 23029C1100E**, 23029C1105E, 23029C1115E, 23029C1120E, 23029C1330E**, 23029C1335E, 23029C1355E	
Town of Whiting	230328	01050002	23029C1415E, 23029C1425E**, 23029C1430E, 23029C1433E, 23029C1440E**, 23029C1441E, 23029C1445E**, 23029C1651E**, 23029C1654E, 23029C1658E, 23029C1660E**, 23029C1680E, 23029C1685E	
Town of Whitneyville	230329	01050002	23029C1365E, 23029C1370E, 23029C1610E, 23029C1617E, 23029C1628E, 23029C1636E, 23029C1638E	

*No Special Flood Hazard Areas Identified **Panel Not Printed

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

  It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 31, "Map Repositories," within this FIS Report.

- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

  The initial Countywide FIS Report for Washington County became effective on _____. Refer to Table 28 for information about subsequent revisions to the FIRMs.

- Selected FIRM panels for the community may contain information (such as floodways and cross sections) that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels. In addition, former flood hazard zone designations have been changed as follows:

Old Zone	New Zone
A1 through A30	AE
V1 through V30	VE
B	X (shaded)
C	X (unshaded)

- FEMA does not impose floodplain management requirements or special insurance ratings based on Limit of Moderate Wave Action (LiMWA) delineations at this time. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. If the LiMWA is shown on the FIRM, it is being provided by FEMA as information only. For

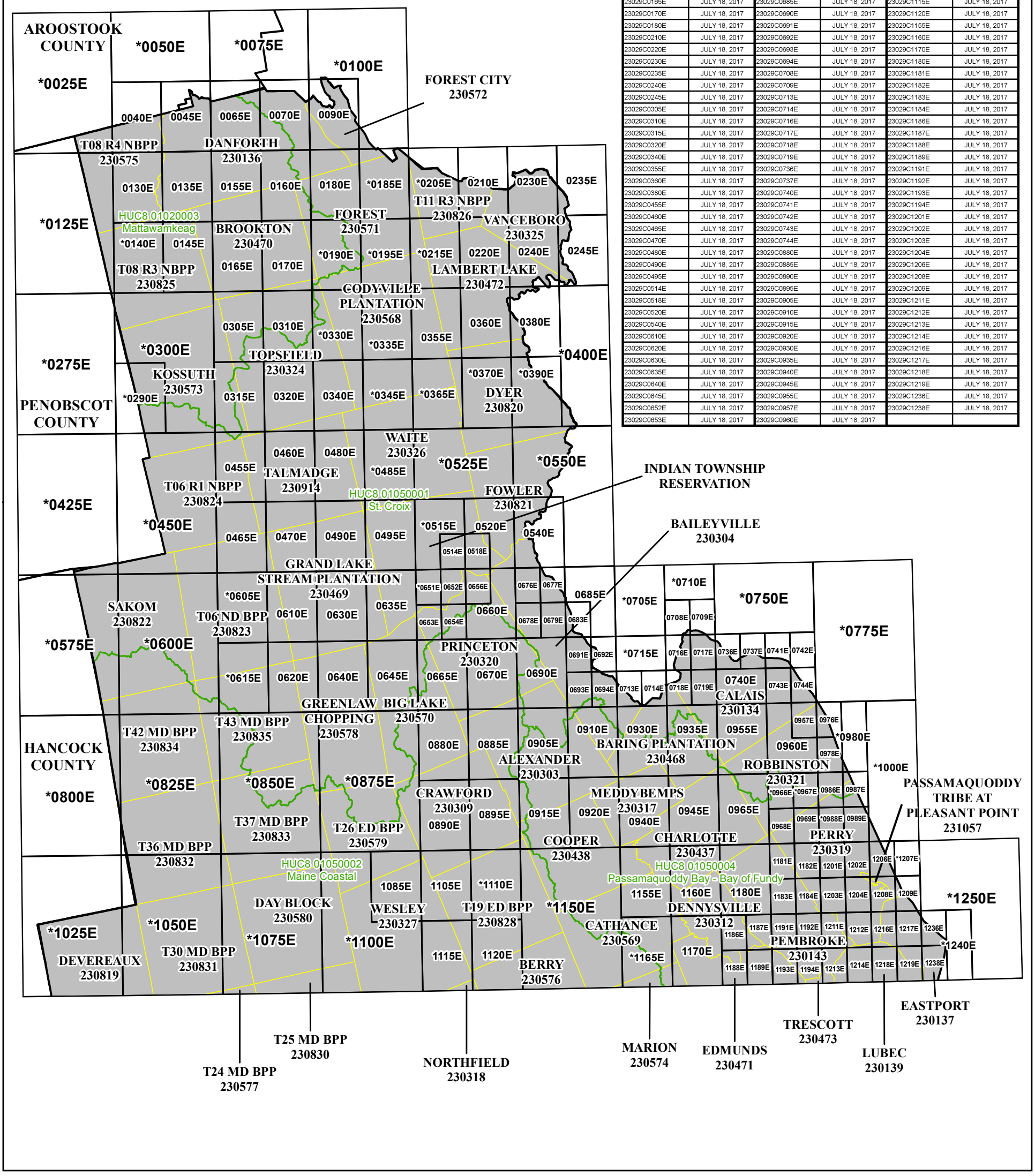
communities that do adopt Zone VE building standards in the area defined by the LiMWA, additional Community Rating System (CRS) credits are available. Refer to Section 2.5.4 for additional information about the LiMWA.

The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Visit the FEMA Web site at http://www.fema.gov or contact your appropriate FEMA Regional Office for more information about this program.

- Previous FIS Reports and FIRMs may have included levees that were accredited as providing protection from the 1% annual chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees with providing protection from the base flood, the levees must meet the criteria of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), titled "Mapping of Areas Protected by Levee Systems."

  Since the status of levees is subject to change at any time, the user should contact the appropriate agency for the latest information regarding levees presented in Table 9 of this FIS Report. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE national levee database. For all other levees, the user is encouraged to contact the appropriate local community.

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at http://www.fema.gov.



FIRM Panel Dates for Printed Panels of Washington County, Maine (All Jurisdicitons)					
Panel	Effective Date	Panel	Effective Date	Panel	Effective Date
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23029C0653E	JULY 18, 2017	23029C0960E	JULY 18, 2017		

N

1 inch = 6 miles

Miles
0 2.5 5 10

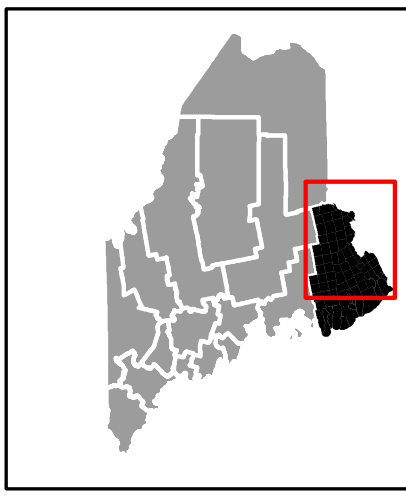
Map Projection:
NAD 1983 UTM Zone 19N
North American Datum of 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SEE FIS REPORT FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX (Sheet 1 of 2)

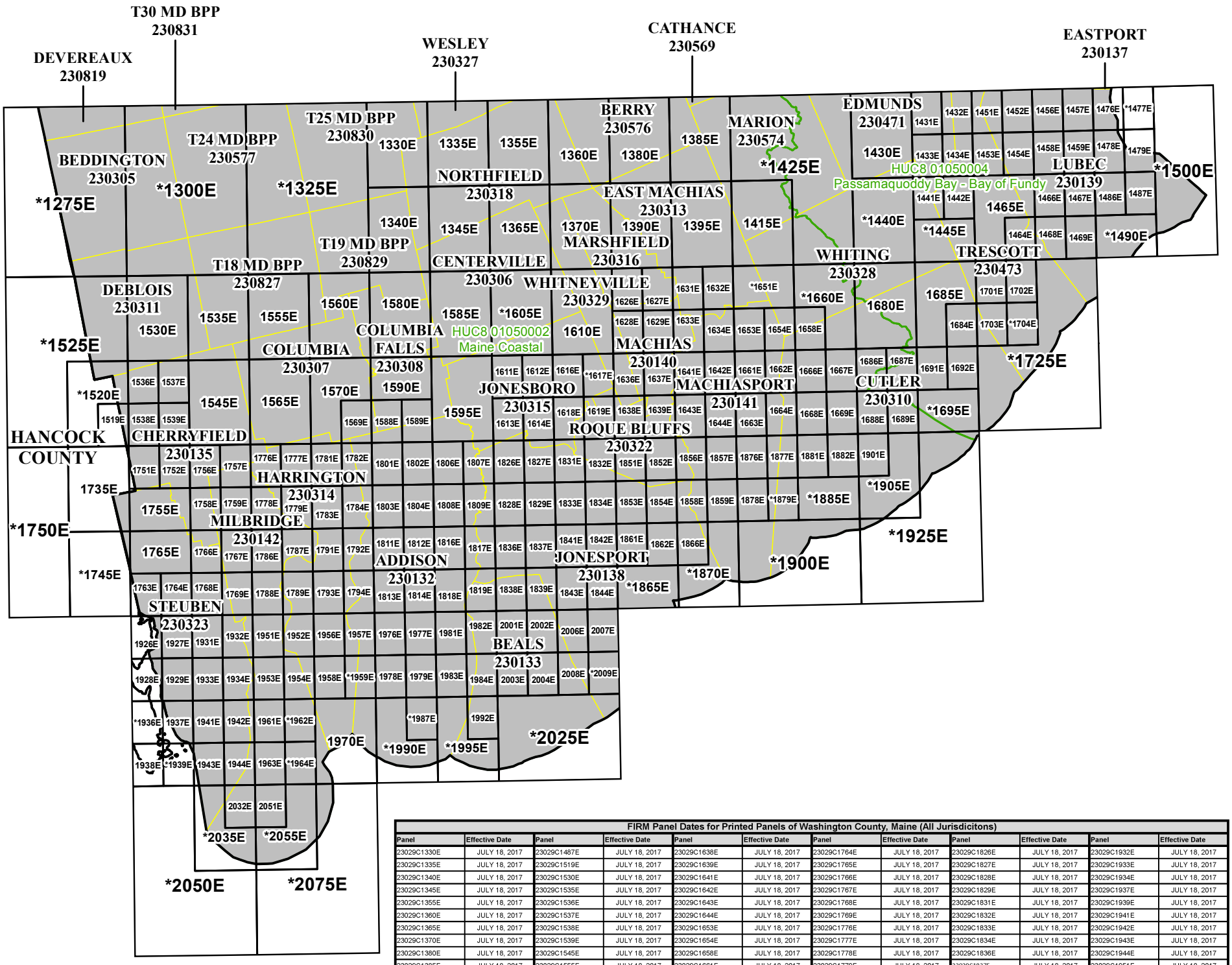
WASHINGTON COUNTY, MAINE (All Jurisdictions)

PANELS PRINTED:

0040, 0045, 0065E, 0070E, 0090E, 0130E, 0135E, 0145E, 0155E, 0160E, 0165E, 0170E, 0180E, 0210E, 0220E, 0230E, 0235E, 0240E, 0245E, 0305E, 0310E, 0315E, 0320E, 0340E, 0355E, 0360E, 0380E, 0455E, 0460E, 0465E, 0470E, 0480E, 0490E, 0495E, 0514E, 0518E, 0520E, 0540E, 0610E, 0620E, 0630E, 0635E, 0640E, 0645E, 0652E, 0653E, 0654E, 0656E, 0660E, 0665E, 0670E, 0676E, 0677E, 0678E, 0679E, 0683E, 0685E, 0690E, 0691E, 0692E, 0693E, 0694E, 0708E, 0709E, 0713E, 0714E, 0716E, 0717E, 0718E, 0719E, 0736E, 0737E, 0740E, 0741E, 0742E, 0743E, 0744E, 0880E, 0885E, 0890E, 0895E, 0905E, 0910E, 0915E, 0920E, 0930E, 0935E, 0940E, 0945E, 0955E, 0957E, 0960E, 0965E, 0968E, 0969E, 0976E, 0978E, 0986E, 0987E, 0989E, 1085E, 1105E, 1115E, 1120E, 1155E, 1160E, 1170E, 1180E, 1181E, 1182E, 1183E, 1184E, 1186E, 1187E, 1188E, 1189E, 1191E, 1192E, 1193E, 1194E, 1201E, 1202E, 1203E, 1204E, 1206E, 1208E, 1209E, 1211E, 1212E, 1213E, 1214E, 1216E, 1217E, 1218E, 1219E, 1236E, 1238E

MAP NUMBER
23029CIND1A

EFFECTIVE DATE
JULY 18, 2017



FIRM Panel Dates for Printed Panels of Washington County, Maine (All Jurisdicitons)

Panel	Effective Date	Panel	Effective Date	Panel	Effective Date	Panel	Effective Date	Panel	Effective Date	Panel	Effective Date
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23029C1432E	JULY 18, 2017	23029C1585E	JULY 18, 2017	23029C1668E	JULY 18, 2017	23029C1787E	JULY 18, 2017	23029C1844E	JULY 18, 2017	23029C1958E	JULY 18, 2017
23029C1433E	JULY 18, 2017	23029C1588E	JULY 18, 2017	23029C1669E	JULY 18, 2017	23029C1788E	JULY 18, 2017	23029C1851E	JULY 18, 2017	23029C1961E	JULY 18, 2017
23029C1434E	JULY 18, 2017	23029C1589E	JULY 18, 2017	23029C1680E	JULY 18, 2017	23029C1789E	JULY 18, 2017	23029C1852E	JULY 18, 2017	23029C1963E	JULY 18, 2017
23029C1441E	JULY 18, 2017	23029C1590E	JULY 18, 2017	23029C1684E	JULY 18, 2017	23029C1791E	JULY 18, 2017	23029C1853E	JULY 18, 2017	23029C1970E	JULY 18, 2017
23029C1442E	JULY 18, 2017	23029C1595E	JULY 18, 2017	23029C1685E	JULY 18, 2017	23029C1792E	JULY 18, 2017	23029C1854E	JULY 18, 2017	23029C1976E	JULY 18, 2017
23029C1451E	JULY 18, 2017	23029C1610E	JULY 18, 2017	23029C1686E	JULY 18, 2017	23029C1793E	JULY 18, 2017	23029C1856E	JULY 18, 2017	23029C1977E	JULY 18, 2017
23029C1452E	JULY 18, 2017	23029C1611E	JULY 18, 2017	23029C1687E	JULY 18, 2017	23029C1794E	JULY 18, 2017	23029C1857E	JULY 18, 2017	23029C1978E	JULY 18, 2017
23029C1453E	JULY 18, 2017	23029C1612E	JULY 18, 2017	23029C1688E	JULY 18, 2017	23029C1801E	JULY 18, 2017	23029C1858E	JULY 18, 2017	23029C1979E	JULY 18, 2017
23029C1454E	JULY 18, 2017	23029C1613E	JULY 18, 2017	23029C1689E	JULY 18, 2017	23029C1802E	JULY 18, 2017	23029C1859E	JULY 18, 2017	23029C1981E	JULY 18, 2017
23029C1456E	JULY 18, 2017	23029C1614E	JULY 18, 2017	23029C1691E	JULY 18, 2017	23029C1803E	JULY 18, 2017	23029C1861E	JULY 18, 2017	23029C1982E	JULY 18, 2017
23029C1457E	JULY 18, 2017	23029C1616E	JULY 18, 2017	23029C1692E	JULY 18, 2017	23029C1804E	JULY 18, 2017	23029C1862E	JULY 18, 2017	23029C1983E	JULY 18, 2017
23029C1458E	JULY 18, 2017	23029C1618E	JULY 18, 2017	23029C1701E	JULY 18, 2017	23029C1806E	JULY 18, 2017	23029C1866E	JULY 18, 2017	23029C1984E	JULY 18, 2017
23029C1459E	JULY 18, 2017	23029C1619E	JULY 18, 2017	23029C1702E	JULY 18, 2017	23029C1807E	JULY 18, 2017	23029C1876E	JULY 18, 2017	23029C1992E	JULY 18, 2017
23029C1464E	JULY 18, 2017	23029C1626E	JULY 18, 2017	23029C1703E	JULY 18, 2017	23029C1808E	JULY 18, 2017	23029C1877E	JULY 18, 2017	23029C2001E	JULY 18, 2017
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23029C1466E	JULY 18, 2017	23029C1628E	JULY 18, 2017	23029C1751E	JULY 18, 2017	23029C1811E	JULY 18, 2017	23029C1881E	JULY 18, 2017	23029C2003E	JULY 18, 2017
23029C1467E	JULY 18, 2017	23029C1629E	JULY 18, 2017	23029C1752E	JULY 18, 2017	23029C1812E	JULY 18, 2017	23029C1882E	JULY 18, 2017	23029C2004E	JULY 18, 2017
23029C1468E	JULY 18, 2017	23029C1631E	JULY 18, 2017	23029C1755E	JULY 18, 2017	23029C1813E	JULY 18, 2017	23029C1901E	JULY 18, 2017	23029C2006E	JULY 18, 2017
23029C1469E	JULY 18, 2017	23029C1632E	JULY 18, 2017	23029C1756E	JULY 18, 2017	23029C1814E	JULY 18, 2017	23029C1926E	JULY 18, 2017	23029C2007E	JULY 18, 2017
23029C1476E	JULY 18, 2017	23029C1633E	JULY 18, 2017	23029C1757E	JULY 18, 2017	23029C1816E	JULY 18, 2017	23029C1927E	JULY 18, 2017	23029C2008E	JULY 18, 2017
23029C1478E	JULY 18, 2017	23029C1634E	JULY 18, 2017	23029C1758E	JULY 18, 2017	23029C1817E	JULY 18, 2017	23029C1928E	JULY 18, 2017	23029C2032E	JULY 18, 2017
23029C1479E	JULY 18, 2017	23029C1636E	JULY 18, 2017	23029C1759E	JULY 18, 2017	23029C1818E	JULY 18, 2017	23029C1929E	JULY 18, 2017	23029C2051E	JULY 18, 2017
23029C1486E	JULY 18, 2017	23029C1637E	JULY 18, 2017	23029C1763E	JULY 18, 2017	23029C1819E	JULY 18, 2017	23029C1931E	JULY 18, 2017		

1 inch = 6 miles

N

Miles
0 2.5 5 10

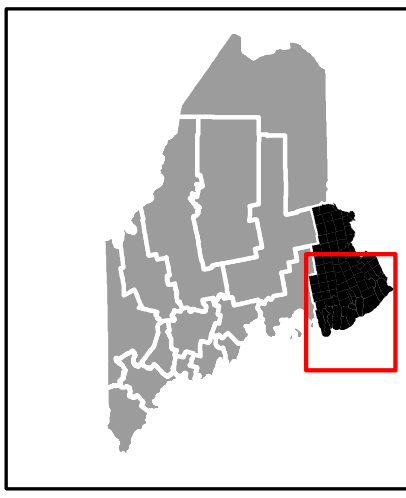
Map Projection:
NAD 1983 UTM Zone 19N
North American Datum of 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SEE FIS REPORT FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX (Sheet 2 of 2)

WASHINGTON COUNTY, MAINE (All Jurisdictions)

PANELS PRINTED:

1330E, 1335E, 1340E, 1345E, 1355E, 1360E, 1365E, 1370E, 1380E, 1385E, 1390E, 1395E, 1415E, 1430E, 1431E, 1432E, 1433E, 1434E, 1441E, 1442E, 1451E, 1452E, 1453E, 1454E, 1456E, 1457E, 1458E, 1459E, 1464E, 1465E, 1466E, 1467E, 1468E, 1469E, 1476E, 1478E, 1479E, 1486E, 1487E, 1519E, 1530E, 1535E, 1536E, 1537E, 1538E, 1539E, 1545E, 1555E, 1560E, 1565E, 1569E, 1570E, 1580E, 1585E, 1588E, 1589E, 1590E, 1595E, 1610E, 1611E, 1612E, 1613E, 1614E, 1616E, 1618E, 1619E, 1626E, 1627E, 1628E, 1629E, 1631E, 1632E, 1633E, 1634E, 1636E, 1637E, 1638E, 1639E, 1641E, 1642E, 1643E, 1644E, 1653E, 1654E, 1658E, 1661E, 1662E, 1663E, 1664E, 1666E, 1667E, 1668E, 1669E, 1680E, 1684E, 1685E, 1686E, 1687E, 1688E, 1689E, 1691E, 1692E, 1701E, 1702E, 1703E, 1735E, 1751E, 1752E, 1755E, 1756E, 1757E, 1758E, 1759E, 1763E, 1764E, 1765E, 1766E, 1767E, 1768E, 1769E, 1776E, 1777E, 1778E, 1779E, 1781E, 1782E, 1783E, 1784E, 1786E, 1787E, 1788E, 1789E, 1791E, 1792E, 1793E, 1794E, 1801E, 1802E, 1803E, 1804E, 1806E, 1807E, 1808E, 1809E, 1811E, 1812E, 1813E, 1814E, 1816E, 1817E, 1818E, 1819E, 1826E, 1827E, 1828E, 1829E, 1831E, 1832E, 1833E, 1834E, 1836E, 1837E, 1838E, 1839E, 1841E, 1842E, 1843E, 1844E, 1851E, 1852E, 1853E, 1854E, 1856E, 1857E, 1858E, 1859E, 1861E, 1862E, 1866E, 1876E, 1877E, 1878E, 1881E, 1882E, 1901E, 1926E, 1927E, 1928E, 1929E, 1931E, 1932E, 1933E, 1934E, 1937E, 1939E, 1941E, 1942E, 1943E, 1944E, 1951E, 1952E, 1953E, 1954E, 1956E, 1957E, 1958E, 1961E, 1963E, 1970E, 1976E, 1977E, 1978E, 1979E, 1981E, 1982E, 1983E, 1984E, 1992E, 2001E, 2002E, 2003E, 2004E, 2006E, 2007E, 2008E, 2032E, 2051E

MAP NUMBER
23029CIND2A

EFFECTIVE DATE
JULY 18, 2017

FEMA

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 28 in this FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

Coastal Base Flood Elevations shown on the map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the FIS Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on the FIRM.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

Figure 2. FIRM Notes to Users *(continued)*

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was Universal Transverse Mercator (UTM) Zone 19N. The horizontal datum was North American Datum 1983 (NAD83). Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 (NGVD29) and NAVD88, visit the National Geodetic Survey website at http://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 20910-3282
(301) 713-3242

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 31 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was provided by Washington County. For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Washington County, Maine (All Jurisdictions), corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 28 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

Figure 2. FIRM Notes to Users *(continued)*

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Washington County, Maine (All Jurisdictions), effective July 18, 2017.

COASTAL BARRIER RESOURCES (CBRS) NOTE: This map includes approximate boundaries of the CBRS for informational purposes only. Flood insurance is not available within CBRS areas for structures that are newly built or substantially improved on or after the date(s) indicated on the map. For more information see http://www.fws.gov/habitatconservation/coastal_barrier.html, the FIS Report, or call the U.S. Fish and Wildlife Service Customer Service Center at 1-800-344-WILD.

LIMIT OF MODERATE WAVE ACTION: Zone AE has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between Zone VE and the LiMWA (or between the shoreline and the LiMWA for areas where Zone VE is not identified) will be similar to, but less severe than, those in Zone VE.

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Figure 3: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*

Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)

Zone A — The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.

Zone AE — The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone, either at cross section locations or as static whole-foot elevations that apply throughout the zone.

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

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

Zone AR — The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

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

Zone V — The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.

Zone VE — Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.

Regulatory Floodway determined in Zone AE.

Figure 3: Map Legend for FIRM *(continued)*

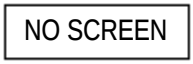
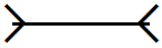
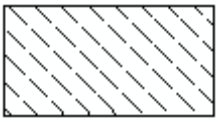
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.
	Zone X Protected by Accredited Levee: Areas protected by an accredited levee, dike or other flood control structures. See Notes to Users for important information.
OTHER AREAS	
	Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible
	Unshaded Zone X: Areas determined to be outside the 0.2% annual chance floodplain
FLOOD HAZARD AND OTHER BOUNDARY LINES	
	Flood Zone Boundary (white line)
	Limit of Study
	Jurisdiction Boundary
	Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet
GENERAL STRUCTURES	
Aqueduct *Channel* *Culvert* *Storm Sewer*	Channel, Culvert, Aqueduct, or Storm Sewer
Dam *Jetty* *Weir*	Dam, Jetty, Weir
	Levee, Dike or Floodwall accredited or provisionally accredited to provide protection from the 1% annual chance flood
	Levee, Dike or Floodwall not accredited to provide protection from the 1% annual chance flood.
 *Bridge*	Bridge

Figure 3: Map Legend for FIRM *(continued)*

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA): *CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. See Notes to Users for important information.*

CBRS AREA 09/30/2009

Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway.



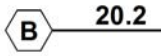
OTHERWISE PROTECTED AREA 09/30/2009

Otherwise Protected Area

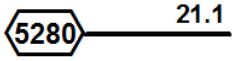
REFERENCE MARKERS

River mile Markers

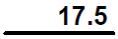
CROSS SECTION & TRANSECT INFORMATION



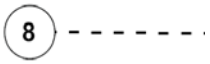
Lettered Cross Section with Regulatory Water Surface Elevation (BFE)



Numbered Cross Section with Regulatory Water Surface Elevation (BFE)



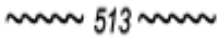
Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)



Coastal Transect

Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.

Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.



Base Flood Elevation Line (shown for flooding sources for which no cross sections or profile are available)

ZONE AE (EL 16)

Static Base Flood Elevation value (shown under zone label)

ZONE AO (DEPTH 2)

Zone designation with Depth

ZONE AO (DEPTH 2) (VEL 15 FPS)

Zone designation with Depth and Velocity

Figure 3: Map Legend for FIRM *(continued)*

BASE MAP FEATURES	
Missouri Creek	River, Stream or Other Hydrographic Feature
234	Interstate Highway
234	U.S. Highway
234	State Highway
234	County Highway
MAPLE LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
RAILROAD	Railroad
	Horizontal Reference Grid Line
	Horizontal Reference Grid Ticks
+	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
$^{42}76^{000m}$E	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16’ 52.5”	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% annual chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Washington County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1% annual chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 23), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% annual chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Figure 3, "Map Legend for FIRM", describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 2 and Table 3 indicate the flood zone designations for each flooding source and each community within Washington County (All Jurisdictions), respectively.

Table 2, "Flooding Sources Included in this FIS Report," lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 13. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

2.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the

encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard.

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water-surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. Regulations require communities in Washington County to limit increases caused by encroachment to 1.0 feet and several communities have adopted additional restrictions. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic

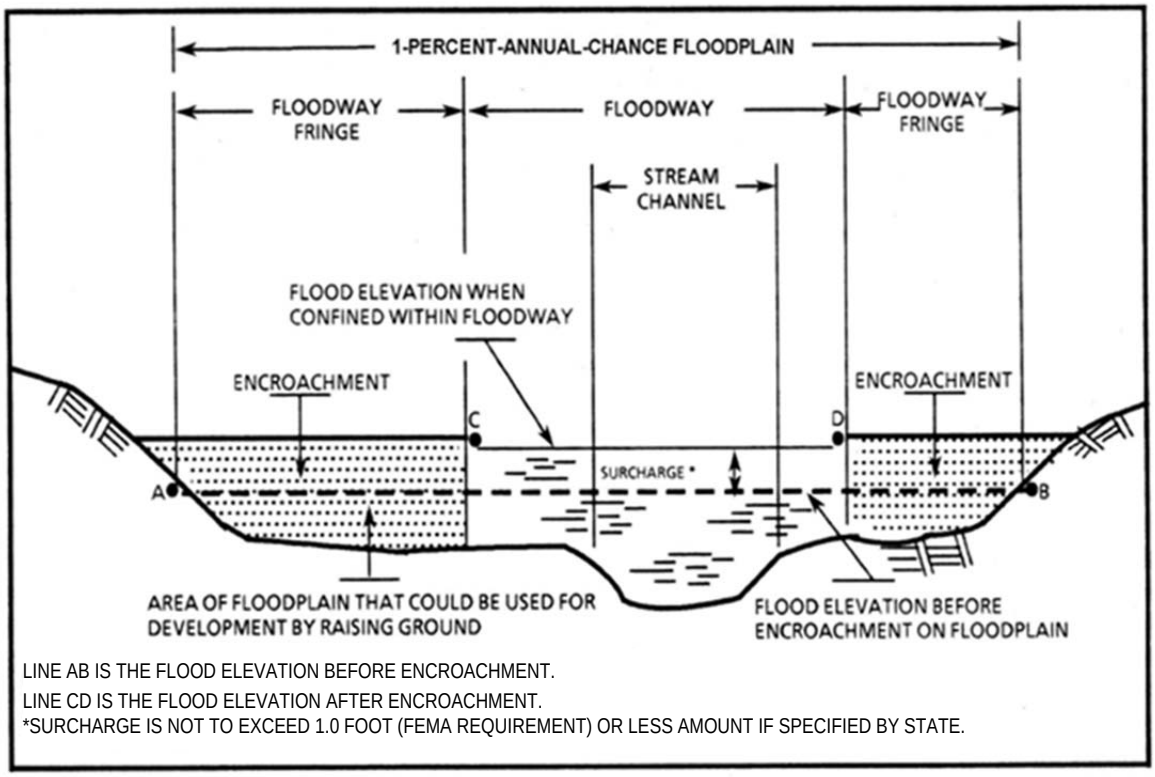


Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Atlantic Ocean Coastline	Washington County	Entire Shoreline	Entire Shoreline	01050002			N	AE, VE	June 2014
Boyden Lake	Town of Perry, Town of Robbinston	Entire Shoreline	Entire Shoreline	01050002		13.2	N	AE	February 1991
Grand Falls Flowage	Town of Princeton	Entire Shoreline	Entire Shoreline	01050002		1,315	N	AE	June 1999
Lewy Lake	Town of Princeton	Entire Shoreline	Entire Shoreline	01050002		488	N	AE	June 1999
Long Lake	Town of Princeton	Entire Shoreline	Entire Shoreline	01050002		465	N	AE	June 1999
Machias River	Town of East Machias, Town of Machias, Town of Machiasport, Town of Whitneyville	Approximately 1,440 feet downstream of the confluence of Libby Brook	Approximately 2.3 miles upstream of U.S. Route 1	01050002	5.3		N	AE	December 1987
Machias River	Town of Northfield, Centerville Township, Town of Whitneyville	Approximately 2.3 miles upstream of U.S. Route 1	Approximately 2 miles upstream of Holmes Farm Road	01050002	22.5		N	A	December 1987, June 2014
Narraguagus River	Town of Cherryfield	Approximately 2.2 miles downstream of U.S. Route 1	Approximately 2,645 feet upstream of the confluence of Corliss Brook	01050002	13.7		N	AE	December 1986
Sawyers Brook	Town of Milbridge	At the confluence with Narraguagus River	2,351 feet upstream of Washington Street	01050002	5.6		Y	AE, w/floodway	September 1987
Sawyers Brook	Town of Milbridge	2,351 feet upstream of Washington Street	1.5 miles upstream of Washington Street	01050002	1.5		N	A	June 2014

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Sawyers Brook Branch	Town of Milbridge	At the confluence with Sawyers Brook	Approximately 142 feet upstream of the confluence with Sawyers Brook	01050002	0.02		Y	AE, w/floodway	September 1987
St. Croix River	Baring Plantation, City of Calais, Town of Baileyville, Town of Robbinston	375 feet upstream of the confluence of Beaver Brook	2,712 feet upstream of the confluence of Wapsaconhagan River	01050002	5.6		Y	AE, w/floodway	February 1991
Wapsaconhagan Brook	Town of Baileyville	At the confluence with St. Croix River	2.5 miles u/s of U.S. Route 1	01050002	3.1		Y	AE, w/floodway	October 1980
West Branch Narraguagus River	Town of Cherryfield	At the confluence with Narraguagus River	US limit of effective profile baseline	01050002	6.2		N	AE, w/floodway	December 1986
Beaver Brook Beaver Brook Beaver Meadow Brook, Bells Brook Boyden Stream, Branch Brook, Burnt Cove Brook, Chandler River, Chase Mills Stream, Cole Creek, Crane Mill Brook, Crow Brook	Multiple, Refer to FIRM	Refer to FIRM	Refer to FIRM	01050002, 01050001	136.76		N	A	March 2014

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Curtis Creek, Dennys River, East Branch Magurrewock Stream East Branch Tributary A to Dennys Bay, East Machias River, East Stream, Eastern Marsh Brook, Englishman River, Flowed Land Ponds, Hamilton Brook, Harrington River, Hobart Stream, Huntley Creek, Indian River, Knowles Brook, Lamsen Brook, Little River, Long Creek, Longfellow Brook, Mays Brook, Meadow Brook Middle River, Mill River	Multiple, Refer to FIRM	Refer to FIRM	Refer to FIRM	01050002, 01050001	136.76		N	A	March 2014

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Pennamaquan River, Pleasant River, Sipp Brook, Snare Creek, Southwest Branch Indian River, Tributary 1 to Beaver Brook, Tributary 1 to Boyden Stream, Tributary 1 to St. Croix River, Tributary 1 to White Creek, Tributary 14 to Harrington River, Tributary 16 to Machias River, Tributary 2 to Cole Creek Tributary 2 to Indian River Tributary 2 to Mays Brook, Tributary 2 to Southwest Branch Indian River, Tributary 21 to Harrington River,	Multiple, Refer to FIRM	Refer to FIRM	Refer to FIRM	01050002, 01050001	136.76		N	A	March 2014

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Tributary 28 to Pleasant River, Tributary 3 to Indian River, Tributary 3 to Quoddy Narrows, Tributary 4 to East Branch Magurrewock Stream Tributary 4 to Indian River, Tributary 4 to Pleasant River, Tributary 6 to Little River, Tributary 7 to Quoddy Narrows, Tributary 8 to East Machias River, Tributary A to Bar Harbor, Tributary A to Dennys Bay Tributary B to Morong Cove, Tributary B to Pigeon Hill Bay, Tributary to Dyer Harbor	Multiple, Refer to FIRM	Refer to FIRM	Refer to FIRM	01050002, 01050001	136.76		N	A	March 2014

Table 2: Flooding Sources Included in this FIS Report *(continued)*

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Tributary to Larrabee Cove, Tributary to Pinkham Bay, Tunk Stream, West Branch Pleasant River, West Branch to Little Kennebec Bay, West Branch Tributary A to Dennys Bay West River, Western Marsh Brook, Willow Brook, Wilson Stream	Multiple, Refer to FIRM	Refer to FIRM	Refer to FIRM	01050002, 01050001	136.76		N	A	March 2014

Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 24, "Floodway Data."

All floodways that were developed for this FIS project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and l% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

2.4 Non-Encroachment Zones

Some States and communities use non-encroachment zones to manage floodplain development. While not a FEMA designated floodway, the non-encroachment zone represents that area around the stream that should be reserved to convey the 1% annual chance flood event.

Non-encroachment determinations may be delineated where it is not possible to delineate floodways because specific channel profiles with bridge and culvert geometry were not developed. Any non-encroachment determinations for this FIS project have been tabulated for selected cross sections and are shown in Table 25, "Flood Hazard and Non-Encroachment Data for Selected Streams." Areas for which non-encroachment zones are provided show BFEs and the 1% annual chance floodplain boundaries mapped as zone AE on the FIRM but no floodways.

2.5 Coastal Flood Hazard Areas

For most areas along rivers, streams, and small lakes, BFEs and floodplain boundaries are based on the amount of water expected to enter the area during a 1% annual chance flood and the geometry of the floodplain. Floods in these areas are typically caused by storm events. However, for areas on or near ocean coasts, large rivers, or large bodies of water, BFE and floodplain boundaries may need to be based on additional components, including storm surges and waves. Communities on or near ocean coasts face flood hazards caused by offshore seismic events as well as storm events. Coastal flooding sources that are included in this FIS project are shown in Table 2.

2.5.1 Water Elevations and the Effects of Waves

Specific terminology is used in coastal analyses to indicate which components have been included in evaluating flood hazards.

The stillwater elevation (SWEL or still water level) is the surface of the water resulting from astronomical tides, storm surge, and freshwater inputs, but excluding wave setup contribution or the effects of waves.

- *Astronomical tides* are periodic rises and falls in large bodies of water caused by the rotation of the earth and by the gravitational forces exerted by the earth, moon, and sun.
- *Storm surge* is the additional water depth that occurs during large storm events. These events can bring air pressure changes and strong winds that force water up against the shore.
- *Freshwater inputs* include rainfall that falls directly on the body of water, runoff from surfaces and overland flow, and inputs from rivers.

The 1% annual chance stillwater elevation is the stillwater elevation that has been calculated for a storm surge from a 1% annual chance storm. The 1% annual chance storm surge can be determined from analyses of tidal gage records, statistical study of regional historical storms, or other modeling approaches. Stillwater elevations for storms of other frequencies can be developed using similar approaches.

The total stillwater elevation (also referred to as the mean water level) is the stillwater elevation plus wave setup contribution but excluding the effects of waves.

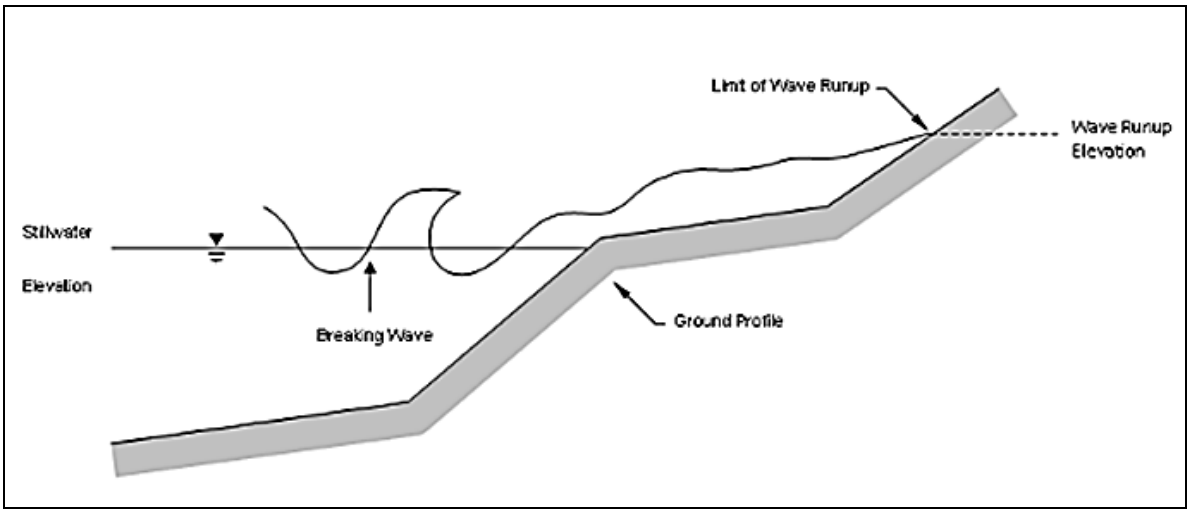
- *Wave setup* is the increase in stillwater elevation at the shoreline caused by the reduction of waves in shallow water. It occurs as breaking wave momentum is transferred to the water column.

Like the stillwater elevation, the total stillwater elevation is based on a storm of a particular frequency, such as the 1% annual chance storm. Wave setup is typically estimated using standard engineering practices or calculated using models, since tidal gages are often sited in areas sheltered from wave action and do not capture this information.

Coastal analyses may examine the effects of overland waves by analyzing storm-induced erosion, overland wave propagation, wave runup, and/or wave overtopping.

- *Storm-induced erosion* is the modification of existing topography by erosion caused by a specific storm event, as opposed to general erosion that occurs at a more constant rate.
- *Overland wave propagation* describes the combined effects of variation in ground elevation, vegetation, and physical features on wave characteristics as waves move onshore.
- *Wave runup* is the uprush of water from wave action on a shore barrier. It is a function of the roughness and geometry of the shoreline at the point where the stillwater elevation intersects the land.
- *Wave overtopping* refers to wave runup that occurs when waves pass over the crest of a barrier.

Figure 5: Wave Runup Transect Schematic



2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

For coastal communities along the Atlantic and Pacific Oceans, the Gulf of Mexico, the Great Lakes, and the Caribbean Sea, flood hazards must take into account how storm surges, waves, and extreme tides interact with factors such as topography and vegetation. Storm surge and waves must also be considered in assessing flood risk for certain communities on rivers or large inland bodies of water.

Beyond areas that are affected by waves and tides, coastal communities can also have riverine floodplains with designated floodways, as described in previous sections.

Floodplain Boundaries

In many coastal areas, storm surge is the principle component of flooding. The extent of the 1% annual chance floodplain in these areas is derived from the total stillwater elevation (stillwater elevation including storm surge plus wave setup) for the 1% annual chance storm. The methods that were used for calculation of total stillwater elevations for coastal areas are described in Section 5.3 of this FIS Report. Location of total stillwater elevations for coastal areas are shown in Figure 7, "1% Annual Chance Total Stillwater Levels for Coastal Areas."

In some areas, the 1% annual chance floodplain is determined based on the limit of wave runup or wave overtopping for the 1% annual chance storm surge. The methods that were used for calculation of wave hazards are described in Section 5.3 of this FIS Report.

Table 26 presents the types of coastal analyses that were used in mapping the 1% annual chance floodplain in coastal areas.

Coastal BFEs

Coastal BFEs are calculated as the total stillwater elevation (stillwater elevation including storm surge plus wave setup) for the 1% annual chance storm plus the additional flood hazard from overland wave effects (storm-induced erosion, overland wave propagation, wave runup, and wave overtopping).

Where they apply, coastal BFEs are calculated along transects extending from offshore to the limit of coastal flooding onshore. Results of these analyses are accurate until local topography, vegetation, or development type and density within the community undergoes major changes.

Parameters that were included in calculating coastal BFEs for each transect included in this FIS Report are presented in Table 17, "Coastal Transect Parameters." The locations of transects are shown in Figure 8, "Transect Location Map." More detailed information about the methods used in coastal analyses and the results of intermediate steps in the coastal analyses are presented in Section 5.3 of this FIS Report. Additional information on specific mapping methods is provided in Section 6.4 of this FIS Report.

2.5.3 Coastal High Hazard Areas

Certain areas along the open coast and other areas may have higher risk of experiencing structural damage caused by wave action and/or high-velocity water during the 1% annual chance flood. These areas will be identified on the FIRM as Coastal High Hazard Areas.

- *Coastal High Hazard Area (CHHA)* is a SFHA extending from offshore to the inland limit of the primary frontal dune (PFD) or any other area subject to damages caused by wave action and/or high-velocity water during the 1% annual chance flood.

- *Primary Frontal Dune (PFD)* is a continuous or nearly continuous mound or ridge of sand with relatively steep slopes immediately landward and adjacent to the beach. The PFD is subject to erosion and overtopping from high tides and waves during major coastal storms.

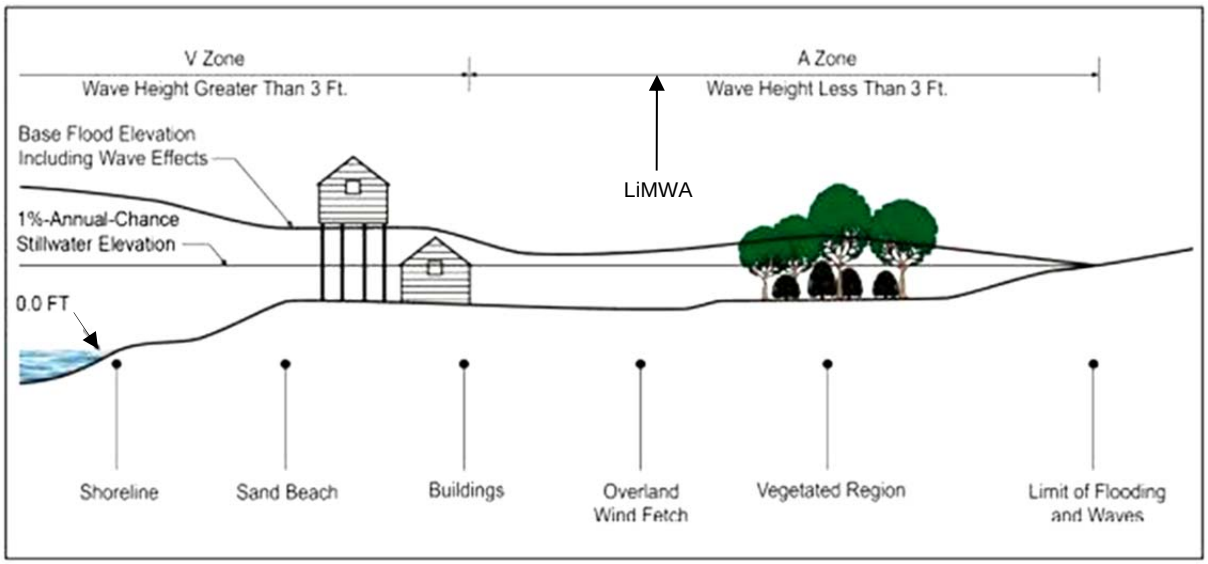
CHHAs are designated as "V" zones (for "velocity wave zones") and are subject to more stringent regulatory requirements and a different flood insurance rate structure. The areas of greatest risk are shown as VE on the FIRM. Zone VE is further subdivided into elevation zones and shown with BFEs on the FIRM.

The landward limit of the PFD occurs at a point where there is a distinct change from a relatively steep slope to a relatively mild slope; this point represents the landward extension of Zone VE. Areas of lower risk in the CHHA are designated with Zone V on the FIRM. More detailed information about the identification and designation of Zone VE is presented in Section 6.4 of this FIS Report.

Areas that are not within the CHHA but are SFHAs may still be impacted by coastal flooding and damaging waves; these areas are shown as "A" zones on the FIRM.

Figure 6, "Coastal Transect Schematic," illustrates the relationship between the base flood elevation, the 1% annual chance stillwater elevation, and the ground profile as well as the location of the Zone VE and Zone AE areas in an area without a PFD subject to overland wave propagation. This figure also illustrates energy dissipation and regeneration of a wave as it moves inland.

Figure 6: Coastal Transect Schematic



Methods used in coastal analyses in this FIS project are presented in Section 5.3 and mapping methods are provided in Section 6.4 of this FIS Report.

Coastal floodplains are shown on the FIRM using the symbology described in Figure 3, "Map Legend for FIRM." In many cases, the BFE on the FIRM is higher than the stillwater elevations shown in Table 17 due to the presence of wave effects. The higher elevation should be used for construction and/or floodplain management purposes.

2.5.4 Limit of Moderate Wave Action

Laboratory tests and field investigations have shown that wave heights as little as 1.5 feet can cause damage to and failure of typical Zone AE building construction. Wood-frame, light gage steel, or masonry walls on shallow footings or slabs are subject to damage when exposed to waves less than 3 feet in height. Other flood hazards associated with coastal waves (floating debris, high velocity flow, erosion, and scour) can also damage Zone AE construction.

Therefore, a LiMWA boundary may be shown on the FIRM as an informational layer to assist coastal communities in safe rebuilding practices. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The location of the LiMWA relative to Zone VE and Zone AE is shown in Figure 6.

The effects of wave hazards in Zone AE between Zone VE (or the shoreline where Zone VE is not identified) and the limit of the LiMWA boundary are similar to, but less severe than, those in Zone VE where 3-foot or greater breaking waves are projected to occur during the 1% annual chance flooding event. Communities are therefore encouraged to adopt and enforce more stringent floodplain management requirements than the minimum NFIP requirements in the LiMWA. The NFIP Community Rating System provides credits for these actions.

Where wave runup elevations dominate over wave heights, there is no evidence to date of significant damage to residential structures by runup depths less than 3 feet. Examples of these areas include areas with steeply sloped beaches, bluffs, or flood protection structures that lie parallel to the shore. In these areas, the FIRM shows the LiMWA immediately landward of the

VE/AE boundary. Similarly, in areas where the zone VE designation is based on the presence of a primary frontal dune or wave overtopping, the LiMWA is delineated immediately landward of the Zone VE/AE boundary.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3, "Map Legend for FIRM." Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in Washington County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Town of Addison	A, AE, VE, X
Town of Alexander	A, X
Town of Baileyville	A, AE, X
Baring Plantation	A, AE, X
Town of Beals	A, AE, VE, X
Town of Beddington	X
Township of Berry	X
Township of Big Lake	X
Township of Brookton	A, X
City of Calais	A, AE, VE, X
Township of Cathance	X
Centerville Township	X
Town of Charlotte	A, X
Town of Cherryfield	A, AE, X
Codyville Plantation	X
Town of Columbia Falls	A, AE, X
Town of Columbia	A, AE, X
Town of Cooper	X
Town of Crawford	A, X
Town of Cutler	A, AE, VE, X
Town of Danforth	A, X
Township of Day Block	X
Town of Deblois	X
Town of Dennysville	A, AE, X
Township of Devereaux	X
Township of Dyer	X
Town of East Machias	A, AE, X
City of Eastport	AE, AO, VE, X
Township of Edmunds	A, AE, X
Township of Forest City	A, X
Township of Forest	X
Township of Fowler	X
Grand Lake Stream Plantation	A, X

Table 3: Flood Zone Designations by Community – *(continued)*

Community	Flood Zone(s)
Township of Greenlaw Chopping	X
Town of Harrington	A, AE, VE, X
Indian Township Reservation	X
Town of Jonesboro	A, AE, VE, X
Town of Jonesport	A, AE, VE, X
Township of Kossuth	X
Township of Lambert Lake	A, X
Town of Lubec	A, AE, AO, VE, X
Town of Machias	A, AE, VE, X
Town of Machiasport	A, AE, VE, X
Township of Marion	X
Town of Marshfield	A, AE, X
Town of Meddybemps	X
Town of Milbridge	A, AE, VE, X
Town of Northfield	A, X
Town of Pembroke	A, AE, VE, X
Passamaquoddy Tribe at Pleasant Point	AE, AO, VE, X
Town of Perry	A, AE, VE, X
Town of Princeton	A, AE, X
Town of Robbinston	A, AE, VE, X
Town of Roque Bluffs	A, AE, AO, VE, X
Township of Sakom	X
Town of Steuben	A, AE, AO, VE, X
Township of T6 ND BPP	X
Township of T6 R1 NBPP	X
Township of T8 R3 NBPP	X
Township of T8 R4 NBPP	X
Township of T11 R3 NBPP	X
Township of T18 MD BPP	X
Township of T19 ED BPP	X
Township of T19 MD BPP	X
Township of T24 MD BPP	X
Township of T25 MD BPP	X

Table 3: Flood Zone Designations by Community – *(continued)*

Community	Flood Zone(s)
Township of T26 ED BPP	X
Township of T30 MD BPP	X
Township of T36 MD BPP	X
Township of T37 MD BPP	X
Township of T42 MD BPP	X
Township of T43 MD BPP	X
Town of Talmadge	A, X
Town of Topsfield	A, X
Township of Trescott	A, AE, VE, X
Town of Vanceboro	A, X
Town of Waite	X
Town of Wesley	A, X
Town of Whiting	A, AE, VE, X
Town of Whitneyville	A, X

3.2 Coastal Barrier Resources System

The Coastal Barrier Resources Act (CBRA) of 1982 was established by Congress to create areas along the Atlantic and Gulf coasts and the Great Lakes, where restrictions for Federal financial assistance including flood insurance are prohibited. In 1990, Congress passed the Coastal Barrier Improvement Act (CBIA), which increased the extent of areas established by the CBRA and added "Otherwise Protected Areas" (OPA) to the system. These areas are collectively referred to as the John. H Chafee Coastal Barrier Resources System (CBRS). The CBRS boundaries that have been identified in the project area are in Table 4, "Coastal Barrier Resource System Information."

Table 4: Coastal Barrier Resources System Information

Primary Flooding Source	CBRS/OPA Type	Date CBRS Area Established	FIRM Panel Number(s)
Atlantic Ocean	OPA	11/16/1991	23029C1664E, 23029C1668E, 23029C1851E, 23029C1877E, 23029C1881E 23029C1942E, 23029C1944E, 23029C1961E, 23029C1963E, 23029C2032E, 23029C2051E

Table 4: Coastal Barrier Resources System Information – *(continued)*

Primary Flooding Source	CBRS/OPA Type	Date CBRS Area Established	FIRM Panel Number(s)
Atlantic Ocean	CBRS	11/16/1990	23029C1212E, 23029C1478E, 23029C1479E, 23029C1486E, 23029C1644E, 23029C1791E, 23029C1792E, 23029C1827E, 23029C1831E, 23029C1833E, 23029C1834E, 23029C1837E, 23029C1841E, 23029C1856E, 23029C1857E, 23029C1877E, 23029C1881E 23029C1933E, 23029C1941E,
Atlantic Ocean	CBRS	10/01/1983	23029C1464E, 23029C1468E, 23029C1478E, 23029C1486E, 23029C1644E, 23029C1829E, 23029C1834E, 23029C1837E, 23029C1857E

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 5 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 5: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
St. Croix	01050001	St. Croix	Located north of the county	22.2
Maine Coastal	01050002	Atlantic Ocean	Located south of the county	1,388.6

4.2 Principal Flood Problems

Table 6 contains a description of the principal flood problems that have been noted for Washington County by flooding source.

Table 6: Principal Flood Problems

Flooding Source	Description of Flood Problems
Atlantic Ocean	Coastal flooding caused by northeasters and hurricanes.
Machias River, Narraguagus River	Rapid runoff caused by heavy rains combined with snowmelt and as a result of hurricanes. Also ocean surges at times of extremely high tides.
St. Croix River, Wapsaconhagan Brook	Rapid runoff caused by heavy rains combined with snowmelt and as a result of hurricanes.
Sawyers Brook, Sawyers Brook Branch	Flooding is primarily due to constriction of the stream channel by buildings built in and on the floodplain.

Table 7 contains information about historic flood elevations in the communities within Washington County.

Table 7: Historic Flooding Elevations

[Not Applicable to this FIS Project]

4.3 Non-Levee Flood Protection Measures

Table 8 contains information about non-levee flood protection measures within Washington County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 8: Non-Levee Flood Protection Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Grand Falls Flowage, Long Lake, Lewy Lake	Grand Falls Project Dam	Dam	Grand Falls in the Town of Cherryfield	The dam is 1,100 feet long, including 965 feet of spillway. Flashboards and nine tainter gates control the spillway discharge
Narraguagus River	N/A	Dike	Along river in the Town of Millbridge	Does not provide 1% annual chance flood protection
	N/A	Dam	Just upstream of the Town Cherryfield	Prevents ice from running downstream
St. Croix River	N/A	Dam	Milltown Power Plant	Provides no protection from flooding

4.4 Levees

This section is not applicable to this FIS project.

Table 9: Levees

[Not Applicable to this FIS Project]

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

The engineering analyses described here incorporate the results of previously issued Letters of Map Change (LOMCs) listed in Table 27, “Incorporated Letters of Map Change”, which include Letters of Map Revision (LOMRs). For more information about LOMRs, refer to Section 6.5, “FIRM Revisions.”

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 13. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 10. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 11. (Coastal stillwater elevations are discussed in Section 5.3 and shown in Table 17.) Stream gage information is provided in Table 12.

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (square miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Boyden Lake	At outlet	14.2	*	*	*	450	*	*
Machias River	U.S. Geological Survey (USGS) gaging station (010215000)	462.7	*	*	*	13,950	*	*
Machias River	Whitneyville-Machias town line	476.5	*	*	*	14,270	*	*
Sawyers Brook	At confluence with Narraguagus River	2.6	*	*	*	240	*	*
Sawyers Brook Branch	At confluence with Sawyers Brook	0.4	53	*	100	127		274
St. Croix River	At the downstream corporate limits	1,369	19,800	*	27,400	30,900	*	39,900
St. Croix River	500 feet downstream of Woodland Dam	1,336.1	19,400	*	26,900	30,300	*	39,100
Wapsaconhagan Brook	At the confluence with St. Croix River	23.1	1,490	*	2,440	2,870	*	3,740
Wapsaconhagan Brook	2,700 feet upstream of U.S. Route 1	21.3	1,380	*	2,270	2,670	*	3,500
Wapsaconhagan Brook	Approximately 5,000 feet downstream of the upstream corporate limits	17.5	1,150	*	1,920	2,250	*	2,990

*Not calculated for this Flood Risk project

Figure 7: Frequency Discharge-Drainage Area Curves

[Not Applicable to this FIS Project]

Table 11: Summary of Non-Coastal Stillwater Elevations

Flooding Source	Location	Elevations (feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Boyden Lake	Entire shoreline within the Town of Lubec and Robbinston	77.5	*	78.0	78.2	78.5
Grand Falls Flowage	Town of Princeton	*	*	*	202.9	*
Lewy Lake	Town of Princeton	*	*	*	203.1	*
Long Lake	Town of Princeton	*	*	*	203.1	*

*Data not available

Table 12: Stream Gage Information used to Determine Discharges

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (square miles)	Period of Record	
					From	To
Dennys River	01021200	USGS	Dennys River at Dennysville, Maine	93	4/16/1956	5/11/2012
East Machias River	01022000	USGS	East Machias River Near East Machias, Maine	251	10/26/1926	2/1/1958
Machias River	01021500	USGS	Machias River at Whitneyville, Maine	458	4/16/1906	3/10/2008
Middle River	01021600	USGS	Middle River Near Machias, Maine	.08	4/16/1965	2/23/1974
Pleasant River	01022260	USGS	Pleasant River near Epping, Maine	61	2/6/1981	3/11/2008

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS 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.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed on Table 24, “Floodway Data.”

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 13. Roughness coefficients are provided in Table14. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Boyden Lake	Entire shoreline within the Town of Perry	Entire shoreline within the Town of Perry	Log-Pearson Type II analysis	Soil Conservation Service (SCS) TR-20 computer program	February 1991	AE	N/A
Grand Falls Flowage	Entire shoreline within the Town of Princeton	Entire shoreline within the Town of Princeton	Log-Pearson Type III analysis	HEC-RAS computer model	June 2001	AE	N/A
Lewy Lake	Entire shoreline within the Town of Princeton	Entire shoreline within the Town of Princeton	Log-Pearson Type III analysis	HEC-RAS computer model	June 2001	AE	N/A
Long Lake	Entire shoreline within the Town of Princeton	Entire shoreline within the Town of Princeton	Log-Pearson Type III analysis	HEC-RAS computer model	June 2001	AE	N/A
Machas River	Approximately 1,440 feet downstream of the confluence of Libby Brook	Approximately 2.3 miles upstream of U.S. Route 1	Log-Pearson Type II analysis	USGS, step-backwater computer model	December 1987	AE	Redelineated using updated topographic data March 2014
Narraguagus River	Approximately 2.2 miles downstream of U.S. Route 1	Approximately 2,645 upstream of the confluence of Corliss Brook	USGS Regional Formula	USGS, step-backwater computer model	December 1986	AE	Redelineated using updated topographic data March 2014
Sawyers Brook	At the confluence with Narraguagus River	2,351 upstream of Washington Street	USGS Regional Formula	USACE HEC-2 step-backwater computer program	September 1987	AE, w/ floodway	Redelineated using updated topographic data March 2014
Sawyers Brook Branch	At the confluence with Sawyers Brook	Approximately 142 feet upstream of the confluence with Sawyers Brook	USGS Regional Formula	USACE HEC-2 step-backwater computer program	September 1987	AE, w/ floodway	Redelineated using updated topographic data March 2014

Table 13: Summary of Hydrologic and Hydraulic Analyses *(continued)*

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
St. Croix River	375 feet upstream of the confluence of Beaver Brook	2,712 feet upstream of the confluence of Wapsaconhagan River	Log-Pearson Type III analysis	SCS WSP-2 and USACE HEC-2 step-backwater computer programs	February 1991	AE, w/ floodway	Redelineated using updated topographic data March 2014
Wapsaconhagan Brook	At the confluence with St. Croix River	2.5 miles upstream of U.S. Route 1	SCS TR-20 hydrologic evaluation model	SCS WSP-2 computer program	October 1980	AE, w/ floodway	Redelineated using updated topographic data March 2014
West Branch Narraguagus River	At the confluence with Narraguagus River	1.4 miles upstream of Sprague Falls	Log-Pearson Type III analysis	USGS, step-backwater computer model	December 1986	AE	Redelineated using updated topographic data March 2014
Beaver Brook Beaver Brook Beaver Meadow Brook, Bells Brook Boyden Stream, Branch Brook, Burnt Cove Brook, Chandler River, Chase Mills Stream, Cole Creek, Crane Mill Brook, Crow Brook Curtis Creek, Dennys River	Extents shown on FIRM	Extents shown on FIRM	Regional regression equations	HEC-RAS (Version 4.1)	March 2014	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses *(continued)*

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
East Branch Magurrewock Stream East Branch Tributary A to Dennys Bay, East Machias River, East Stream, Eastern Marsh Brook, Englishman River, Flowed Land Ponds, Hamilton Brook, Harrington River, Hobart Stream, Huntley Creek, Indian River, Knowles Brook, Lamsen Brook, Little River, Long Creek, Longfellow Brook, Mays Brook, Meadow Brook Middle River, Mill River Pennamaquan River, Pleasant River, Sipp Brook	Extents shown on FIRM	Extents shown on FIRM	Regional regression equations	HEC-RAS (Version 4.1)	March 2014	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses *(continued)*

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Snare Creek, Southwest Branch Indian River, Tributary 1 to Beaver Brook, Tributary 1 to Boyden Stream, Tributary 1 to St. Croix River, Tributary 1 to White Creek, Tributary 14 to Harrington River, Tributary 16 to Machias River, Tributary 2 to Cole Creek Tributary 2 to Indian River Tributary 2 to Mays Brook, Tributary 2 to Southwest Branch Indian River, Tributary 21 to Harrington River, Tributary 28 to Pleasant River, Tributary 3 to Indian River, Tributary 3 to Quoddy Narrows	Extents shown on FIRM	Extents shown on FIRM	Regional regression equations	HEC-RAS (Version 4.1)	March 2014	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses *(continued)*

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
Tributary 4 to East Branch Magurrewock Stream Tributary 4 to Indian River, Tributary 4 to Pleasant River, Tributary 6 to Little River, Tributary 7 to Quoddy Narrows, Tributary 8 to East Machias River, Tributary A to Bar Harbor, Tributary A to Dennys Bay Tributary B to Morong Cove, Tributary B to Pigeon Hill Bay, Tributary to Dyer Harbor Tributary to Larrabee Cove, Tributary to Pinkham Bay, Tunk Stream, West Branch Pleasant River	Extents shown on FIRM	Extents shown on FIRM	Regional regression equations	HEC-RAS (Version 4.1)	March 2014	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses *(continued)*

Flooding Source	Study Limits		Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
	Downstream Limit	Upstream Limit					
West Branch to Little Kennebec Bay, West Branch Tributary A to Dennys Bay West River, Western Marsh Brook, Willow Brook, Wilson Stream	Extents shown on FIRM	Extents shown on FIRM	Regional regression equations	HEC-RAS (Version 4.1)	March 2014	A	

Table 14: Roughness Coefficients

Flooding Source	Channel "n"	Overbank "n"
Grand Falls Flowage	0.010-0.060	0.075-0.100
Machias River	0.030-0.040	0.050-0.080
Narraguagus River	0.035-0.055	0.055-0.075
Sawyers Brook	0.020	0.040
Sawyers Brook Branch	0.020	0.040
St. Croix River	0.050-0.055	0.080-0.085
Wapsaconhagan Brook	0.060-0.068	0.075-0.090
West Branch Narraguagus River	0.032-0.055	0.070-0.100

5.3 Coastal Analyses

For the areas of Washington County that are impacted by coastal flooding processes, coastal flood hazard analyses were performed to provide estimates of coastal BFEs. Coastal BFEs reflect the increase in water levels during a flood event due to extreme tides and storm surge as well as overland wave effects.

The following subsections provide summaries of how each coastal process was considered for this FIS Report. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation. Table 15 summarizes the methods and/or models used for the coastal analyses. Refer to Section 2.5.1 for descriptions of the terms used in this section.

Table 15: Summary of Coastal Analyses

Flooding Source	Study Limits From	Study Limits To	Hazard Evaluated	Model or Method Used	Date Analysis was Completed
Alley Bay	From Beals Island	To Sawyer Cove in the Town of Jonesport	Wave Runup	Technical Advisory Committee for Water Retaining Structures (TAW)	August 2013
Atlantic Ocean	Entire Coastline of Washington County, ME	Entire Coastline of Washington County, ME	Storm Surge	New England Tide Profile	March 2012
Atlantic Ocean	Entire Coastline of Washington County, ME	Entire Coastline of Washington County, ME	Offshore Wave Generation	Steady State Spectral Wave (STWAVE)	May 2013
Atlantic Ocean	Entire Coastline of Washington County, ME	Entire Coastline of Washington County, ME	Nearshore Wave Transformation	Simulating Waves Nearshore (SWAN)	August 2013

Table 15: Summary of Coastal Analyses – *(continued)*

Flooding Source	Study Limits From	To	Hazard Evaluated	Model or Method Used	Date Analysis was Completed
Atlantic Ocean	Entire Coastline of Washington County, ME	Entire Coastline of Washington County, ME	Wave Setup	Direct Integration Method (DIM)	August 2013
Back Bay	From Wallace Cove Lane in the Town of Milbridge	To Strout Point in the Town of Milbridge	Wave Runup	TAW	August 2013
Chandler Bay	From Great Bar in the Town of Jonesport	To Loon Point in the Town of Jonesport	Wave Runup	TAW	August 2013
Cobscook Bay	From Broad Cove In the Town of Eastport	To Youngs Point in the Town of Lubec	Wave Runup	TAW	August 2013
Douglas Island Harbor	From Stover Cove in the Town of Milbridge	To Monhonon Cove in the Town of Milbridge	Wave Runup	TAW	August 2013
Dyer Bay	From Birch Point in the Town of Steuben	To Stanley Point in the Town of Steuben	Wave Runup	TAW	August 2013
Eastern Bay	From the Eastern Shore of Pig Island	To Pond Point on Great Wass Island	Wave Runup	TAW	August 2013
Englishman Bay	From Johnson Cove in the Town of Roque Bluffs	To Great Bar in the Town of Jonesport	Wave Runup	TAW	August 2013
Flat Bay	From Pineo Point in the Town of Harrington	To Blasket Point in the Town of Milbridge	Wave Runup	TAW	August 2013
Friar Roads	From Todd Head in the Town of Eastport	To Estes Head in the Town of Eastport	Wave Runup	TAW	August 2013

Table 15: Summary of Coastal Analyses - *(continued)*

Flooding Source	Study Limits From	To	Hazard Evaluated	Model or Method Used	Date Analysis was Completed
Grand Manan Channel	From West Quoddy Head in the Town of Lubec	To Long Point in the Town of Culter	Wave Runup	TAW	August 2013
Harrington Bay	From Ripley Neck in the Town of Harrington	To West Carrying Place Cove in the Town of Harrington	Wave Runup	TAW	August 2013
Harrington River	From West Carrying Place Cove in the Town of Harrington	To Ray Point in the Town of Harrington	Wave Runup	TAW	August 2013
Holmes Bay	From Sprague Neck in the Town of Cutler	To Davis Lane in the Town of Machiasport	Wave Runup	TAW	August 2013
Indian River	From Doyle Island in the Town of Addison	To Steele Point in the Town of Addison	Wave Runup	TAW	August 2013
Johnson Bay	From North Lubec on Campobello Island	To Mowry Point in the Town of Lubec	Wave Runup	TAW	August 2013
Joy Bay	From Rogers Point in the Town of Steuben	To the Washington-Hancock County boundary	Wave Runup	TAW	August 2013
Little Bay	From Davis Lane in the Town of Machiasport	To Holmes Point in the Town of Machiasport	Wave Runup	TAW	August 2013
Little Kennebec Bay	From Grays Beach in the Town of Machiasport	Sea Wall Point in the Town of Roque Bluffs	Wave Runup	TAW	August 2013

Table 15: Summary of Coastal Analyses - *(continued)*

Flooding Source	Study Limits From	To	Hazard Evaluated	Model or Method Used	Date Analysis was Completed
Little Machias Bay	From Dennison Point in the Town of Cutler	To Cape Wash in the Town of Cutler	Wave Runup	TAW	August 2013
Lubec Channel	From Mowry Point in the Town of Lubec	To West Quoddy Head in the Town of Lubec	Wave Runup	TAW	August 2013
Machias Bay	From Point of Main in the Town of Machiasport	To Sprague Neck in the Town of Cutler	Wave Runup	TAW	August 2013
Moosabec Reach	From Sawyer Cove in the Town of Jonesport	To Doyle Island in the Town of Addison	Wave Runup	TAW	August 2013
Narragaugus Bay	From Strout Point in the Town of Milbridge	To Stover Cove in the Town of Milbridge	Wave Runup	TAW	August 2013
Passamaquoddy Bay	From Mill Cove in the Town of Robbinston	To Gleason Cove in the Town of Perry	Wave Runup	TAW	August 2013
Pigeon Hill Bay	From Tom Leighton Point in the Town of Milbridge	To Petit Manan Point in the Town of Steuben	Wave Runup	TAW	August 2013
Pleasant Bay	From Tibett Island in the Town of Addison	To Ripley Neck in the Town of Harrington	Wave Runup	TAW	August 2013
Seguin Passage	From Loon Point in the Town of Jonesport	To Sawyer Cove in the Town of Jonesport	Wave Runup	TAW	August 2013

Table 15: Summary of Coastal Analyses - *(continued)*

Flooding Source	Study Limits From	To	Hazard Evaluated	Model or Method Used	Date Analysis was Completed
St. Croix River	From St. Croix River at Devil's Head in the City of Calais	To Mill Cove in the Town of Robbinston	Wave Runup	TAW	August 2013
Western Bay	From Pond Point on Great Wass Island	To Beals Island	Wave Runup	TAW	August 2013
Western Passage	From Gleason Cove in the Town of Perry	To Todd Head in the Town of Eastport	Wave Runup	TAW	August 2013
Wohoa Bay	From Steele Point in the Town of Addison	To Tibett Island in the Town of Addison	Wave Runup	TAW	August 2013

5.3.1 Total Stillwater Elevations

The total stillwater elevations (stillwater including storm surge plus wave setup) for the 1% annual chance flood were determined for areas subject to coastal flooding. The models and methods that were used to determine storm surge and wave setup are listed in Table 15. The stillwater elevation that was used for each transect in coastal analyses is shown in Table 17, "Coastal Transect Parameters."

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas

[Not Applicable to this FIS Project]

Astronomical Tide

Astronomical tidal statistics were generated directly from local tidal constituents by sampling the predicted tide at random times throughout the tidal epoch.

Storm Surge Statistics

Storm surge is modeled based on characteristics of actual storms responsible for significant coastal flooding. The characteristics of these storms are typically determined by statistical study of the regional historical record of storms or by statistical study of tidal gages.

When historic records are used to calculate storm surge, characteristics such as the strength, size, track, etc., of storms are identified by site. An extreme value analysis was performed to determine a stillwater elevation for the 1% annual chance event.

Tidal gages can be used instead of historic records of storms when the available tidal gage record for the area represents both the astronomical tide component and the storm surge component. Table 16 provides the gage name, managing agency, gage type, gage identifier, start date, end date, and statistical methodology applied to each gage used to determine the stillwater elevations.

Table 16: Tide Gage Analysis Specifics

Gage Name	Managing Agency of Tide Gage Record	Gage Type	Start Date	End Date	Statistical Methodology
Eastport, ME Station ID: 8410140	NOAA	Tide	1929	2007	LMOMENTS
Cutler*, ME Station ID: 8411250	NOAA	Tide	1983	2007	LMOMENTS
Bar Harbor, ME Station ID: 8413320	NOAA	Tide	1947	2007	LMOMENTS
Portland, ME Station ID: 8418150	NOAA	Tide	1912	2007	LMOMENTS
Seavey Island, ME Station ID: 8419870	NOAA	Tide	1926	2007	LMOMENTS

*The station to NAVD88 vertical datum conversion was calculated using only one benchmark tied into the geodetic network Therefore, the stability of the benchmark could not be verified, resulting in a slight uncertainty in the conversion value..

Combined Riverine and Tidal Effects

No new Riverine Areas for this study were affected by the new coastal analysis.

Wave Setup Analysis

Wave setup was computed during the storm surge modeling through the methods and models listed in Table 15 and included in the frequency analysis for the determination of the total water elevations. For this analyses, wave setup values were calculated for each coastal transect using the Direct Integration Method (DIM), developed by Goda (2000), as described in the FEMA Guidelines and Specifications, Equation D.2.6-1.

5.3.2 Waves

The nearshore wave conditions accompanying the 1-percent stillwater elevation (SWEL) were generated using the SWAN model. SWAN is a spectral wave growth and wave transformation model that accounts for shallow water physics such as wave shoaling, refraction, diffraction, bottom friction effects, depth-induced wave breaking. SWAN supports unstructured grids, which in large model domains is useful for maintaining both coarse and fine-resolution in the same mesh – avoiding the need for multiple nested grids.

5.3.3 Coastal Erosion

A single storm episode can cause extensive erosion in coastal areas. Storm-induced erosion was evaluated to determine the modification to existing topography that is expected to be associated with flooding events. Erosion was evaluated using the methods listed in Table 15. The post-event eroded profile was used for the subsequent transect-based onshore wave hazard analyses. Primary Frontal Dune (PFD) features were identified as per the G&S. Although PFDs were identified in Washington County, their extent was generally small, and the dunes were not covered by transects. Therefore, dune erosion analysis was not performed along any transects. The Massachusetts Office of Coastal Zone Management (CZM), in cooperation with FEMA has published scientifically based guidance for selecting the landward toe of PFD features by utilizing the second derivative slope. CZM methodology was used for identification of all PFD features in Washington County.

5.3.4 Wave Hazard Analyses

Overland wave hazards were evaluated to determine the combined effects of ground elevation, vegetation, and physical features on overland wave propagation and wave runup. These analyses were performed at representative transects along all shorelines for which waves were expected to be present during the floods of the selected recurrence intervals. The results of these analyses were used to determine elevations for the 1% annual chance flood.

Transect locations were chosen with consideration given to the physical land characteristics as well as development type and density so that they would closely represent conditions in their locality. Additional consideration was given to changes in the total stillwater elevation. Transects were spaced close together in areas of complex topography and dense development or where total stillwater elevations varied. In areas having more uniform characteristics, transects were spaced at larger intervals. Transects shown in Figure 9, "Transect Location Map," are also depicted on the FIRM. Table 17 provides the location, stillwater elevations, and starting wave conditions for each transect evaluated for overland wave hazards. In this table, "starting" indicates the parameter value at the beginning of the transect.

Wave Height Analysis

Wave height analyses were performed to determine wave heights and corresponding wave crest elevations for the areas inundated by coastal flooding and subject to overland wave propagation hazards. Refer to Figure 6 for a schematic of a coastal transect evaluated for overland wave propagation hazards.

Wave heights and wave crest elevations were modeled using the methods and models listed in Table 15, "Summary of Coastal Analyses".

Wave Runup Analysis

Wave runup analyses were performed to determine the height and extent of runup beyond the limit of stillwater inundation for the 1% annual chance flood. Wave runup elevations were modeled using the methods and models listed in Table 15.

Table 17: Coastal Transect Parameters

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
St. Croix River	1	3.8	2.8	13.7 *	* *	14.4 *	14.7 14.7-14.7	15.4 *
St. Croix River	2	4.1	2.9	13.7 *	* *	14.4 *	14.7 14.7-14.7	15.4 *
St. Croix River	3	4.4	3.0	13.7 *	* *	14.4 *	14.7 14.7-14.7	15.4 *
St. Croix River	4	5.2	3.3	13.7 *	* *	14.4 *	14.7 14.7-14.7	15.4 *
Passamaquoddy Bay	5	7.3	4.0	13.7 *	* *	14.4 *	14.7 14.7-14.7	15.4 *
Passamaquoddy Bay	6	7.7	4.2	13.7 *	* *	14.4 *	14.7 14.7-14.7	15.4 *
Passamaquoddy Bay	7	8.3	4.4	13.7 *	* *	14.4 *	14.7 14.7-14.7	15.4 *

*Not calculated for this Flood Risk project

Table 17: Coastal Transect Parameters – *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Western Passage	8	6.3	3.8	13.7 *	* *	14.4 *	14.7 14.7-14.7	15.4 *
Western Passage	9	4.8	3.2	13.7 *	* *	14.4 *	14.7 14.7-14.7	15.4 *
Western Passage	10	5.6	3.4	13.7 *	* *	14.4 *	14.7 14.7-14.7	15.4 *
Friar Roads	11	5.8	3.6	13.7 *	* *	14.4 *	14.7 14.7-14.7	15.4 *
Friar Roads	12	6.1	3.7	13.6 *	* *	14.3 *	14.6 14.7-14.6	15.3 *
Friar Roads	13	4.2	2.8	13.5 *	* *	14.2 *	14.6 14.6-14.6	15.2 *
Friar Roads	14	4.1	2.9	13.5 *	* *	* *	14.5 14.6-14.5	* *

*Not calculated for this Flood Risk project

Table 17: Coastal Transect Parameters – *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Cobscook Bay	15	3.9	2.8	13.5 *	* *	14.2 *	14.6 14.6-14.6	15.2 *
Cobscook Bay	16	3.4	2.6	13.6 *	* *	14.3 *	14.6 14.6-14.6	15.3 *
Cobscook Bay	17	4.3	3.0	13.7 *	* *	14.4 *	14.7 14.6-14.7	15.3 *
Cobscook Bay	18	4.4	3.0	13.4 *	* *	14.0 *	14.4 14.4-14.4	15.1 *
Cobscook Bay	19	4.1	2.9	13.4 *	* *	14.0 *	14.4 14.4-14.4	15.0 *
Cobscook Bay	20	4.6	3.0	13.1 *	* *	13.7 *	14.2 14.4-14.2	14.8 *
Cobscook Bay	21	3.8	2.7	13.4 *	* *	14.0 *	14.4 14.4-14.4	15.0 *

*Not calculated for this Flood Risk project

Table 17: Coastal Transect Parameters – *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Johnson Bay	22	4.9	3.2	13.1 *	* *	13.7 *	14.2 14.4-14.2	14.8 *
Lubec Channel	23	3.9	2.7	13.0 *	* *	13.6 *	14.1 14.2-14.1	14.7 *
Lubec Channel	24	4.5	4.1	12.9 *	* *	13.5 *	14.0 14.1-14.0	14.6 *
Grand Manan Channel	25	16.7	6.6	12.5 *	* *	13.1 *	13.5 14.0-13.5	14.1 *
Grand Manan Channel	26	19.8	7.7	12.0 *	* *	12.7 *	13.1 13.5-13.1	13.5 *
Grand Manan Channel	27	19.7	7.7	11.5 *	* *	12.1 *	12.5 13.1-12.5	13.0 *
Grand Manan Channel	28	19.4	8.0	11.2 *	* *	11.9 *	12.2 12.5-12.2	12.7 *

*Not calculated for this Flood Risk project

Table 17: Coastal Transect Parameters – *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Grand Manan Channel	29	20.5	7.5	10.8 *	* *	11.4 *	11.6 12.2-11.6	12.1 *
Atlantic Ocean	30	24.0	8.2	10.5 *	* *	11.0 *	11.3 11.6-11.3	11.8 *
Atlantic Ocean	31	17.5	7.2	10.4 *	* *	10.9 *	11.2 11.3-11.2	11.7 *
Atlantic Ocean	32	6.0	4.0	10.3 *	* *	10.8 *	11.0 11.2-11.0	11.5 *
Atlantic Ocean	33	1.7	1.8	10.2 *	* *	10.8 *	11.0 11.0-11.0	11.5 *
Atlantic Ocean	34	25.1	8.5	10.2 *	* *	10.8 *	11.0 11.0-11.0	11.5 *
Little Machias Bay	35	3.8	2.7	10.2 *	* *	10.7 *	10.9 11.0-10.9	11.5 *

*Not calculated for this Flood Risk project

Table 17: Coastal Transect Parameters – *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Atlantic Ocean	36	13.9	6.8	10.2 *	* *	10.7 *	10.9 10.9-10.9	11.5 *
Atlantic Ocean	37	28.9	9.2	10.2 *	* *	10.7 *	10.9 10.9-10.9	11.5 *
Machias Bay	38	14.3	6.6	10.1 *	* *	10.6 *	10.8 10.9-10.8	11.5 *
Holmes Bay	39	5.9	3.5	10.1 *	* *	10.6 *	10.8 10.8-10.8	11.5 *
Little Bay	40	8.9	4.7	10.1 *	* *	10.6 *	10.8 10.8-10.8	11.4 *
Machias Bay	41	4.0	2.8	10.1 *	* *	10.5 *	10.7 10.8-10.7	11.4 *
Machias Bay	42	5.6	3.4	10.0 *	* *	10.5 *	10.7 10.7-10.7	11.4 *

*Not calculated for this Flood Risk project

Table 17: Coastal Transect Parameters – *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Machias Bay	43	13.0	6.2	10.1 *	* *	10.5 *	10.7 10.7-10.7	11.4 *
Machias Bay	44	7.5	4.1	10.0 *	* *	10.0 *	10.7 10.7-10.7	11.4 *
Englishman Bay	45	12.8	6.5	10.0 *	* *	10.0 *	10.6 10.7-10.6	11.3 *
Little Kennebec Bay	46	6.1	3.7	10.0 *	* *	10.4 *	10.6 10.6-10.6	11.3 *
Little Kennebec Bay	47	4.2	2.9	9.9 *	* *	10.3 *	10.6 10.6-10.6	11.2 *
Englishman Bay	48	16.9	7.1	9.9 *	* *	10.3 *	10.6 10.6-10.6	11.2 *
Englishman Bay	49	10.7	5.2	9.8 *	* *	10.3 *	10.5 10.6-10.5	11.1 *

*Not calculated for this Flood Risk project

Table 17: Coastal Transect Parameters – *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Englishman Bay	50	5.6	3.5	9.7 *	* *	10.2 *	10.5 10.5-10.5	11.0 *
Englishman Bay	51	5.1	3.2	9.7 *	* *	10.1 *	10.4 10.5-10.4	10.9 *
Chandler Bay	52	11.1	5.2	9.6 *	* *	10.1 *	10.4 10.4-10.4	10.9 *
Atlantic Ocean	53	24.7	8.7	9.7 *	* *	10.2 *	10.5 10.4-10.5	11.0 *
Chandler Bay	54	10.4	5.2	9.6 *	* *	10.1 *	10.3 10.5-10.3	10.8 *
Chandler Bay	55	9.3	4.6	9.6 *	* *	10.1 *	10.3 10.3-10.3	10.8 *
Seguin Passage	56	7.0	3.7	9.6 *	* *	10.0 *	10.3 10.3-10.3	10.8 *

*Not calculated for this Flood Risk project

Table 17: Coastal Transect Parameters – *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Atlantic Ocean	57	18.7	7.7	9.6 *	* *	10.1 *	10.4 10.3-10.4	10.9 *
Eastern Bay	58	7.7	4.2	9.6 *	* *	10.0 *	10.2 10.4-10.2	10.7 *
Eastern Bay	59	7.2	4.4	9.6 *	* *	10.0 *	10.2 10.2-10.2	10.7 *
Eastern Bay	60	19.3	8.9	9.6 *	* *	10.0 *	10.2 10.2-10.2	10.7 *
Western Bay	61	11.5	8.8	9.5 *	* *	9.9 *	10.2 10.2-10.2	10.7 *
Western Bay	62	10.8	5.7	9.5 *	* *	9.9 *	10.1 10.2-10.1	10.6 *
Western Bay	63	8.1	4.6	9.5 *	* *	9.9 *	10.2 10.2-10.2	10.7 *

*Not calculated for this Flood Risk project

Table 17: Coastal Transect Parameters – *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Alley Bay	64	3.5	2.6	9.5 *	* *	9.9 *	10.2 10.2-10.2	10.7 *
Alley Bay	65	3.3	2.5	9.6 *	* *	10.0 *	10.2 10.2-10.2	10.7 *
Alley Bay	66	5.4	3.3	9.6 *	* *	10.0 *	10.3 10.2-10.3	10.8 *
Alley Bay	67	4.7	3.0	9.6 *	* *	10.0 *	10.2 10.2-10.2	10.7 *
Moosabec Reach	68	3.3	2.5	9.6 *	* *	10.0 *	10.2 10.2-10.2	10.7 *
Moosabec Reach	69	4.7	3.0	9.5 *	* *	9.9 *	10.2 10.2-10.2	10.7 *
Moosabec Reach	70	5.3	3.3	9.5 *	* *	9.9 *	10.2 10.2-10.2	10.6 *

*Not calculated for this Flood Risk project

Table 17: Coastal Transect Parameters – *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Indian River	71	2.9	2.4	9.5 *	* *	9.9 *	10.1 10.2-10.1	10.6 *
Wohoa Bay	72	6.7	3.9	9.5 *	* *	9.8 *	10.0 10.1-10.0	10.5 *
Wohoa Bay	73	7.8	4.1	9.4 *	* *	9.8 *	10.0 10.0-10.0	10.5 *
Wohoa Bay	74	8.8	5.1	9.4 *	* *	9.7 *	10.0 10.0-10.0	10.5 *
Pleasant Bay	75	15.4	6.9	9.4 *	* *	9.7 *	9.9 10.0-9.9	10.4 *
Pleasant Bay	76	7.8	4.3	9.4 *	* *	9.7 *	9.9 9.9-9.9	10.4 *
Pleasant Bay	77	2.3	2.0	9.4 *	* *	9.7 *	9.9 9.9-9.9	10.4 *

*Not calculated for this Flood Risk project

Table 17: Coastal Transect Parameters – *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Harrington Bay	78	5.5	3.5	9.3 *	* *	9.6 *	9.8 9.9-9.8	10.3 *
Harrington Bay	79	3.1	2.4	9.3 *	* *	9.6 *	9.8 9.8-9.8	10.3 *
Harrington River	80	2.7	2.3	9.3 *	* *	9.6 *	9.8 9.8-9.8	10.3 *
Harrington River	81	2.9	2.3	9.3 *	* *	9.6 *	9.8 9.8-9.8	10.3 *
Flat Bay	82	3.0	2.4	9.3 *	* *	9.6 *	9.8 9.8-9.8	10.3 *
Flat Bay	83	3.1	2.4	9.3 *	* *	9.6 *	9.8 9.8-9.8	10.3 *
Harrington Bay	84	5.0	3.1	9.3 *	* *	9.6 *	9.8 9.8-9.8	10.3 *

*Not calculated for this Flood Risk project

Table 17: Coastal Transect Parameters – *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Back Bay	85	3.3	2.5	9.2 *	* *	9.6 *	9.8 9.8-9.8	10.3 *
Back Bay	86	3.5	2.6	9.2 *	* *	9.6 *	9.8 9.8-9.8	10.2 *
Narraguagus Bay	87	5.3	3.7	9.2 *	* *	9.6 *	9.8 9.8-9.8	10.2 *
Narraguagus Bay	88	7.6	4.6	9.2 *	* *	9.6 *	9.8 9.8-9.8	10.2 *
Narraguagus Bay	89	4.3	2.9	9.2 *	* *	9.6 *	9.7 9.8-9.7	10.2 *
Narraguagus Bay	90	3.4	2.6	9.2 *	* *	9.5 *	9.7 9.7-9.7	10.2 *
Narraguagus Bay	91	4.3	2.9	9.2 *	* *	9.5 *	9.7 9.7-9.7	10.2 *

*Not calculated for this Flood Risk project

Table 17: Coastal Transect Parameters – *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Narraguagus Bay	92	4.7	3.2	9.2 *	* *	9.5 *	9.7 9.7-9.7	10.2 *
Narragaugus Bay	93	7.4	4.6	9.2 *	* *	9.5 *	9.7 9.7-9.7	10.2 *
Narragaugus Bay	94	9.2	5.0	9.2 *	* *	9.6 *	9.8 9.7-9.8	10.2 *
Narragaugus Bay	95	9.6	5.0	9.2 *	* *	9.6 *	9.8 9.8-9.8	10.2 *
Douglas Island Harbor	96	5.9	4.2	9.2 *	* *	9.5 *	9.7 9.8-9.7	10.2 *
Atlantic Ocean	97	19.9	9.7	9.1 *	* *	9.5 *	9.7 9.7-9.7	10.2 *
Pigeon Hill Bay	98	6.2	4.3	9.2 *	* *	9.5 *	9.7 9.7-9.7	10.2 *

*Not calculated for this Flood Risk project

Table 17: Coastal Transect Parameters – *(continued)*

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (feet)	Peak Wave Period T_p (seconds)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Pigeon Hill Bay	99	3.7	2.7	9.2 *	* *	9.5 *	9.7 9.7-9.7	10.2 *
Pigeon Hill Bay	100	6.2	3.7	9.1 *	* *	9.5 *	9.7 9.7-9.7	10.1 *
Atlantic Ocean	101	13.0	9.3	9.0 *	* *	9.4 *	9.6 9.7-9.6	10.0 *
Dyer Bay	102	3.7	2.7	9.1 *	* *	9.5 *	9.7 9.6-9.7	10.1 *
Dyer Bay	103	6.3	3.7	9.0 *	* *	9.5 *	9.6 9.6-9.6	10.1 *
Gouldsboro Bay	104	4.1	2.9	9.0 *	* *	9.5 *	9.6 9.6-9.6	10.0 *
Joy Bay	105	3.1	2.5	9.0 *	* *	9.5 *	9.6 9.6-9.6	10.1 *

*Not calculated for this Flood Risk project

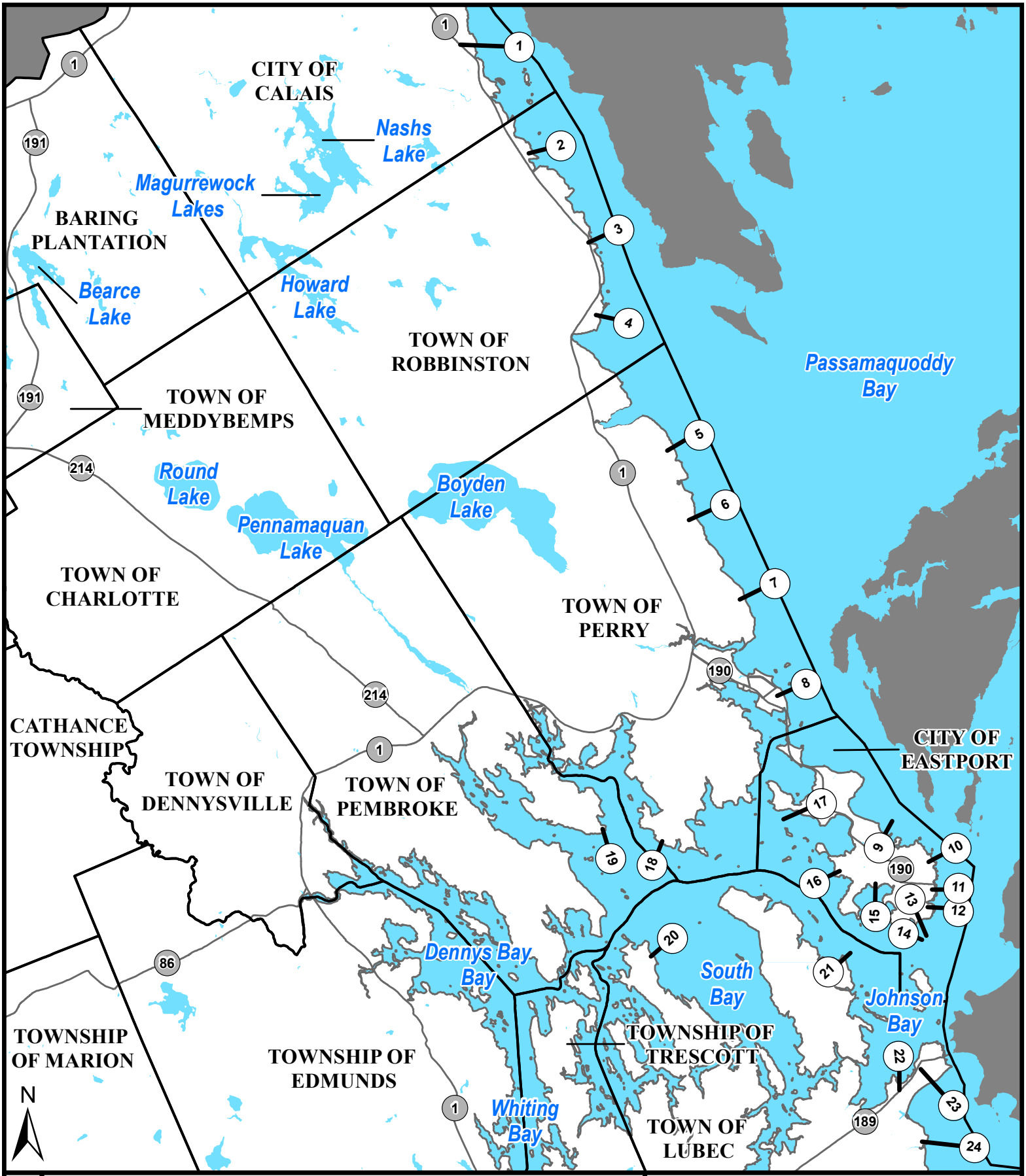


FIGURE 9

Federal Emergency Management Agency

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

0 1 2 3 4 5 Miles

TRANSECT LOCATION MAP

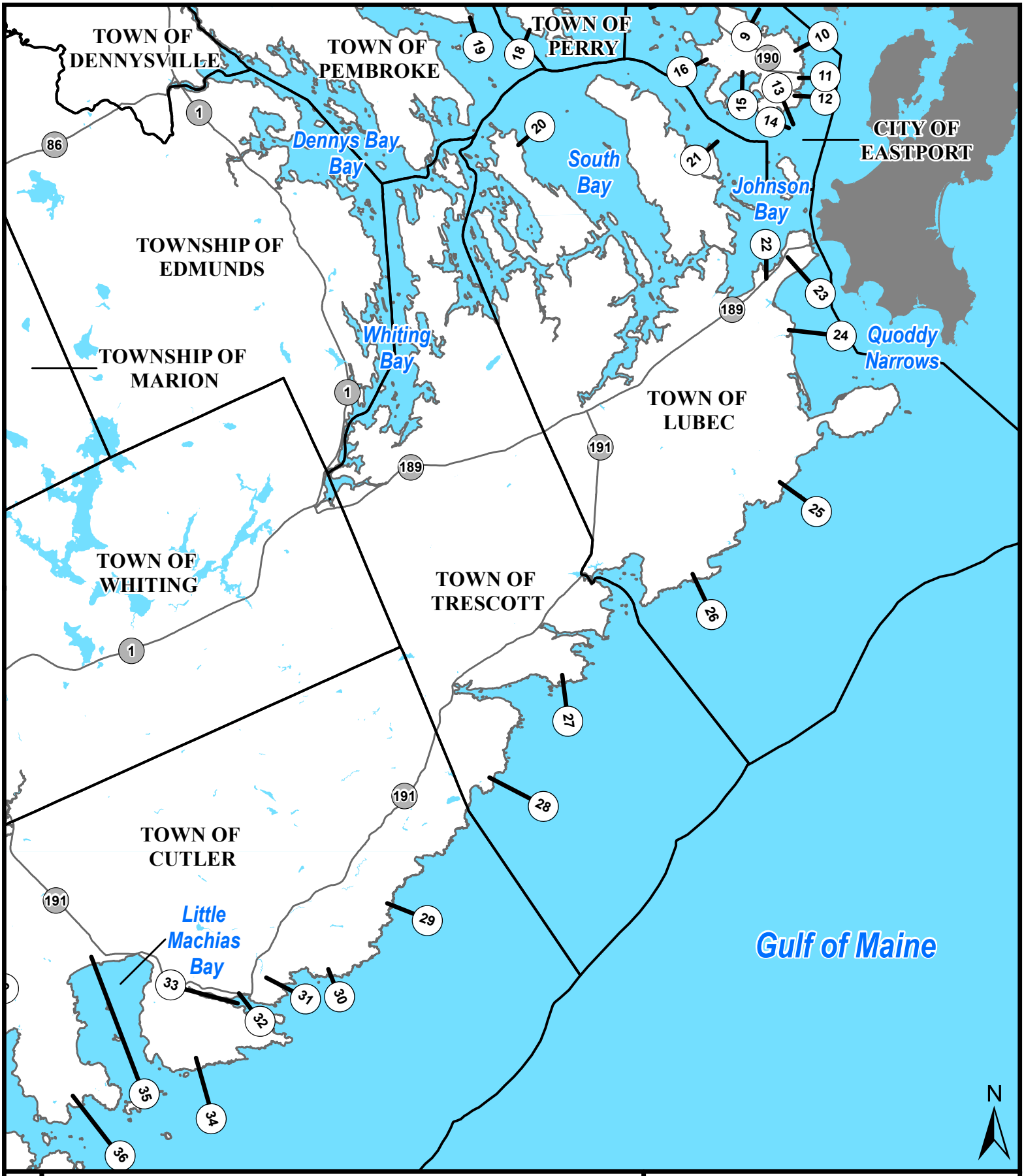


FIGURE 9

Federal Emergency Management Agency

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

0 1 2 3 4 5 Miles

TRANSECT LOCATION MAP

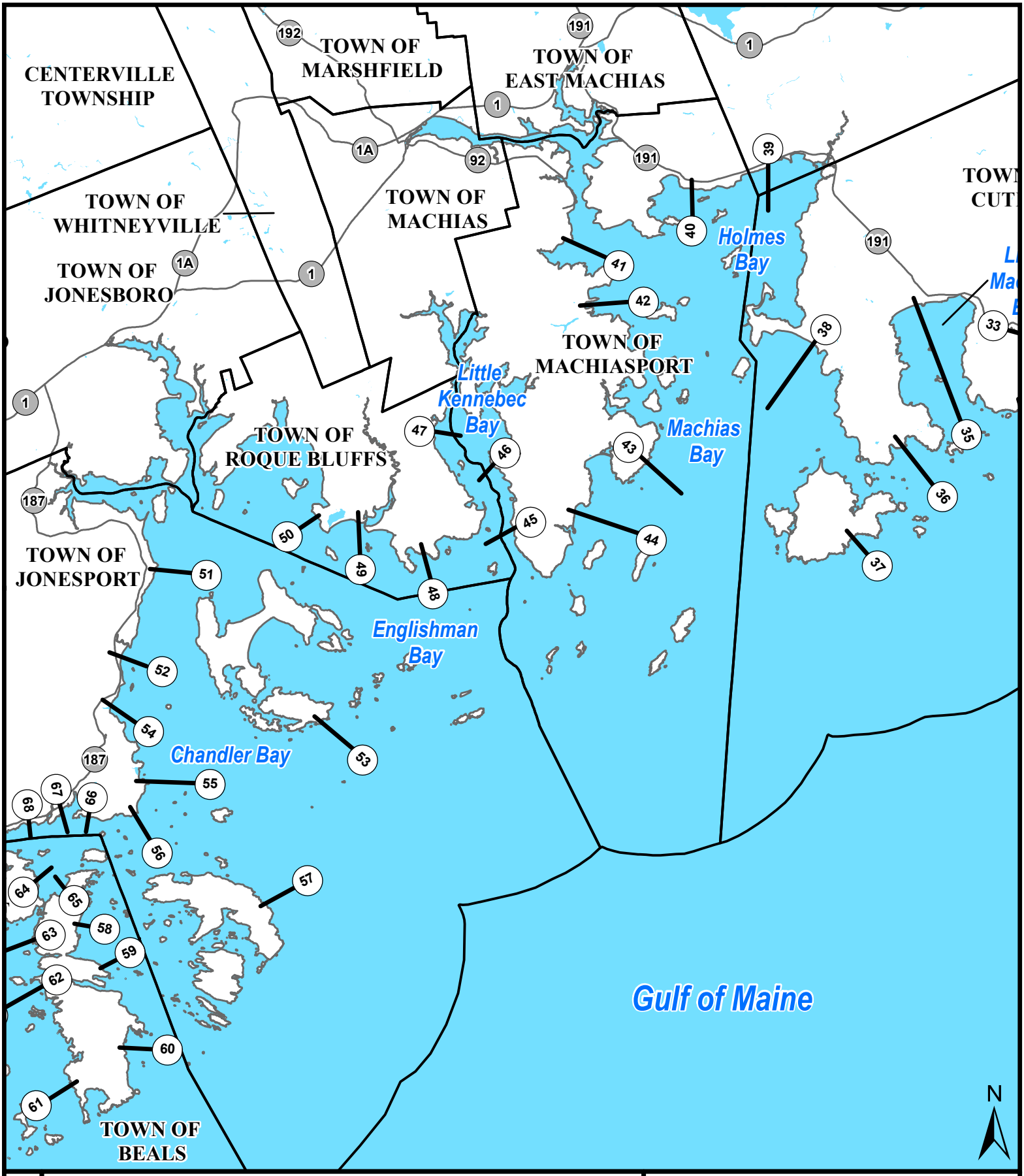


FIGURE 9

Federal Emergency Management Agency

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

0 1 2 3 4 5 Miles

TRANSECT LOCATION MAP

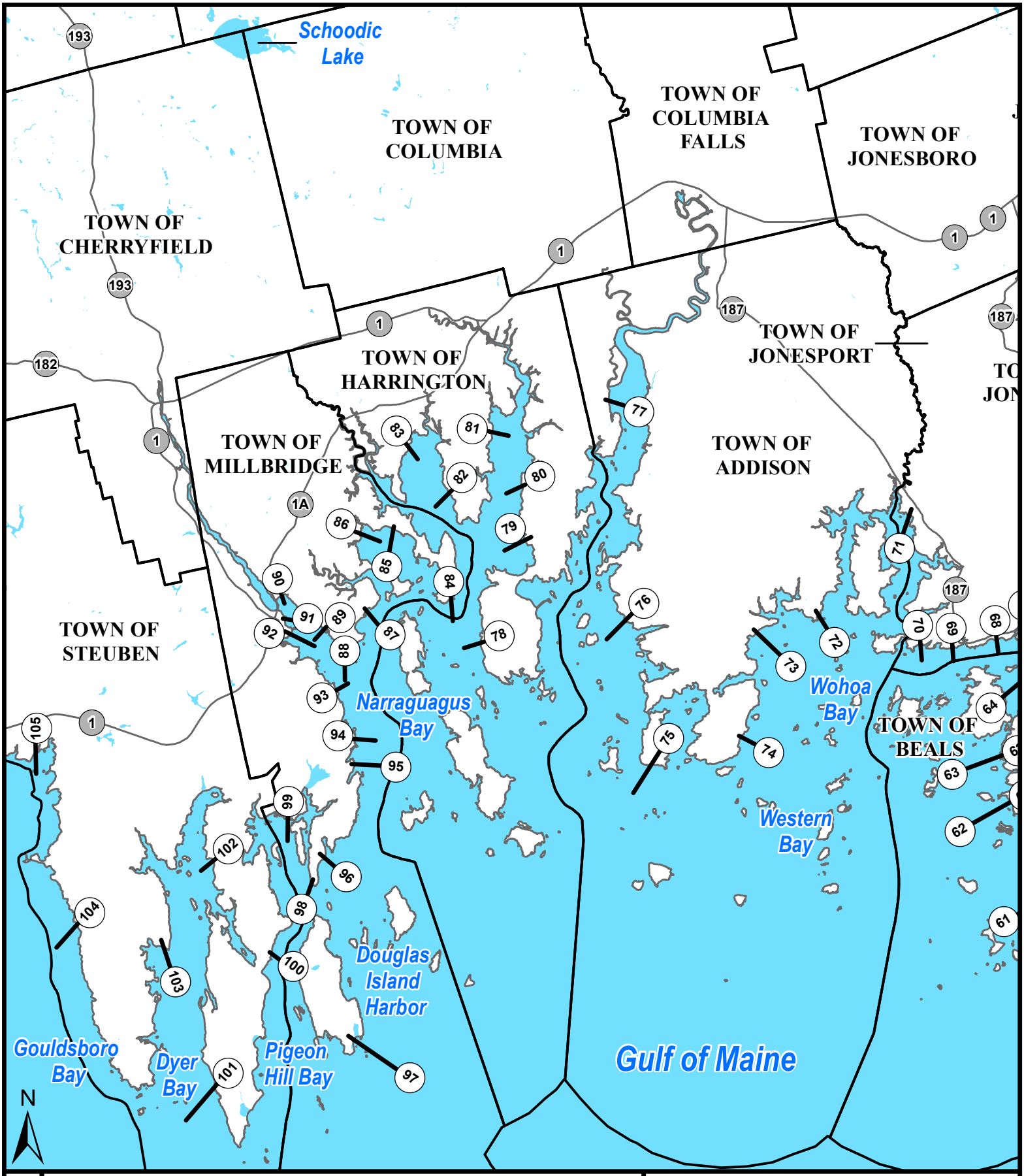


FIGURE 9

Federal Emergency Management Agency

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

TRANSECT LOCATION MAP

5.4 Alluvial Fan Analyses

This section is not applicable to this FIS project.

Table 18: Summary of Alluvial Fan Analyses
[Not Applicable to this FIS Project]

Table 19: Results of Alluvial Fan Analyses
[Not Applicable to this FIS Project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

All FIS Reports 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 used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website 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 20910-3282
(301) 713-3242

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 archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please contact information services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

The datum conversion locations and values that were calculated for Washington County are provided in Table 20.

.

Table 20: Countywide Vertical Datum Conversion

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Stetson Mountain	NE	45.625	-67.875	-0.549
Tomah Mountain	NE	45.500	-67.625	-0.580
Tomah Ridge	NE	45.375	-67.500	-0.615
Addison	NE	44.625	-67.625	-0.698
Big Lake	NE	45.250	-67.625	-0.625
Bog Lake	NE	44.875	-67.500	-0.640
Bois Bubert	NE	44.500	-67.750	-0.678
Bottle Lake	NE	45.375	-68.000	-0.646
Bowers Mountain	NE	45.500	-68.000	-0.598
Brookton	NE	45.625	-67.750	-0.535
Cherryfield	NE	44.625	-67.875	-0.654
Clifford Lake	NE	45.125	-67.625	-0.644
Columbia Falls	NE	44.750	-67.625	-0.648
Crawford Lake	NE	45.125	-67.500	-0.661
Cross Island	NE	44.625	-67.250	-0.476
Cutler	NE	44.750	-67.125	-0.602
Old Man	NE	44.625	-67.125	-0.557
Dark Cove Mountain	NE	45.250	-67.875	-0.635
Dill Hill	NE	45.500	-67.875	-0.586
Drisko Island	NE	44.500	-67.625	-0.685
Duck Lake	NE	45.250	-68.000	-0.644
Eastport (digital)	NE	45.000	-67.000	-0.607
Epping	NE	44.750	-67.750	-0.647
Farrow Mountain	NE	45.500	-67.750	-0.564
Fletcher Peak	NE	45.125	-67.875	-0.632
Forest	NE	45.625	-67.625	-0.559

Table 20: Countywide Vertical Datum Conversion *(continued)*

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Gassabias Lake	NE	45.125	-68.000	-0.642
Grand Lake Stream	NE	45.250	-67.750	-0.622
Great Wass Island	NE	44.500	-67.500	-0.676
Hadley Lake	NE	44.875	-67.375	-0.686
Harrington	NE	44.625	-67.750	-0.688
Jonesport	NE	44.625	-67.500	-0.703
Kellyland	NE	45.375	-67.375	-0.624
Lake Cathance	NE	45.000	-67.375	-0.678
Lambert Lake	NE	45.625	-67.500	-0.582
Lead Mountain	NE	44.875	-68.000	-0.611
Long Lake	NE	44.875	-67.250	-0.670
Loon Bay	NE	45.500	-67.375	-0.612
Machias	NE	44.750	-67.375	-0.679
Machias Bay	NE	44.750	-67.250	-0.687
Meddybemps Lake East	NE	45.125	-67.250	-0.673
Meddybemps Lake West	NE	45.125	-67.375	-0.670
Monroe Lake	NE	45.125	-67.750	-0.636
Montegail Pond	NE	44.875	-67.750	-0.630
Moose River	NE	44.750	-67.000	-0.516
Northeast Bluff	NE	44.875	-67.875	-0.620
Oxbrook Lakes	NE	45.375	-67.750	-0.603
Peaked Mountain	NE	45.000	-67.875	-0.628
Peaked Mountain Pond	NE	44.875	-67.625	-0.621
Pembroke	NE	45.000	-67.125	-0.616
Petit Manan Point	NE	44.500	-67.875	-0.655
Petit Manan Point OE S	NE	44.375	-67.875	-0.667
Porcupine Mountain	NE	45.000	-67.250	-0.684
Potter Hill	NE	45.625	-68.000	-0.578
Princeton	NE	45.250	-67.500	-0.636
Quillpig Mountain	NE	45.000	-68.000	-0.628
Red Beach	NE	45.125	-67.125	-0.595

Table 20: Countywide Vertical Datum Conversion *(continued)*

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Rocky Pond	NE	44.875	-68.125	-0.620
Roque Bluffs	NE	44.625	-67.375	-0.640
Round Lake	NE	45.000	-67.500	-0.648
Schoodic Lake	NE	44.750	-67.875	-0.612
Scraggly Lake	NE	45.375	-67.875	-0.619
Simsquish Lake	NE	45.500	-67.500	-0.599
Tug Mountain	NE	45.000	-67.750	-0.630
Tunk Lake	NE	44.625	-68.000	-0.639
Tunk Mountain	NE	44.750	-68.000	-0.589
Waite	NE	45.375	-67.625	-0.603
Wesley	NE	45.000	-67.625	-0.625
West Lubec	NE	44.875	-67.000	-0.585
Whiting	NE	44.875	-67.125	-0.652
Whitneyville	NE	44.750	-67.500	-0.596
Winter Harbor	NE	44.500	-68.000	-0.635
Cross Island	SW	44.500	-67.375	-0.651
Drisko Island	SW	44.375	-67.750	-0.672
Great Wass Island	SW	44.375	-67.625	-0.671
Average Conversion from NGVD29 to NAVD88 = -0.627 (FEET)				

Table 21: Stream-by-Stream Vertical Datum Conversion

[Not Applicable to this FIS Project]

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM

Database and its contents can be found in FEMA's *Guidelines and Standards for Mapping Partners*, Appendix L.

Base map information shown on the FIRM was derived from the sources described in Table 22.

Table 22: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
S_BASE_INDEX	Maine Department of GIS	June 2005 September 1998	1:4,800, 1:24,000	S_Base_Index was created by adapting the MEGIS ortho index to the standards described in Volume 1 of the FEMA Guidelines and Specifications for base mapping.
Digital Orthophoto	Maine Department of GIS	September 2003-2005	1:4,800	The orthophotography consists of 2 foot high resolution digital orthophotos
Digital Orthophoto	Maine Department of GIS	September 1998	1:24,000	The orthophotography consists of 1 meter high resolution digital orthophotos
Political Boundaries	Maine Department of GIS	February 2012	1:24,000	County and city boundary data
Surface Water Features	Maine Department of GIS	January 2013	1:5,000	Streams, rivers, and lakes were derived from National Hydrography Dataset high resolution data
Transportation Features	Maine Department of GIS	August 2012	1:24,000	Comprised of street centerlines, railroad centerlines and airport runways.
USGS 7.5-Minute Topographic Maps	USGS	July 1999	1:24,000	Detailed and accurate graphic representation of cultural and natural features on the ground.
CBRS	U.S. Fish and Wildlife Service	September 1990	1:24,000	CBRS consists of the undeveloped coastal barriers and other areas located on the coasts

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23. For each coastal flooding source studied as part of this FIS Report, the mapped floodplain boundaries on the FIRM have been delineated using the flood and wave elevations determined at each transect; between transects, boundaries were delineated using land use and land cover data, the topographic elevation data described in Table 23, and knowledge of coastal flood processes. In ponding areas, flood elevations were determined at each junction of the model; between junctions, boundaries were interpolated using the topographic elevation data described in Table 23.

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM 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. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 24, “Floodway Data.”

Table 23: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Elevations (feet NAVD88)			
		Description	Scale	Contour Interval	Citation
Washington County	Machias River, Narraguagus River, Sawyers Brook, Sawyers Brook Branch, St. Croix River, West Branch Narraguagus River, Wapsaconhagan Brook, Zone A streams	LiDAR - 2011	2 m	2 ft	USGS

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations.

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
MACHIAS RIVER								
A	-1,280	*	*	*	10.7[2]	*	*	*
B	1,000	*	*	*	10.7[2]	*	*	*
C	2,620	*	*	*	10.7[2]	*	*	*
D	5,300	*	*	*	10.7[2]	*	*	*
E	7,050	*	*	*	10.7[2]	*	*	*
F	8,500	*	*	*	10.7[2]	*	*	*
G	9,050	*	*	*	10.7[2]	*	*	*
H	9,400	*	*	*	10.7[2]	*	*	*
I	9,820	*	*	*	27.2	*	*	*
J	10,180	*	*	*	27.5	*	*	*
K	10,830	*	*	*	28.0	*	*	*
L	11,080	*	*	*	29.1	*	*	*
M	11,280	*	*	*	30.0	*	*	*
N	11,410	*	*	*	30.3	*	*	*
O	11,610	*	*	*	30.8	*	*	*
P	11,850	*	*	*	31.4	*	*	*
Q	12,500	*	*	*	32.2	*	*	*
R	12,830	*	*	*	32.9	*	*	*
S	13,640	*	*	*	36.9	*	*	*
T	14,840	*	*	*	40.4	*	*	*

[1]Distance in feet above the confluence of Libby Brook

*Data Not Available

[2]Elevations affected by tidal flooding

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

FLOODWAY DATA

MACHIAS RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
MACHIAS RIVER								
U	15,780	*	*	*	41.0	*	*	*
V	17,030	*	*	*	45.5	*	*	*
W	17,950	*	*	*	46.3	*	*	*
X	19,620	*	*	*	47.2	*	*	*
Y	20,950	*	*	*	47.4	*	*	*
Z	21,700	*	*	*	47.6	*	*	*

[1]Distance in feet above the confluence of Libby Brook
*Data not available

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME
(ALL JURISDICTIONS)

FLOODWAY DATA

MACHIAS RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
NARRAGUAGUS RIVER								
A	11,800	*	*	*	9.7[2]	*	*	*
B	12,950	*	*	*	9.7[2]	*	*	*
C	13,680	*	*	*	9.7[2]	*	*	*
D	14,350	*	*	*	9.7[2]	*	*	*
E	14,980	*	*	*	9.7[2]	*	*	*
F	15,560	*	*	*	9.7[2]	*	*	*
G	16,390	*	*	*	9.7[2]	*	*	*
H	16,950	*	*	*	9.7[2]	*	*	*
I	17,460	*	*	*	9.7[2]	*	*	*
J	17,970	*	*	*	9.7[2]	*	*	*
K	18,540	*	*	*	9.7[2]	*	*	*
L	19,500	*	*	*	9.7[2]	*	*	*
M	20,100	*	*	*	9.7[2]	*	*	*
N	20,750	*	*	*	9.7[2]	*	*	*
O	21,220	*	*	*	9.7[2]	*	*	*
P	21,990	*	*	*	9.7[2]	*	*	*
Q	22,410	*	*	*	9.7[2]	*	*	*
R	22,810	*	*	*	9.7[2]	*	*	*
S	23,480	*	*	*	9.7[2]	*	*	*
T	24,800	*	*	*	9.7[2]	*	*	*

[1]Stream distance in feet above Narraguagus Bay
[2]Elevations affected by tidal flooding
*Data not available

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

FLOODWAY DATA

NARRAGUAGUS RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
NARRAGUAGUS RIVER								
U	25,400	*	*	*	11.8	*	*	*
V	25,940	*	*	*	13.1	13.1	*	*
W	27,170	*	*	*	25.2	25.2	*	*
X	27,480	*	*	*	33.8	33.8	*	*
Y	27,930	*	*	*	37.3	37.3	*	*
Z	28,340	*	*	*	44.1	44.1	*	*
AA	28,820	*	*	*	48.0	48.0	*	*
AB	29,400	*	*	*	52.6	52.6	*	*
AC	29,630	*	*	*	56.3	56.3	*	*
AD	29,800	*	*	*	56.8	56.8	*	*
AE	30,420	*	*	*	60.2	60.2	*	*
AF	30,650	*	*	*	61.3	61.3	*	*
AG	31,130	*	*	*	61.3	61.3	*	*
AH	31,360	*	*	*	65.1	65.1	*	*
AI	32,240	*	*	*	65.7	65.7	*	*
AJ	32,890	*	*	*	66.0	66.0	*	*
AK	33,280	*	*	*	66.1	66.1	*	*
AL	33,890	*	*	*	66.2	66.2	*	*
AM	35,050	*	*	*	66.4	66.4	*	*

[1]Stream distance in feet above Narraguagus Bay
*Data not available

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
NARRAGUAGUS RIVER								
AN	40,740	*	*	*	66.9	66.9	*	*
AO	45,070	*	*	*	68.0	68.0	*	*
AP	47,260	*	*	*	68.3	68.3	*	*
AQ	50,200	*	*	*	68.8	68.8	*	*
AR	53,500	*	*	*	73.1	73.1	*	*
AS	55,030	*	*	*	75.5	75.5	*	*
AT	57,710	*	*	*	79.0	79.0	*	*
AU	61,170	*	*	*	80.5	80.5	*	*
AV	61,700	*	*	*	82.2	82.2	*	*
AW	64,750	*	*	*	88.0	88.0	*	*
AX	67,270	*	*	*	89.2	89.2	*	*
AY	70,100	*	*	*	89.8	89.8	*	*
AZ	71,850	*	*	*	90.2	90.2	*	*
BA	74,700	*	*	*	91.0	91.0	*	*
BB	77,620	*	*	*	92.4	92.4	*	*
BC	80,360	*	*	*	93.7	93.7	*	*
BD	82,260	*	*	*	94.4	94.4	*	*

[1]Stream distance in feet above Narraguagus Bay
*Data not available

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME
(ALL JURISDICTIONS)

FLOODWAY DATA

NARRAGUAGUS RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAV88D)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
SAWYERS BROOK								
A	0[1]	10	36	10.9	9.7	6.2[3]	6.2	0.0
B	97[1]	18	94	3.7	9.7	8.3[3]	8.4	0.1
C	190[1]	9	52	6.7	9.7	8.4[3]	8.5	0.1
D	700[1]	20	134	2.6	9.7	9.4[3]	9.5	0.1
E	1,200[1]	20	121	2.9	9.7	9.4[3]	9.5	0.1
F	2,200[1]	11	78	4.4	10.4	10.4	11.3	0.9
SAWYERS BROOK BRANCH								
A	142[2]	5	29	4.4	11.1	11.1	11.1	0.0

[1]Feet above confluence with Narraguagus River
[2]Feet above confluence with Sawyers Brook
[3]Elevation computed without consideration of backwater effects from Narraguagus River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME
(ALL JURISDICTIONS)

FLOODWAY DATA

SAWYERS BROOK – SAWYERS BROOK BRANCH

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)[2]	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
ST. CROIX RIVER								
A	62,640	301/150	3,870	8.4	29.5	29.5	32.9	3.4
B	62,740	350/175	4,024	8.1	47.9	44.4	47.9	3.5
C	63,140	200/100	2,931	11.1	49.3	46.2	49.3	3.1
D	63,160	200/100	3,452	9.4	51.9	48.2	51.9	3.7
E	64,160	350/175	3,506	9.3	56.3	52.8	56.2	3.4
F	65,160	395/190	2,257	14.4	69.7	68.3	69.7	1.4
G	66,060	432/337	7,223	4.5	77.1	73.5	77.1	3.6
H	71,060	642/317	13,328	2.4	78.6	74.8	78.6	3.8
I	76,060	1,354/600	22,191	1.5	79.2	75.3	79.1	3.8
J	82,877	1,311/260	28,659	1.1	79.2	77.1	78.1	1.0
K	85,017	344/210	5,288	5.9	79.2	79.2	80.2	1.0
L	86,417	322/200	4,046	7.7	83.9	83.9	84.9	1.0
M	86,677	262/110	3,955	7.8	84.8	85.8	85.8	1.0
N	87,037	500/110	7,374	4.2	85.6	85.6	86.6	1.0
O	88,927	350/230	5,516	5.6	87.9	87.9	88.9	1.0
P	90,747	1,475/1,475	18,985	1.6	88.6	88.6	89.6	1.0
Q	92,847	285/90	5,005	6.2	90.3	90.3	91.3	1.0
R	93,747	465/440	6,645	4.6	91.3	91.3	92.3	1.0
S	103,115	388/180	6,197	5.0	98.4	98.4	99.4	1.0
T	108,595	803/675	11,967	2.6	99.9	99.9	100.9	1.0
U	111,215	575/130	8,426	3.7	101.7	101.7	102.7	1.0
V	114,265	459/170	4,848	6.3	107.8	107.8	108.8	1.0

[1]Stream distance in feet above the confluence of Beaver Brook
[2]Width/width within corporate limits

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME
(ALL JURISDICTIONS)

FLOODWAY DATA

ST. CROIX RIVER

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)	INCREASE (FEET)
WAPSACONHAGAN BROOK								
A	390	218	1,185	2.4	102.3	95.7	96.7	1.0
B	1,270	73	484	5.9	103.2	102.6	101.5	1.0
C	2,495	116	587	4.8	108.3	107.7	108.7	1.0
D	3,205	110	688	4.1	117.9	117.3	118.9	1.0
E	6,065	127	696	3.8	135.2	134.6	136.2	1.0
F	7,655	95	745	3.5	137.8	137.2	138.8	1.0
G	12,945	75	630	3.7	146.0	146.0	147.0	1.0
H	16,355	122	706	3.2	153.1	152.5	154.1	1.0

[1]Feet above confluence with St. Croix River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

FLOODWAY DATA

WAPSACONHAGAN BROOK

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD88)	WITHOUT FLOODWAY (FEET NAVD88)	WITH FLOODWAY (FEET NAVD88)*	INCREASE (FEET)*
WEST BRANCH NARRAGUAGUS RIVER								
A	2,960	*	*	*	66.6	66.6	*	*
B	4,950	*	*	*	66.7	66.7	*	*
C	8,290	*	*	*	67.0	67.0	*	*
D	11,850	*	*	*	67.3	67.3	*	*
E	14,010	*	*	*	67.7	67.7	*	*
F	16,850	*	*	*	68.4	68.4	*	*
G	20,360	*	*	*	69.0	69.0	*	*
H	22,920	*	*	*	69.3	69.3	*	*
I	25,330	*	*	*	71.6	71.6	*	*
J	25,660	*	*	*	76.8	76.8	*	*
K	25,880	*	*	*	81.1	81.1	*	*
L	29,560	*	*	*	87.0	87.0	*	*
M	31,510	*	*	*	87.8	87.8	*	*

[1]Stream distance in feet above the confluence of Narraguagus River
*Data not available

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME
(ALL JURISDICTIONS)

FLOODWAY DATA

WEST BRANCH NARRAGUAGUS RIVER

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams

[Not Applicable to this FIS Project]

6.4 Coastal Flood Hazard Mapping

Flood insurance zones and BFEs including the wave effects were identified on each transect based on the results from the onshore wave hazard analyses. Between transects, elevations were interpolated using topographic maps, land-use and land-cover data, and knowledge of coastal flood processes to determine the aerial extent of flooding. Sources for topographic data are shown in Table 23.

Zone VE is subdivided into elevation zones and BFEs are provided on the FIRM.

The limit of Zone VE shown on the FIRM is defined as the farthest inland extent of any of these criteria (determined for the 1% annual chance flood condition):

- The *primary frontal dune zone* is defined in 44 CFR Section 59.1 of the NFIP regulations. The primary frontal dune represents a continuous or nearly continuous mound or ridge of sand with relatively steep seaward and landward slopes that occur immediately landward and adjacent to the beach. The primary frontal dune zone is subject to erosion and overtopping from high tides and waves during major coastal storms. The inland limit of the primary frontal dune zone occurs at the point where there is a distinct change from a relatively steep slope to a relatively mild slope.

- The *wave runup zone* occurs where the (eroded) ground profile is 3.0 feet or more below the 2-percent wave runup elevation.

- The *wave overtopping splash zone* is the area landward of the crest of an overtopped barrier, in cases where the potential 2-percent wave runup exceeds the barrier crest elevation by 3.0 feet or more.

- The *breaking wave height zone* occurs where 3-foot or greater wave heights could occur (this is the area where the wave crest profile is 2.1 feet or more above the total stillwater elevation).

- The *high-velocity flow zone* is landward of the overtopping splash zone (or area on a sloping beach or other shore type), where the product of depth of flow times the flow velocity squared (hv^2) is greater than or equal to 200 ft^3/sec^2. This zone may only be used on the Pacific Coast.

The SFHA boundary indicates the limit of SFHAs shown on the FIRM as either “V” zones or “A” zones.

Table 26 indicates the coastal analyses used for floodplain mapping and the criteria used to determine the inland limit of the open-coast Zone VE and the SFHA boundary at each transect.

Table 26: Summary of Coastal Transect Mapping Considerations

Coastal Transect	Primary Frontal Dune (PFD) Identified[1]	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary[2]
		Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
1		VE 22	N/A	Runup	
2		VE 20	N/A	Runup	
3		VE 23	N/A	Runup	
4		VE 18	N/A	Runup	
5		VE 25	N/A	Runup	
6		VE 23	N/A	Runup	
7		VE 30	N/A	Runup	
8		VE 25	N/A	Runup	
9		VE 15	N/A	Runup	
10		VE 25	N/A	Runup	
11		VE 17	N/A	Runup	
12		VE 19	N/A	Runup	
13		VE 21	N/A	Runup	
14		VE 22	N/A	Runup	
15		VE 24	N/A	Runup	
16		VE 15	N/A	Runup	
17		VE 18	N/A	Runup	
18		VE 21	N/A	Runup	
19		VE 18	N/A	Runup	
20		VE 23	N/A	Runup	
21		VE 20	N/A	Runup	
22		VE 15	N/A	Runup	
23		VE 17	N/A	Runup	
24		VE 22	N/A	Runup	
25		VE 37	N/A	Runup	
26		VE 44	N/A	Runup	
27		VE 45	N/A	Runup	
28		VE 22	N/A	Runup	
29		VE 46	N/A	Runup	
30		VE 41	N/A	Runup	
31		VE 16	VE 17-21 AE 15	Wave Height	
32		VE 14	N/A	Runup	

[1]Although PFD formations were identified in Washington County, none of these locations were covered by the selected transects..
[2]Not calculated for this Flood Risk project

Table 26: Summary of Coastal Transect Mapping Considerations – *(continued)*

Coastal Transect	Primary Frontal Dune (PFD) Identified[1]	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary[2]
		Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
33		AE 12	AE 12-13	Wave Height	
34		VE 54	N/A	Runup	
35		VE 12	N/A	Runup	
36		VE 14	N/A	Runup	
37		VE 37	N/A	Runup	
38		VE 17	N/A	Runup	
39		VE 14	N/A	Runup	
41		VE 16	N/A	Runup	
42		VE 18	N/A	Runup	
43		VE 16	N/A	Runup	
44		VE 16	N/A	Runup	
45		VE 22	N/A	Runup	
46		VE 14	N/A	Runup	
47		VE 18	N/A	Runup	
48		VE 19	N/A	Runup	
49		VE 29	N/A	Runup	
50		VE 21	N/A	Runup	
51		VE 13	N/A	Runup	
52		VE 15	N/A	Runup	
53		VE 27	N/A	Runup	
54		VE 15	N/A	Runup	
55		VE 13	N/A	Runup	
56		VE 13	N/A	Runup	
57		VE 24	N/A	Runup	
58		VE 22	N/A	Runup	
59		VE 17	N/A	Runup	
60		VE 15	N/A	Runup	
61		VE 31	N/A	Runup	
62		VE 18	N/A	Runup	
63		VE 14	N/A	Runup	
64		VE 13	N/A	Runup	
65		VE 11	N/A	Runup	
66		VE 11	N/A	Runup	

[1]Although PFD formations were identified in Washington County, none of these locations were covered by the selected transects.
[2]Not calculated for this Flood Risk project

Table 26: Summary of Coastal Transect Mapping Considerations – *(continued)*

Coastal Transect	Primary Frontal Dune (PFD) Identified[1]	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary[2]
		Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
67		VE 11	N/A	Runup	
68		VE 13	N/A	Runup	
69		VE 16	N/A	Runup	
70		VE 11	N/A	Runup	
71		VE 15	N/A	Runup	
72		VE 12	N/A	Runup	
73		VE 15	N/A	Runup	
74		VE 20	N/A	Runup	
75		VE 17	N/A	Runup	
76		VE 15	N/A	Runup	
77		AE 11	N/A	Runup	
78		VE 15	N/A	Runup	
79		VE 13	N/A	Runup	
80		VE 16	N/A	Runup	
81		AE 10	N/A	Runup	
82		VE 15	N/A	Runup	
83		VE 15	N/A	Runup	
84		VE 14	N/A	Runup	
85		VE 13	N/A	Runup	
86		VE 12	N/A	Runup	
87		VE 16	N/A	Runup	
88		VE 18	N/A	Runup	
89		VE 18	N/A	Runup	
90		AE 12	N/A	Runup	
91		VE 19	N/A	Runup	
92		VE 15	N/A	Runup	
93		VE 19	N/A	Runup	
94		VE 15	N/A	Runup	
95		VE 16	N/A	Runup	
96		VE 14	N/A	Runup	
97		VE 30	N/A	Runup	
98		VE 14	N/A	Runup	
99		VE 13	N/A	Runup	
100		VE 18	N/A	Runup	

[1]Although PFD formations were identified in Washington County, none of these locations were covered by the selected transects.
[2]Not calculated for this Flood Risk project

Table 26: Summary of Coastal Transect Mapping Considerations – *(continued)*

Coastal Transect	Primary Frontal Dune (PFD) Identified[1]	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary[2]
		Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
101		VE 24	N/A	Runup	
102		VE 14	N/A	Runup	
103		AE 10	N/A	Runup	
104		VE 12	N/A	Runup	
105		VE 14	N/A	Runup	

[1]Although PFD formations were identified in Washington County, none of these locations were covered by the selected transects.
[2]Not calculated for this Flood Risk project

A LiMWA boundary has also been added in coastal areas subject to wave action for use by local communities in safe rebuilding practices. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. To simplify representation, the LiMWA was continued immediately landward of the VE/AE boundary in areas where wave runup elevations dominate. Similarly, in areas where the Zone VE designation is based on the presence of a primary frontal dune or wave overtopping, the LiMWA was delineated immediately landward of the Zone VE/AE boundary.

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions to FIS projects may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 31, "Map Repositories").

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA. A LOMA cannot be issued for properties located on the PFD (primary frontal dune).

To obtain an application for a LOMA, visit http://www.fema.gov and download the form "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill". Visit the "Flood Map-Related Fees" section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at http://www.fema.gov/plan/prevent/fhm/ot_lmreq.shtm.

For more information about how to apply for a LOMA, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA's determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting http://www.fema.gov for the "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill" or by calling the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the "Flood Map-Related Fees" section.

A tutorial for LOMR-F is available at http://www.fema.gov/plan/prevent/fhm/ot_lmreq.shtm.

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit http://www.fema.gov and download the form "MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision". Visit the "Flood Map-Related Fees" section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Washington County FIRM are listed in Table 27.

Table 27: Incorporated Letters of Map Change

[Not Applicable to this FIS Project]

6.5.4 Physical Map Revisions

PMRs are an official republication of a community's NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community's chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit http://www.fema.gov and visit the "Flood Map Revision Processes" section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Flood County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 26, "Community Map History." A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.

- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or "pending" (for Preliminary FIS Reports) is shown. If the community is listed in Table 28 but not identified on the map, the community is treated as if it were unmapped.

- *Initial FHBM Effective Date* is the effective date of the first Flood Hazard Boundary Map (FHBM). This date may be the same date as the Initial NFIP Map Date.

- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.

- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community. This is the first effective date that is shown on the FIRM panel.

- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as Physical Map Revisions (PMR) of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

Table 28: Community Map History

Community Name	Initial Identification Date (First NFIP Map Published)	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Town of Addison	10/18/1974	10/18/1974	7/23/1976	7/16/1991	7/18/2017
Town of Alexander	12/6/1974	12/6/1974	11/12/1976	9/4/1985	7/18/2017
Town of Baileyville	1/24/1974	1/24/1974	5/27/1977	4/15/1982	7/18/2017
Baring Plantation	1/31/1975	1/31/1975	None	3/15/1982	7/18/2017
Town of Beals	8/16/1974	8/16/1974	8/20/1976	5/15/1991	7/18/2017 7/2/2003
Town of Beddington*	7/18/2017	None	None	7/18/2017	None
Township of Berry*	7/18/2017	None	None	7/18/2017	None
Township of Big Lake*	7/18/2017	None	None	7/18/2017	None
Township of Brookton	2/21/1975	2/21/1975	None	11/1/1985	7/18/2017
City of Calais	6/28/1974	6/28/1974	10/8/1976	8/3/1994	7/18/2017
Township of Cathance*	7/18/2017	None	None	7/18/2017	None
Centerville Township*	7/18/2017	None	None	7/18/2017	None
Town of Charlotte	12/17/1976	12/17/1976	None	8/1/2008	7/18/2017
Town of Cherryfield	8/2/1974	8/2/1974	8/13/1976	5/4/1988	7/18/2017 4/02/1990
Codyville Plantation*	7/18/2017	None	None	7/18/2017	None
Town of Columbia	2/14/1975	2/14/1975	None	4/1/2011	7/18/2017
Town of Columbia Falls	4/18/1975	4/18/1975	1/14/1977	9/4/1985	7/18/2017
Town of Cooper*	7/18/2017	None	None	7/18/2017	None
Town of Crawford	1/17/1975	1/17/1975	None	7/18/2017	None
Town of Cutler	2/21/1975	2/21/1975	None	8/5/1985	7/18/2017 3/15/1993
Town of Danforth	8/9/1974	8/9/1974	9/17/1976	9/18/1985	7/18/2017
Township of Day Block*	7/18/2017	None	None	7/18/2017	None
Town of Deblois*	7/18/2017	None	None	7/18/2017	None
Town of Dennysville	1/10/1975	1/10/1975	None	8/19/1985	7/18/2017
Township of Devereaux*	7/18/2017	None	None	7/18/2017	None
Township of Dyer*	7/18/2017	None	None	7/18/2017	None
City of Eastport	7/26/1974	7/26/1974	6/21/1977	12/3/1987	7/18/2017
Town of East Machias	2/14/1975	2/14/1975	2/11/1977	9/4/1985	7/18/2017
Township of Edmunds	2/14/1975	2/14/1975	None	8/19/1985	7/18/2017
Township of Forest*	7/18/2017	None	None	7/18/2017	None

*No Special Hazard Areas Identified

Table 28: Community Map History – *(continued)*

Community Name	Initial Identification Date (First NFIP Map Published)	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Township of Forest City*	7/18/2017	None	None	7/18/2017	None
Township of Fowler*	7/18/2017	None	None	7/18/2017	None
Grand Lake Stream Plantation	2/14/1975	2/14/1975	None	8/5/1985	7/18/2017
Township of Greenlaw Chopping*	7/18/2017	None	None	7/18/2017	None
Town of Harrington	2/21/1975	2/21/1975	3/4/1977	9/27/1985	7/18/2017 7/15/1992
Indian Township Reservation*	7/18/2017	None	None	7/18/2017	None
Town of Jonesboro	2/14/1975	2/14/1975	None	8/1/2008	7/18/2017
Town of Jonesport	10/25/1974	10/25/1974	11/12/1976 10/1/1983	5/3/1990	7/18/2017 7/15/1992
Township of Kossuth*	7/18/2017	None	None	7/18/2017	None
Township of Lambert Lake	2/21/1975	2/21/1975	None	1/17/1985	7/18/2017
Town of Lubec	11/1/1974	11/1/1974	8/20/1976 10/1/1983	4/15/1992	7/18/2017
Town of Machias	8/2/1974	8/2/1974	1/14/1977	11/18/1988	7/18/2017
Town of Machiasport	7/19/1974	7/19/1974	11/19/1976 10/1/1983	8/5/1991	7/18/2017 7/15/1992
Township of Marion*	7/18/2017	None	None	7/18/2017	None
Town of Marshfield	2/21/1975	2/21/1975	9/24/1976	9/18/1985	7/18/2017
Town of Meddybemps*	7/18/2017	None	None	7/18/2017	None
Town of Milbridge	8/2/1974	8/2/1974	8/13/1976	5/3/1990	7/18/2017 7/15/1992
Town of Northfield	2/14/1975	2/14/1975	None	7/18/2017	None
Passamaquoddy Tribe at Pleasant Point	7/18/2017	None	None	7/18/2017	None
Town of Pembroke	10/18/1974	10/18/1974	10/29/1976	4/1/2009	7/18/2017
Town of Perry	2/28/1975	2/28/1975	None	9/4/1985	7/18/2017 8/19/97 05/3/1993
Town of Princeton	2/21/1975	2/21/1975	6/151984	8/19/1985	7/18/2017 5/15/2002
Town of Robbinston	4/11/1975	4/11/1975	None	8/19/1985	7/18/2017 5/3/1993

*No Special Hazard Areas Identified

Table 28: Community Map History - *(continued)*

Community Name	Initial Identification Date (First NFIP Map Published)	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Town of Roque Bluffs	2/21/1975	2/21/1975	10/22/1976	9/18/1985	7/18/2017 7/15/1992
Township of Sakom*	7/18/2017	None	None	7/18/2017	None
Town of Steuben	2/21/1975	2/21/1975	7/15/1992	9/1/2013	7/18/2017
Town of Talmadge	12/17/1976	12/17/1976	None	7/18/2017	None
Town of Topsfield	3/14/1975	3/14/1975	None	3/1/2011	7/18/2017
Township of Trescott	1/24/1975	1/24/1975	None	8/5/1985	7/18/2017 2/8/1999
Town of Vanceboro	2/21/1975	2/21/1975	None	8/19/1985	7/18/2017
Town of Waite*	7/18/2017	None	None	7/18/2017	None
Town of Wesley	12/27/1974	12/27/1974	None	9/18/1985	7/18/2017
Town of Whiting	2/7/1975	2/7/1975	None	8/5/1985	7/18/2017
Town of Whitneyville	6/7/1977	6/7/1977	2/4/1983	7/18/2017	None
Township of T11 R3 NBPP*	7/18/2017	None	None	7/18/2017	None
Township of T18 MD BPP*	7/18/2017	None	None	7/18/2017	None
Township of T19 ED BPP*	7/18/2017	None	None	7/18/2017	None
Township of T19 MD BPP*	7/18/2017	None	None	7/18/2017	None
Township of T24 MD BPP*	7/18/2017	None	None	7/18/2017	None
Township of T25 MD BPP*	7/18/2017	None	None	7/18/2017	None
Township of T26 ED BPP*	7/18/2017	None	None	7/18/2017	None
Township of T30 MD BPP*	7/18/2017	None	None	7/18/2017	None
Township of T36 MD BPP*	7/18/2017	None	None	7/18/2017	None
Township of T37 MD BPP*	7/18/2017	None	None	7/18/2017	None
Township of T42 MD BPP*	7/18/2017	None	None	7/18/2017	None
Township of T43 MD BPP*	7/18/2017	None	None	7/18/2017	None
Township of T6 ND BPP*	7/18/2017	None	None	7/18/2017	None
Township of T6 R1 NBPP*	7/18/2017	None	None	7/18/2017	None
Township of T8 R3 NBPP*	7/18/2017	None	None	7/18/2017	None
Township of T8 R4 NBPP*	7/18/2017	None	None	7/18/2017	None

*No Special Hazard Areas Identified

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 29 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Atlantic Ocean		STARR	HSFEHQ-09-D-0370	March 2014	Washington County
Boyden Lake	May 3, 1993	SCS	83-566	February 1991	Town of Perry, Town of Robbinston
Grand Falls Flowage	May 15, 2002	MAINE USGS	EMW-97-IA-0155	June 1999	Town of Princeton
Lewy Lake	May 15, 2002	MAINE USGS	EMW-97-IA-0155	June 1999	Town of Princeton
Long Lake	May 15, 2002	MAINE USGS	EMW-97-IA-0155	June 1999	Town of Princeton
Machias River		STARR	HSFEHQ-09-D-0370	March 2014	Town of East Machias, Town of Machias, Town of Machiasport, Town of Whitneyville
Narraguagus River		STARR	HSFEHQ-09-D-0370	March 2014	Town of Cherryfield
Sawyers Brook		STARR	HSFEHQ-09-D-0370	March 2014	Town of Milbridge
Sawyers Brook Branch		STARR	HSFEHQ-09-D-0370	March 2014	Town of Milbridge
St. Croix River		STARR	HSFEHQ-09-D-0370	March 2014	Baring Plantation, City of Calais, Town of Baileyville
Wapsaconhagan Brook		STARR	HSFEHQ-09-D-0370	March 2014	Town of Cherryfield
West Branch Narraguagus River		STARR	HSFEHQ-09-D-0370	March 2014	Town of Cherryfield

7.2 Community Meetings

The dates of the community meetings held for this FIS project and any previous FIS projects are shown in Table 30. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 30: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Washington County (All Jurisdictions)		04/18/12	Project Discovery	Representatives of FEMA and Washington County, Marshfield and Machias fire department,

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see http://www.fema.gov.

Table 31 is a list of the locations where FIRMs for Washington County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 31: Map Repositories

Community	Address	City	State	Zip Code
Town of Addison	TOWN HALL 334 WATER STREET	ADDISON	ME	04606
Town of Alexander	TOWN HALL 50 COOPER ROAD	ALEXANDER	ME	04694
Town of Baileyville	TOWN OFFICE 63 BROADWAY STREET	BAILEYVILLE	ME	04694
Baring Plantation	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Town of Beals	TOWN OFFICE 11 BIG POND ROAD	BEALS	ME	04611
Town of Beddington	TOWN OFFICE 1978 STATE HIGHWAY 193	BEDDINGTON	ME	04622
Township of Berry	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of Big Lake	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of Brookton	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
City of Calais	CITY BUILDING 11 CHURCH STREET	CALAIS	ME	04619
Township of Cathance	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401

Table 31: Map Repositories – *(continued)*

Community	Address	City	State	Zip Code
Centerville Township	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Town of Charlotte	TOWN OFFICE 1098 AYERS JUNCTION ROAD	CHARLOTTE	ME	04666
Town of Cherryfield	TOWN OFFICE 12 MUNICIPAL WAY	CHERRYFIELD	ME	04622-0058
Codyville Plantation	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Town of Columbia	TOWN HALL 106 EPPING ROAD	COLUMBIA	ME	04623
Town of Columbia Falls	TOWN OFFICE 8 POINT STREET	COLUMBIA FALLS	ME	04623-0100
Town of Cooper	TOWN OFFICE 425 COOPER HIGHWAY	COOPER	ME	04657
Town of Crawford	FIRST SELECTMAN'S OFFICE 359 CRAWFORD ARM ROAD	CRAWFORD	ME	04694
Town of Cutler	TOWN OFFICE 2655 CUTLER ROAD	CUTLER	ME	04626
Town of Danforth	TOWN OFFICE 18 CENTRAL STREET	DANFORTH	ME	04424
Township of Day Block	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Town of Deblois	TOWN HALL 8 LANE ROAD	DEBLOIS	ME	04622
Town of Dennysville	TOWN OFFICE 2 MAIN STREET	DENNYSVILLE	ME	04628
Township of Devereaux	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of Dyer	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401

Table 31: Map Repositories – *(continued)*

Community	Address	City	State	Zip Code
Town of East Machias	TOWN OFFICE 32 CUTLER ROAD	EAST MACHIAS	ME	04630
City of Eastport	CITY HALL 78 HIGH STREET	EASTPORT	ME	04631
Township of Edmunds	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of Forest	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of Forest City	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of Fowler	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Grand Lake Stream Plantation	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of Greenlaw Chopping	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Town of Harrington	TOWN OFFICE 114 EAST MAIN STREET	HARRINGTON	ME	04643
Indian Township Reservation	8 KENNEBASIS ROAD	PRINCETON	ME	04668
Town of Jonesboro	TOWN OFFICE 23 STATION ROAD	JONESBORO	ME	04648
Town of Jonesport	TOWN OFFICE 70 SNARE CREEK LANE	JONESPORT	ME	04649
Township of Kossuth	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of Lambert Lake	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401

Table 31: Map Repositories – *(continued)*

Community	Address	City	State	Zip Code
Town of Lubec	TOWN OFFICE 40 SCHOOL STREET	LUBEC	ME	04652
Town of Machias	TOWN OFFICE 7 COURT STREET SUITE 1	MACHIAS	ME	04654
Town of Machiasport	TOWN OFFICE 8 UNITY SQUARE	MACHIASPORT	ME	04655
Township of Marion	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Town of Marshfield	TOWN OFFICE 187 NORTHFIELD ROAD	MARSHFIELD	ME	04654
Town of Meddybemps	CLERK AND TREASURER'S OFFICE 166A NORTH STREET	CALAIS	ME	04619
Town of Milbridge	TOWN OFFICE 22 SCHOOL STREET	MILBRIDGE	ME	04658
Town of Northfield	TOWN HALL 1940 NORTHFIELD ROAD	NORTHFIELD	ME	04654
Passamaquoddy Tribe at Pleasant Point	TRIBAL OFFICE 15 ELDERS WAY	PERRY	ME	04667
Town of Pembroke	TOWN OFFICE 48 OLD COUNTY ROAD	PEMBROKE	ME	04666
Town of Perry	TOWN OFFICE 898 U.S. ROUTE ONE	PERRY	ME	04667
Town of Princeton	TOWN OFFICE 15 DEPOT STREET	PRINCETON	ME	04668
Town of Robbinston	TOWN OFFICE 904 U.S. ROUTE ONE	ROBBINSTON	ME	04671
Town of Roque Bluffs	TOWN HALL 3 ROQUE BLUFFS ROAD	ROQUE BLUFFS	ME	04654
Township of Sakom	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Town of Steuben	TOWN OFFICE 294 U.S. ROUTE ONE	STEUBEN	ME	04680
T6 ND BPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401

Table 31: Map Repositories – *(continued)*

Community	Address	City	State	Zip Code
Township of T6 R1 NBPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of T8 R3 NBPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of T8 R4 NBPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of T11 R3 NBPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of T18 MD BPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of T19 ED BPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of T19 MD BPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of T24 MD BPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of T25 MD BPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of T26 ED BPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of T30 MD BPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401

Table 31: Map Repositories – *(continued)*

Community	Address	City	State	Zip Code
Township of T36 MD BPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of T37 MD BPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of T42 MD BPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Township of T43 MD BPP	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Town of Talmadge	CHAIRPERSON'S OFFICE 47 TALMADGE ROAD	TALMADGE	ME	04492
Town of Topsfield	TOWN OFFICE 48 NORTH ROAD	TOPSFIELD	ME	04490
Township of Trescott	LAND USE PLANNING COMMISSION 106 HOGAN ROAD SUITE 8	BANGOR	ME	04401
Town of Vanceboro	TOWN OFFICE 101 HIGH STREET	VANCEBORO	ME	04491
Town of Waite	LADIES AID BUILDING 21 OLD MILL ROAD	WAITE	ME	04492
Town of Wesley	TOWN OFFICE 2 WHINING PINES DRIVE	WESLEY	ME	04686
Town of Whiting	TOWN OFFICE 169 U.S. ROUTE 1	WHITING	ME	04691
Town of Whitneyville	TOWN OFFICE 42 SOUTH MAIN STREET	WHITNEYVILLE	ME	04654

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 32.

Table 32 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the state NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated

an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of state and local GIS data in their state.

Table 32: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	http://www.fema.gov
NFIP website	http://www.fema.gov/business/nfip
NFHL Dataset	http://msc.fema.gov
FEMA Region I	99 High Street, 6th Floor Boston, MA 02110 Telephone: (978) 461-5323
Other Federal Agencies	
USGS website	http://www.usgs.gov
Hydraulic Engineering Center website	http://www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	State National Floodplain Insurance Program (NFIP) Coordinator Sue Baker Maine State Planning Office 38 State House Station 184 State St. Augusta, ME 04333-0038 207-287-8063 FAX 207-287-6489 sue.baker@maine.gov
State GIS Coordinator	State GIS Coordinator Daniel Walters, GIS Administrator State of Maine Office of GIS Bureau of Information Services 71 Hospital Street, 125 State House Station Augusta, Maine 04333-0125 Phone: 207-624-9435 Fax: 207-287-3842 dan.walters@state.me.us

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 33 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 33: Bibliography and References

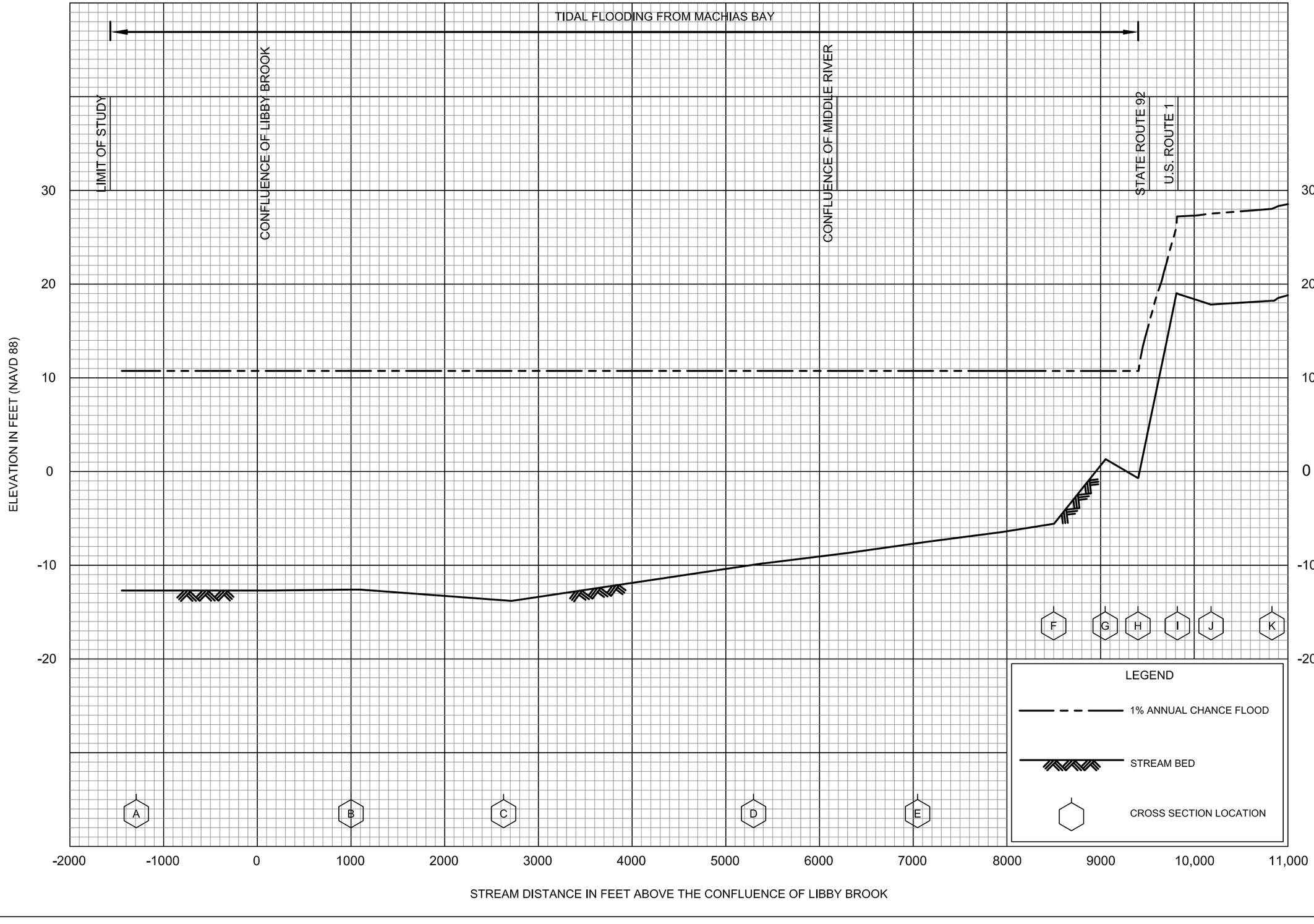
Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA	Federal Emergency Management Agency	*City of Calais Effective FIRM/FIS*	Federal Emergency Management Agency	Washington D.C.	08/3/1994	https://msc.fema.gov/
FEMA	Federal Emergency Management Agency	*Town of Addison Effective FIRM/FIS*	Federal Emergency Management Agency	Washington D.C.	07/16/1991	https://msc.fema.gov/
FEMA	Federal Emergency Management Agency	*Town of Alexander Effective FIRM/FIS*	Federal Emergency Management Agency	Washington D.C.	09/4/1985	https://msc.fema.gov/
FEMA	Federal Emergency Management Agency	*Town of Baileyville Effective FIRM/FIS*	Federal Emergency Management Agency	Washington D.C.	10/15/1981	https://msc.fema.gov/
FEMA	Federal Emergency Management Agency	*Town of Cherryfield Effective FIRM/FIS*	Federal Emergency Management Agency	Washington D.C.	04/2/1990	https://msc.fema.gov/
FEMA	Federal Emergency Management Agency	*Town of Jonesport Effective FIRM/FIS*	Federal Emergency Management Agency	Washington D.C.	05/3/1990	https://msc.fema.gov/
FEMA	Federal Emergency Management Agency	*Town of Machias Effective FIRM/FIS*	Federal Emergency Management Agency	Washington D.C.	11/18/1988	https://msc.fema.gov/

Table 33: Bibliography and References *(continued)*

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA	Federal Emergency Management Agency	*Town of Milbridge Effective FIRM/FIS*	Federal Emergency Management Agency	Washington D.C.	05/3/1990	https://msc.fema.gov/
FEMA	Federal Emergency Management Agency	*Town of Perry Effective FIRM/FIS*	Federal Emergency Management Agency	Washington D.C.	05/3/1993	https://msc.fema.gov/
FEMA	Federal Emergency Management Agency	*Town of Princeton Effective FIRM/FIS*	Federal Emergency Management Agency	Washington D.C.	05/15/2002	https://msc.fema.gov/
FEMA	Federal Emergency Management Agency	*Town of Robbinston Effective FIRM/FIS*	Federal Emergency Management Agency	Washington D.C.	05/3/1993	https://msc.fema.gov/
FEMA	Federal Emergency Management Agency	*Town of Cutler Effective FIRM/FIS*	Federal Emergency Management Agency	Washington D.C.	03/15/1993	https://msc.fema.gov/
FEMA	Federal Emergency Management Agency	*Town of Lubec Effective FIRM/FIS*	Federal Emergency Management Agency	Washington D.C.	04/15/1992	https://msc.fema.gov/
FEMA	FEMA Map Service Center	*Town of Machiasport Effective FIRM/FIS*	Federal Emergency Management Agency	Washington D.C.	08/5/1991	https://msc.fema.gov/

Table 33: Bibliography and References *(continued)*

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Goda 2000	World Scientific	*Ramdom Seas and Design of Maritime Structures*	Goda, Y.	Singapore	2000	
STARR 2014	STARR	*Coastal Analysis*	STARR	Cambridge, MA	1/31/2014	
USACE 2012	STARR	*Tidal flood profiles New England coastline*	STARR		2012	
USACE 2010	USACE	*HEC-RAS (Version 4.1.0)*	USACE	Davis CA	2010	
FEMA	Federal Emergency Management Agency	*Coastal Hazard Analysis*	Federal Emergency Management Agency	Washington D.C.	August 2007	



FLOOD PROFILES

MACHIAS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

01P

ELEVATION IN FEET (NAVD 88)

50
40
30
20
10

LIMIT OF STUDY

L N P M O Q R S T U V W X Y Z

LEGEND

1% ANNUAL CHANCE FLOOD

STREAM BED

CROSS SECTION LOCATION

11,000 12,000 13,000 14,000 15,000 16,000 17,000 18,000 19,000 20,000 21,000 22,000 23,000

STREAM DISTANCE IN FEET ABOVE THE CONFLUENCE OF LIBBY BROOK

FLOOD PROFILES

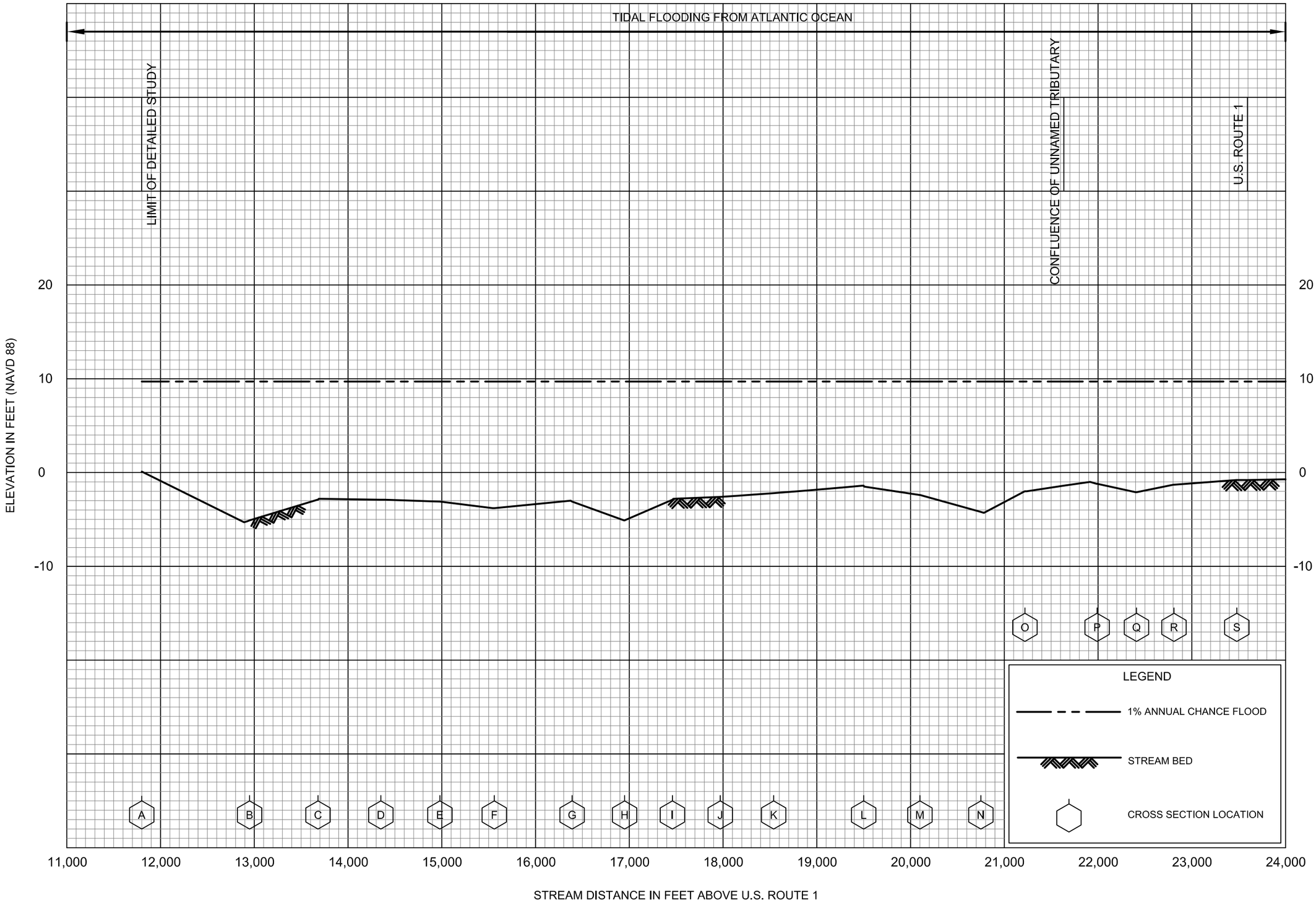
MACHIAS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

02P



FLOOD PROFILES

NARRAGUAGUS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

FLOOD PROFILES

NARRAGUAGUS RIVER

ELEVATION IN FEET (NAVD 88)

70
60
50
40
30
20
10
0
-10

NORTH STREET

DAM

RAILROAD

CONFLUENCE OF WEST BRANCH NARRAGUAGUS RIVER

T U V W X Y Z AA AB AC AD AE AF AG AH AI AJ AK AL AM

LEGEND

1% ANNUAL CHANCE FLOOD

STREAM BED

CROSS SECTION LOCATION

24,000 25,000 26,000 27,000 28,000 29,000 30,000 31,000 32,000 33,000 34,000 35,000 36,000 37,000

STREAM DISTANCE IN FEET ABOVE U.S. ROUTE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

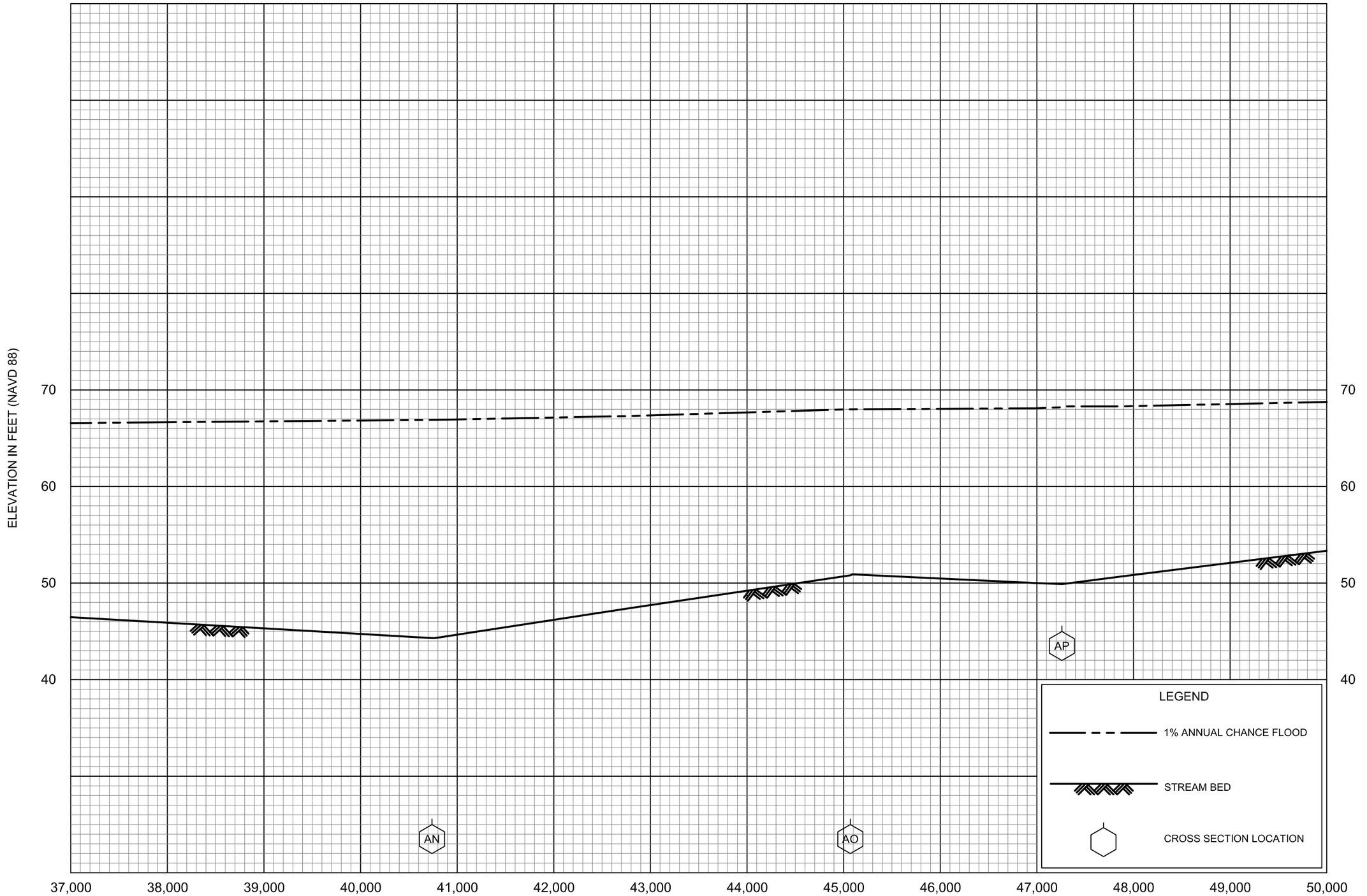
WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

04P

FLOOD PROFILES

NARRAGUAGUS RIVER

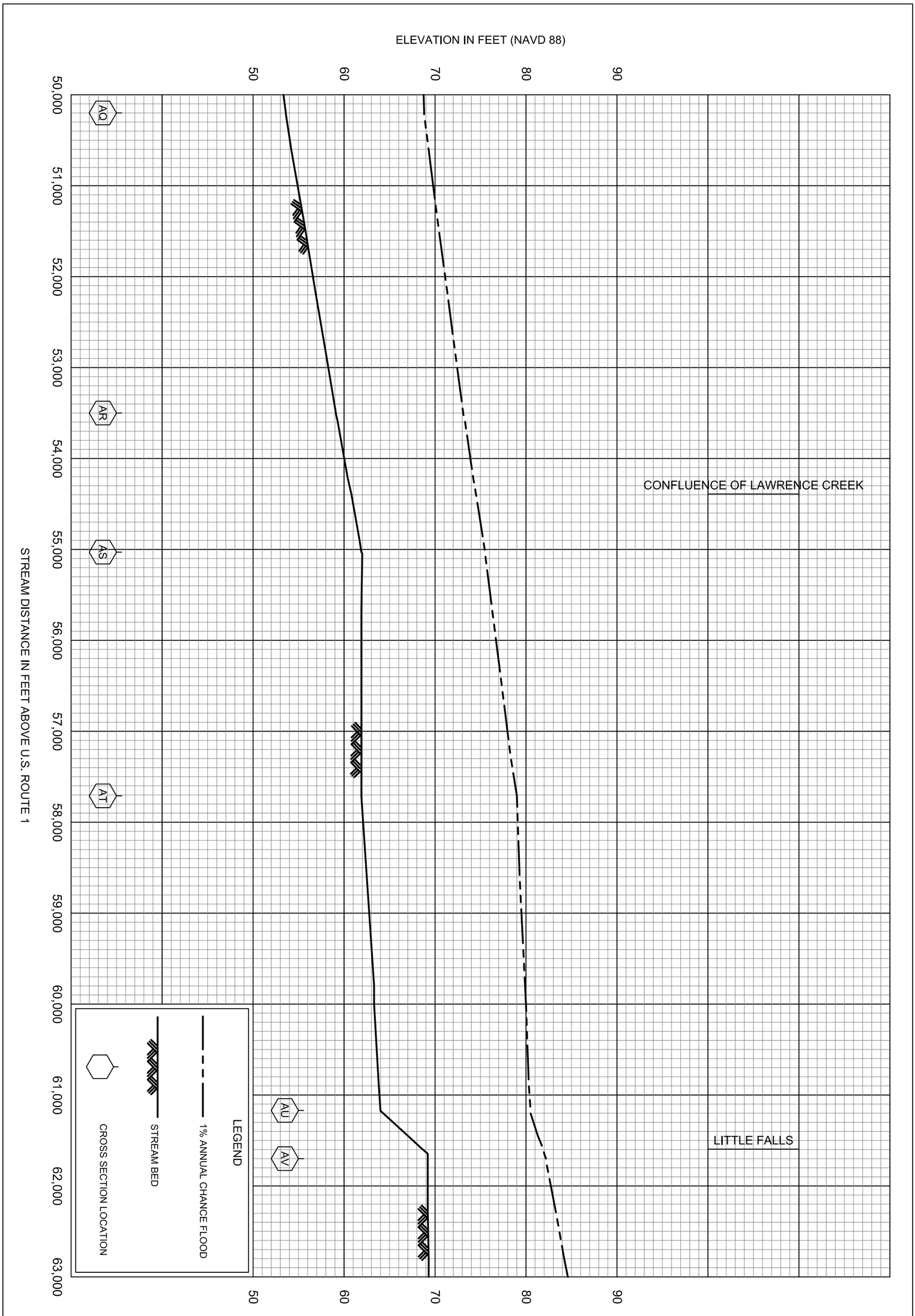


FEDERAL EMERGENCY MANAGEMENT AGENCY

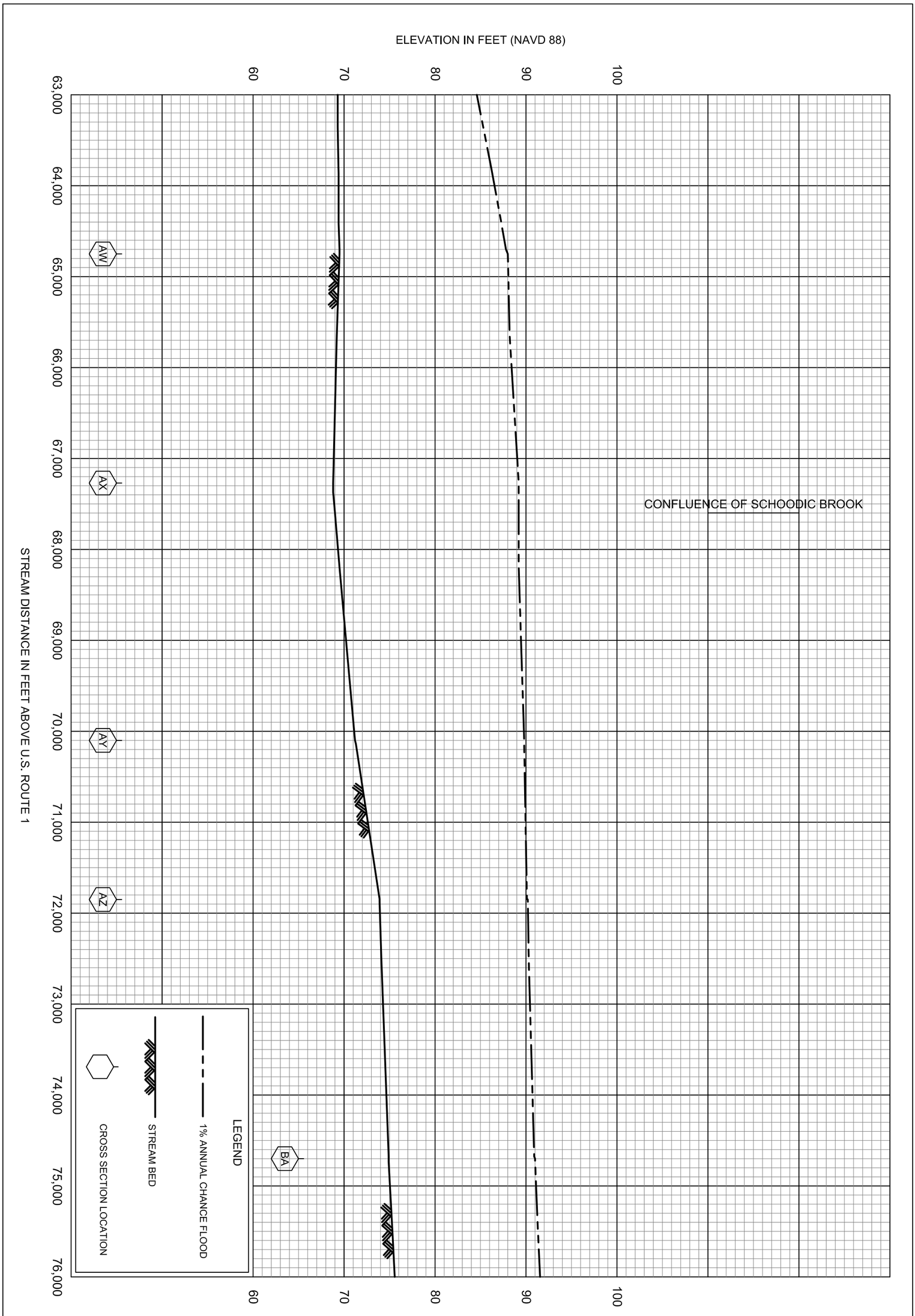
WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

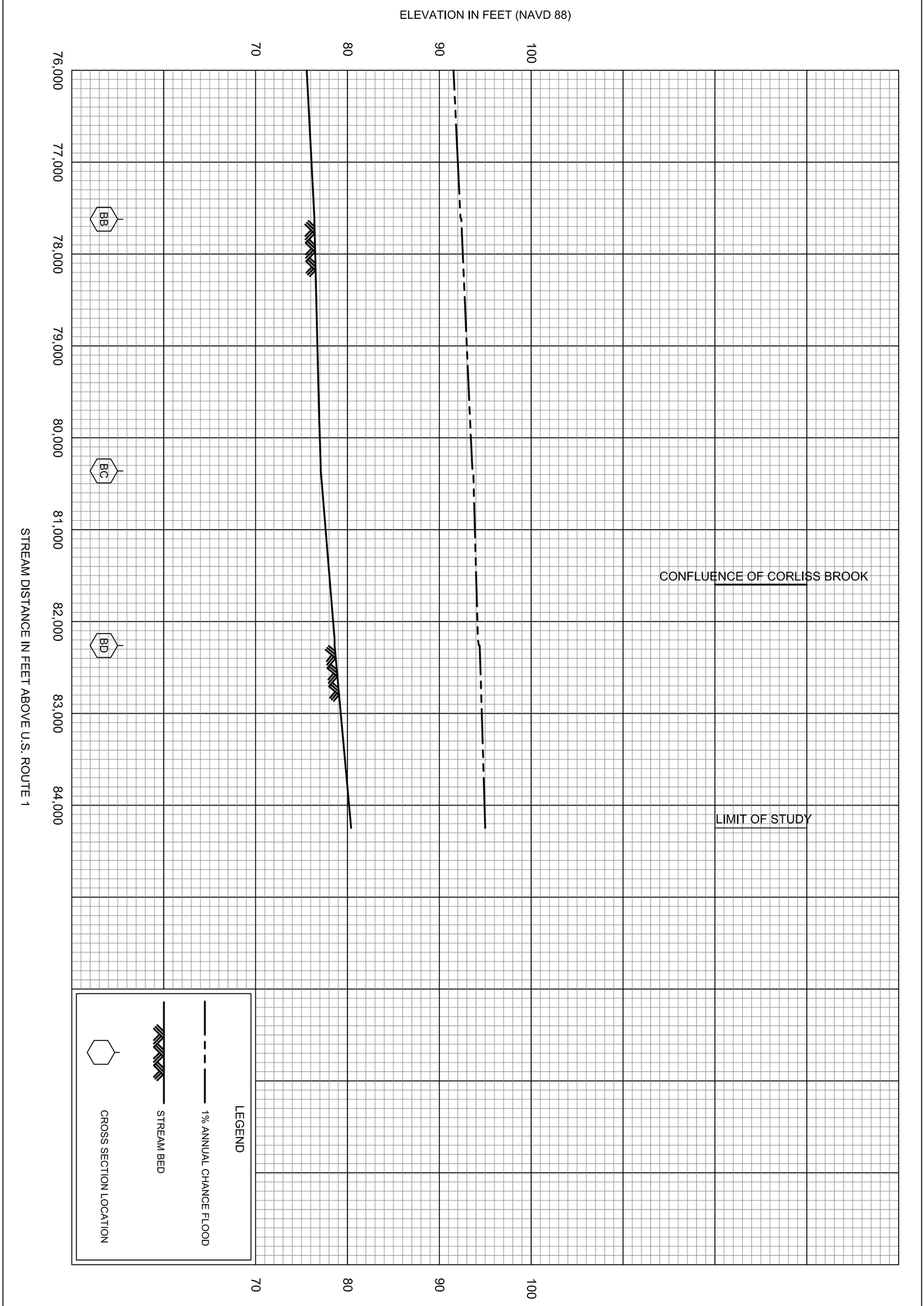
05P



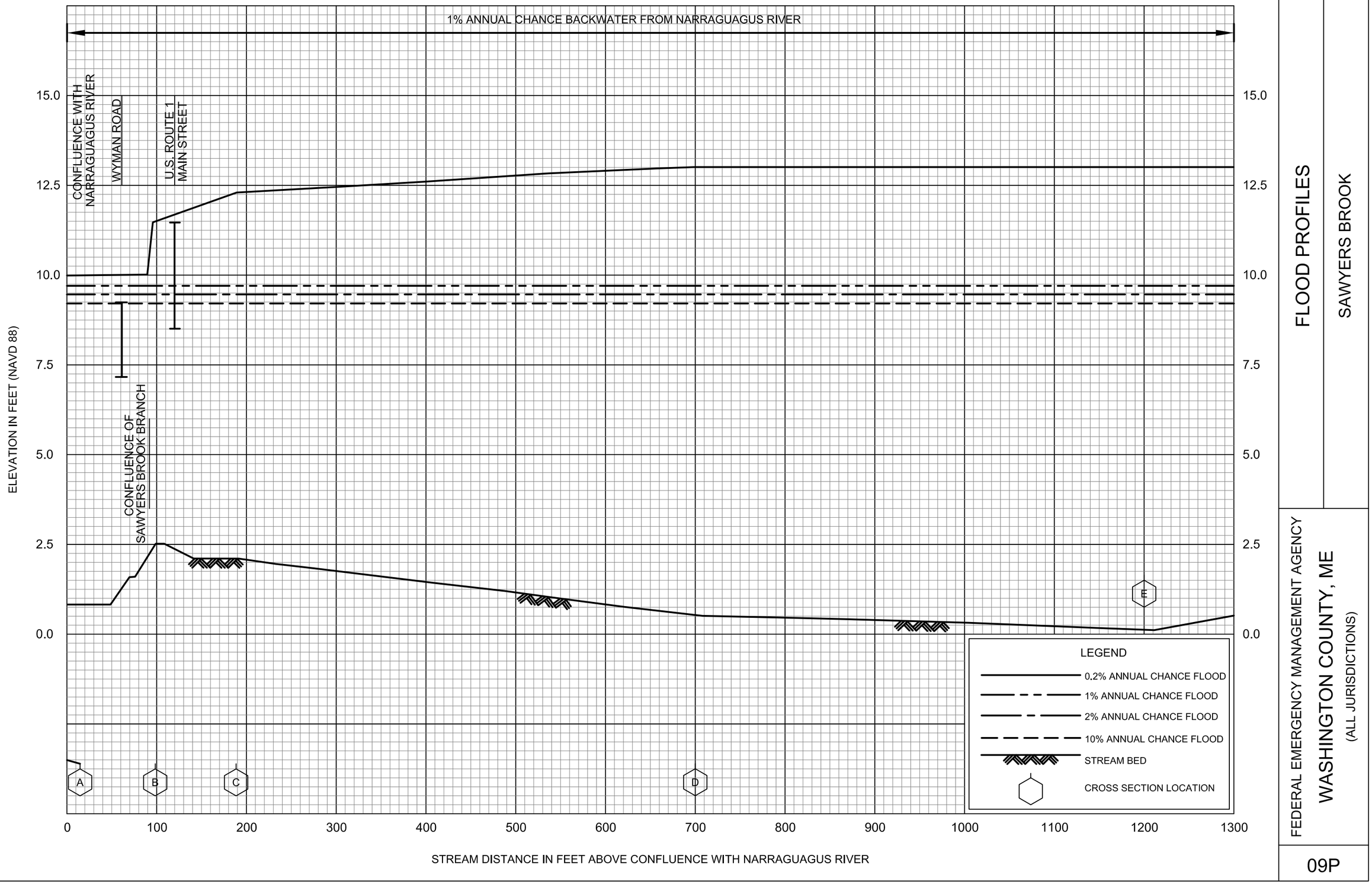
06P	FEDERAL EMERGENCY MANAGEMENT AGENCY WASHINGTON COUNTY, ME (ALL JURISDICTIONS)	FLOOD PROFILES NARRAGUAGUS RIVER



07P	FEDERAL EMERGENCY MANAGEMENT AGENCY WASHINGTON COUNTY, ME (ALL JURISDICTIONS)	FLOOD PROFILES NARRAGUAGUS RIVER



08P	FEDERAL EMERGENCY MANAGEMENT AGENCY WASHINGTON COUNTY, ME (ALL JURISDICTIONS)	FLOOD PROFILES NARRAGUAGUS RIVER



FLOOD PROFILES

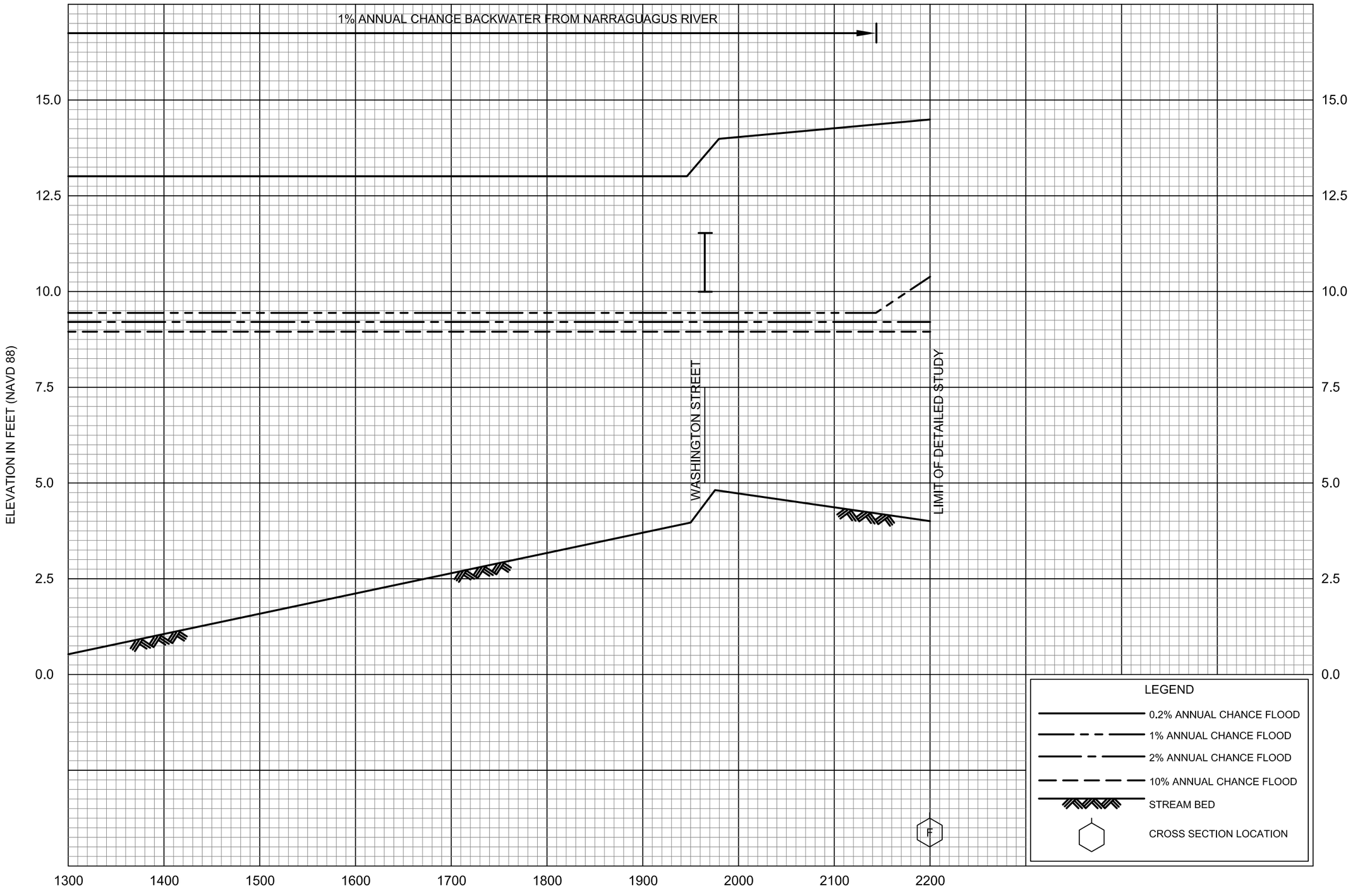
SAWYERS BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

09P



FLOOD PROFILES

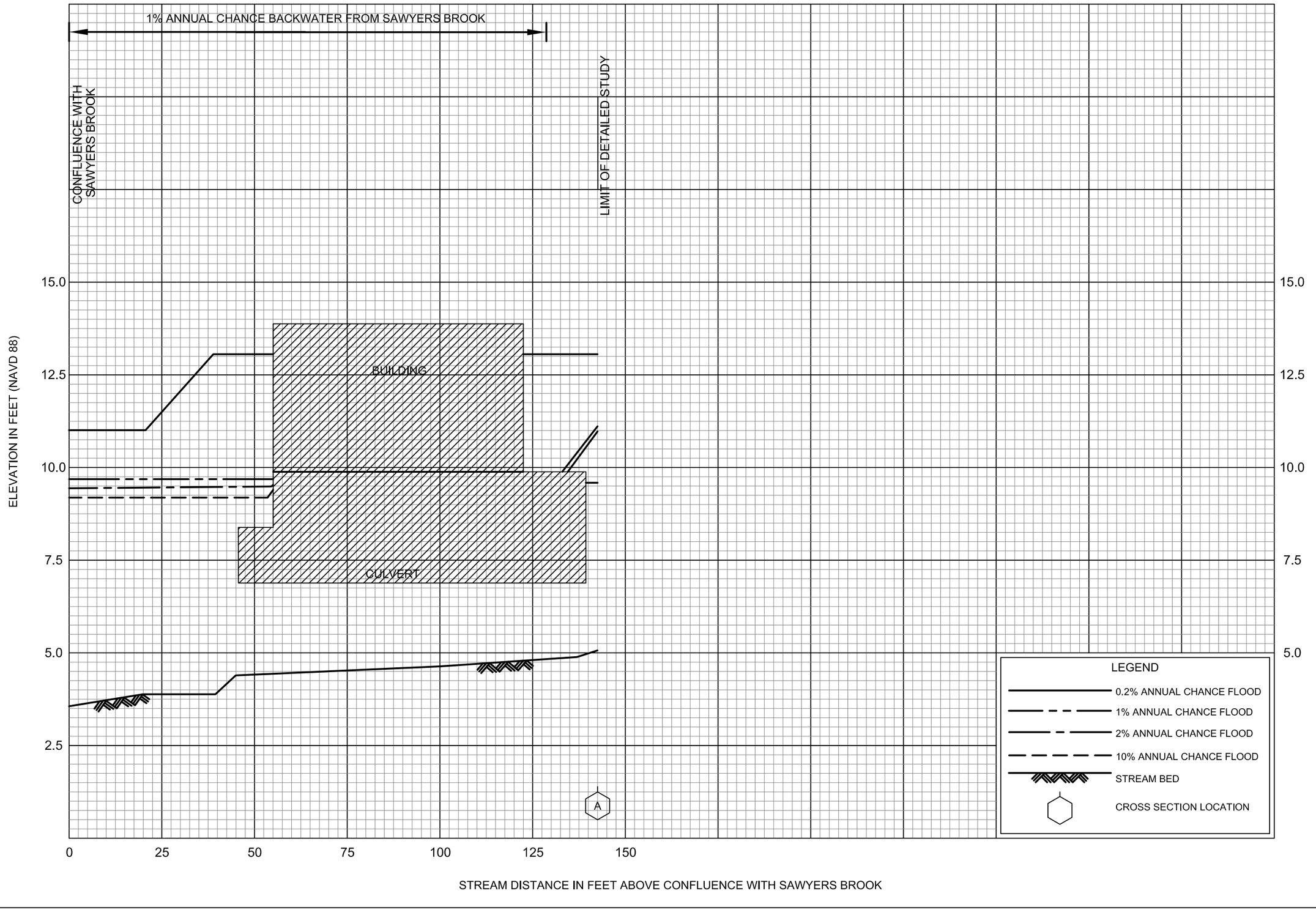
SAWYERS BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

10P



FLOOD PROFILES

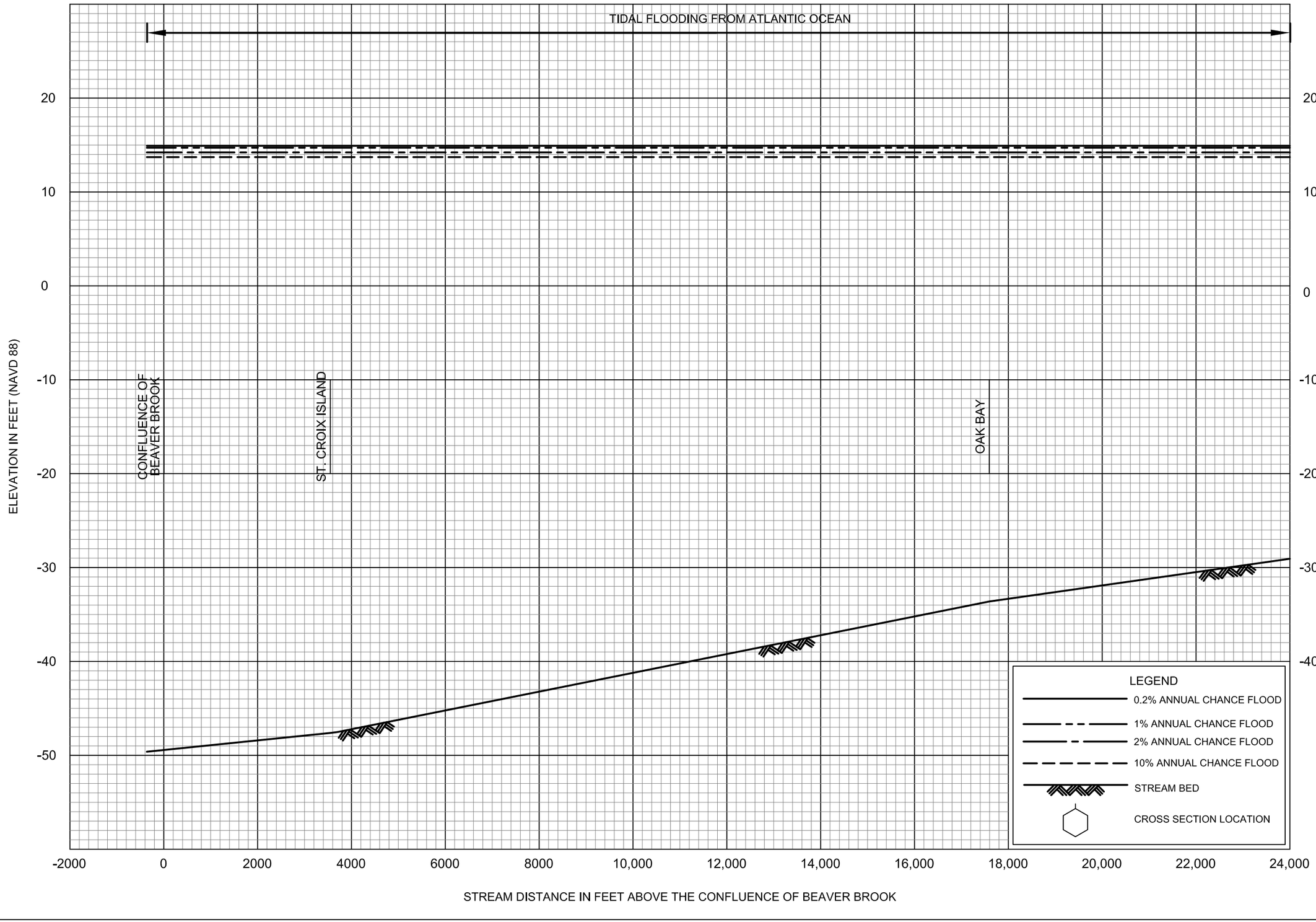
SAWYERS BROOK BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

11P



FLOOD PROFILES

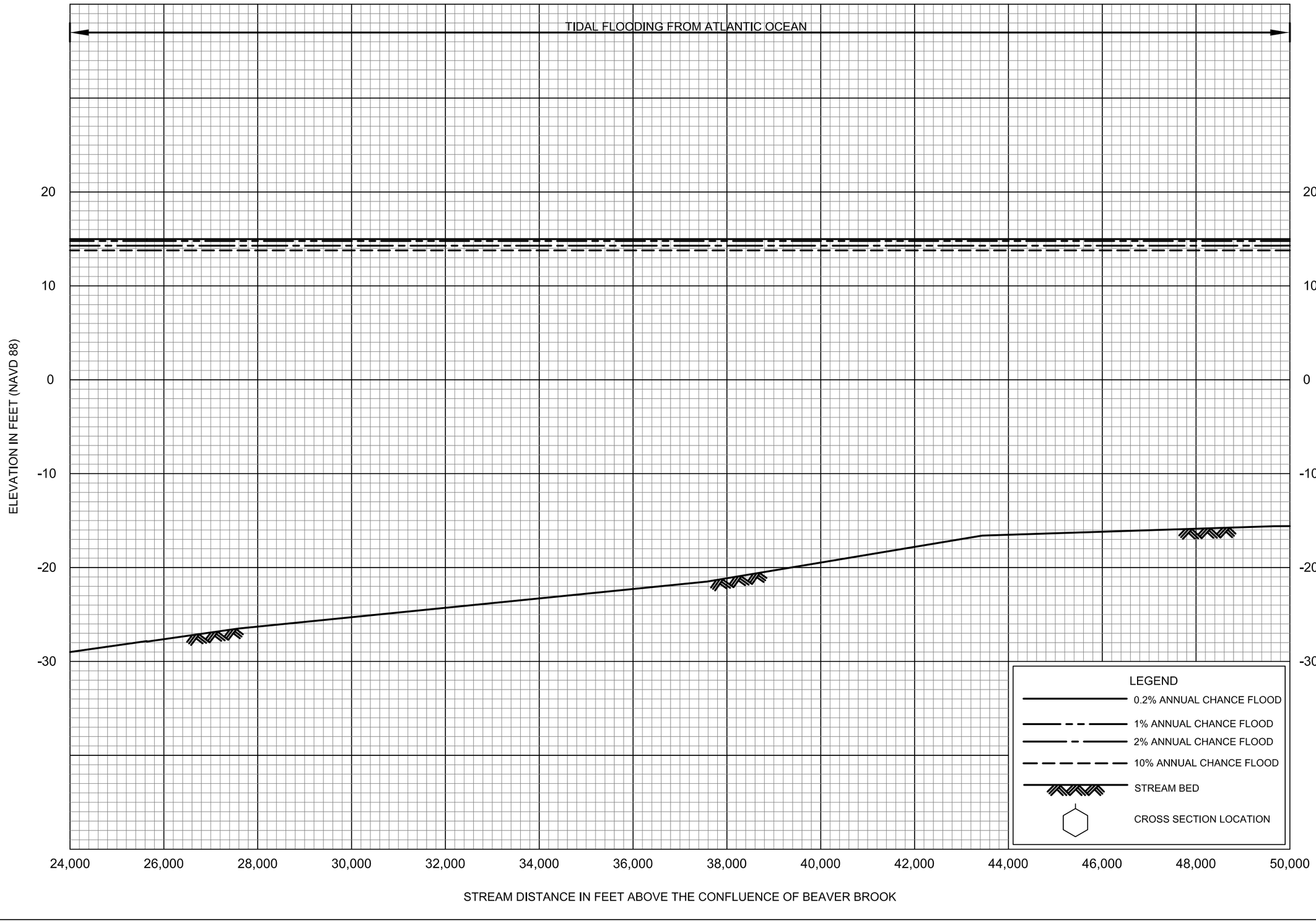
ST. CROIX RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

12P



FLOOD PROFILES

ST. CROIX RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

13P

TIDAL FLOODING FROM ATLANTIC OCEAN

ST. STEPHEN CALAIS BRIDGE

MILL TOWN POWER PLANT
SALMON FALLS BRIDGE

ELEVATION IN FEET (NAVD 88)

60
50
40
30
20
10
0
-10
-20

50,000 52,000 54,000 56,000 58,000 60,000 62,000 64,000

STREAM DISTANCE IN FEET ABOVE THE CONFLUENCE OF BEAVER BROOK

A B C D

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

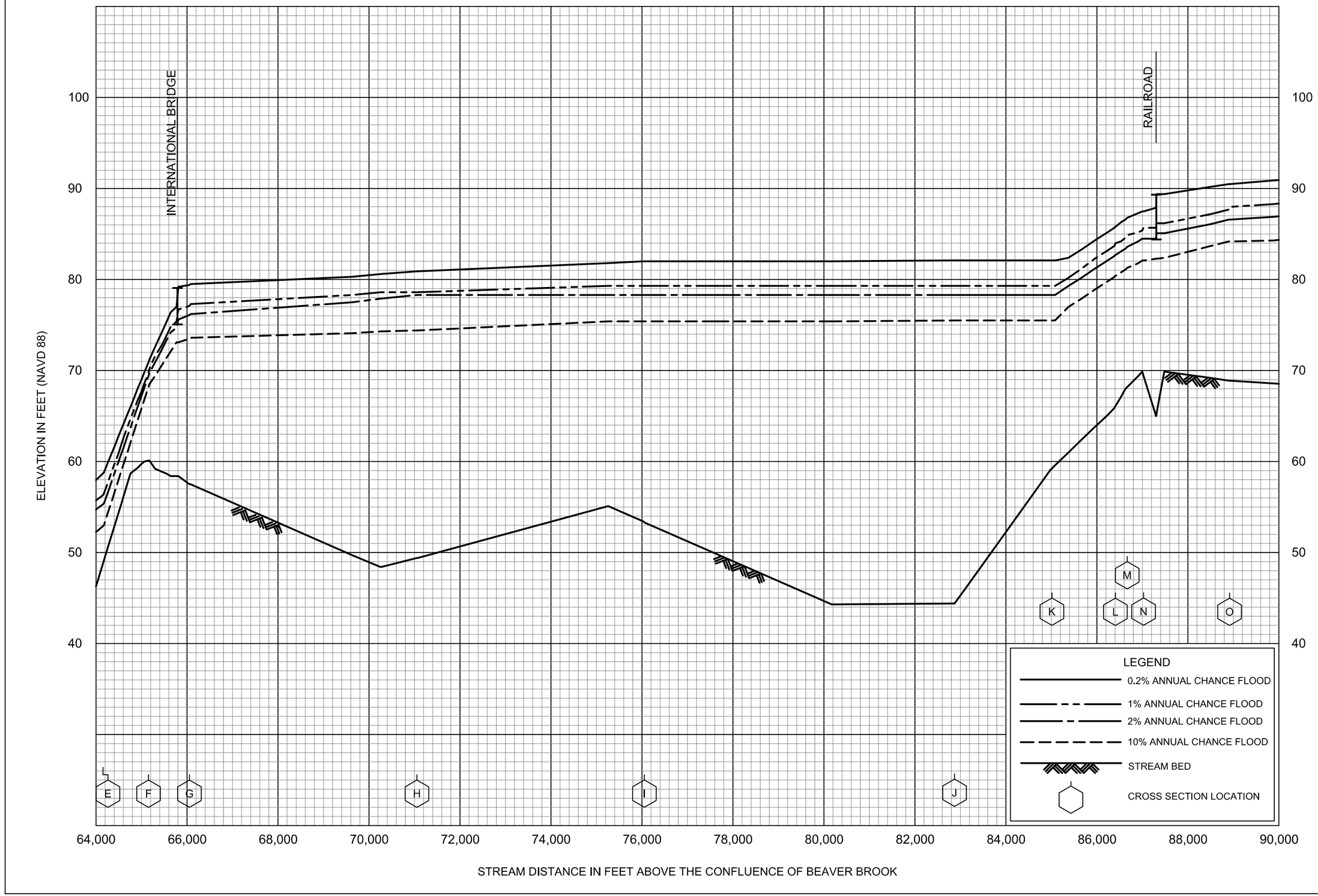
FLOOD PROFILES

ST. CROIX RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)



FLOOD PROFILES

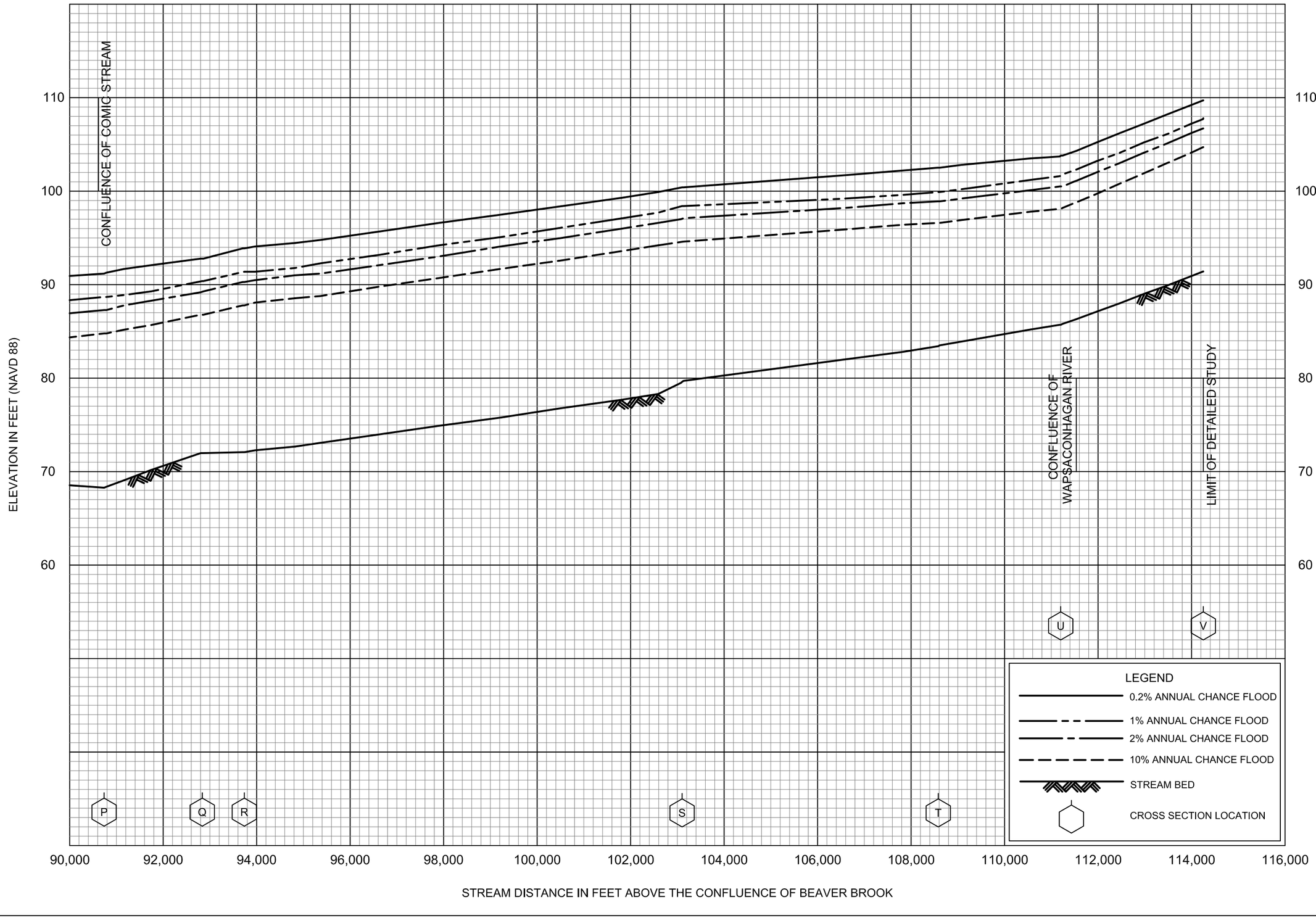
ST. CROIX RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

15P



FLOOD PROFILES

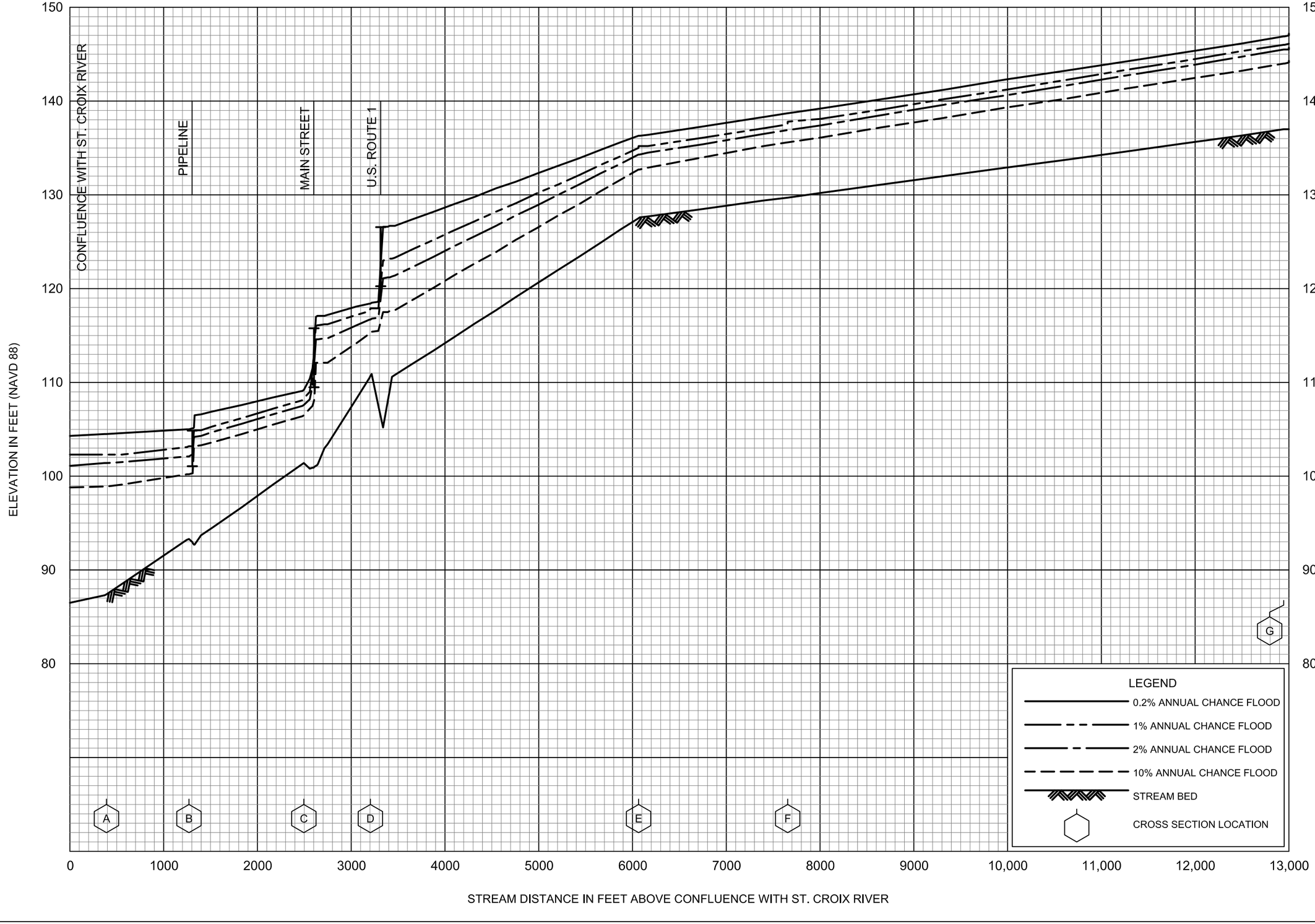
ST. CROIX RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

16P



FLOOD PROFILES

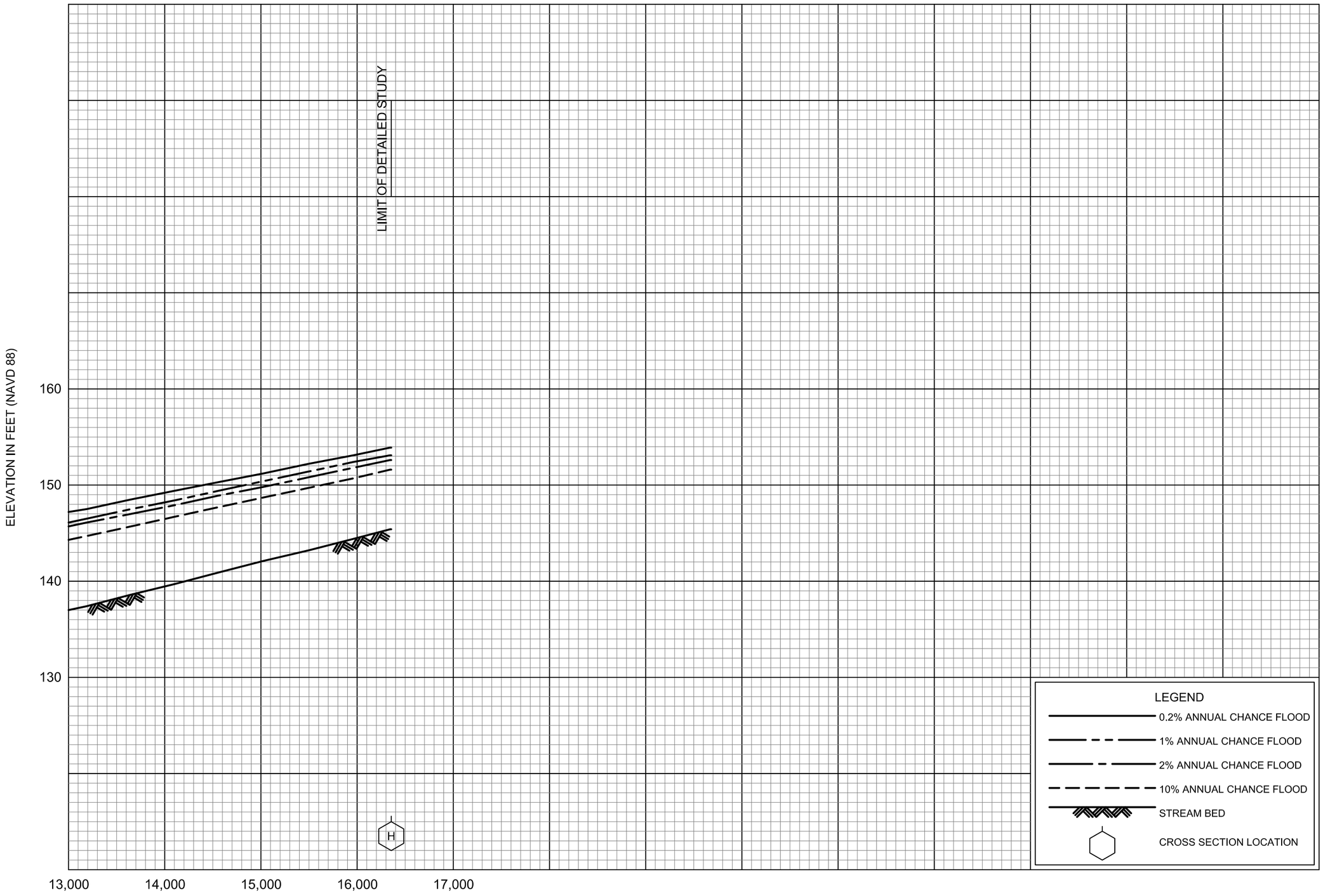
WAPSACONHAGAN BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

17P



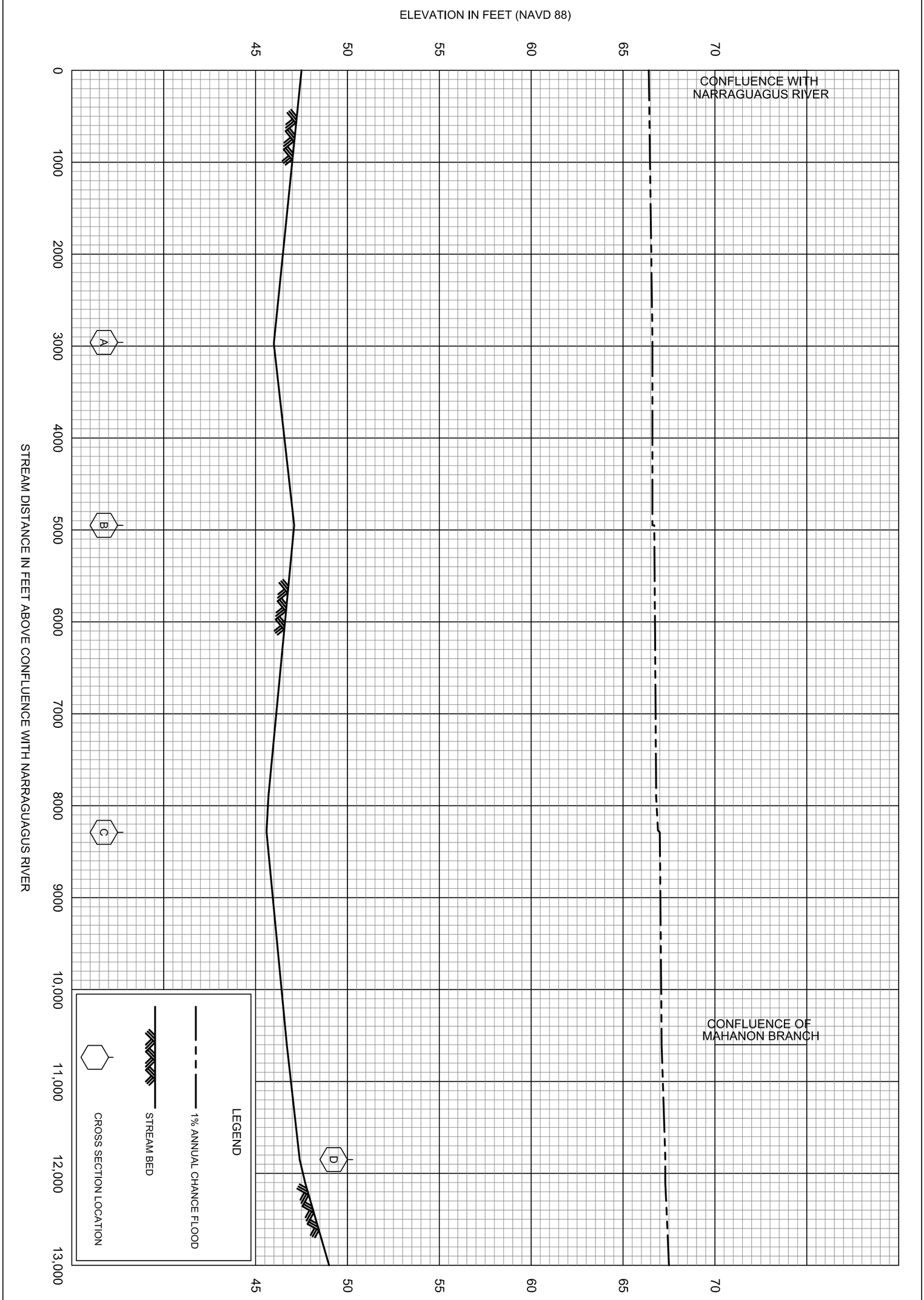
FLOOD PROFILES

WAPSACONHAGAN BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)



19P

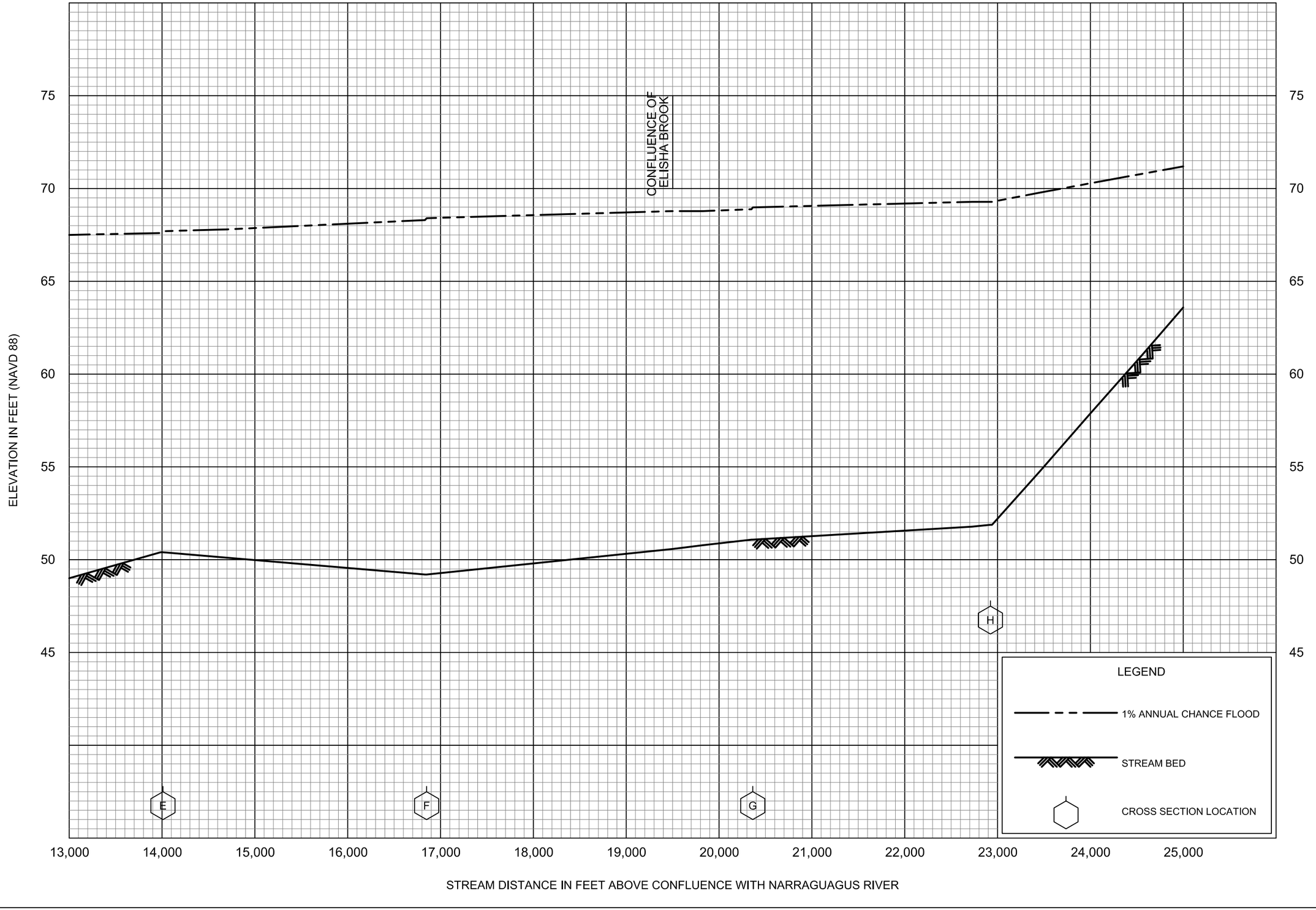
FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

FLOOD PROFILES

WEST BRANCH NARRAGUAGUS RIVER



FLOOD PROFILES

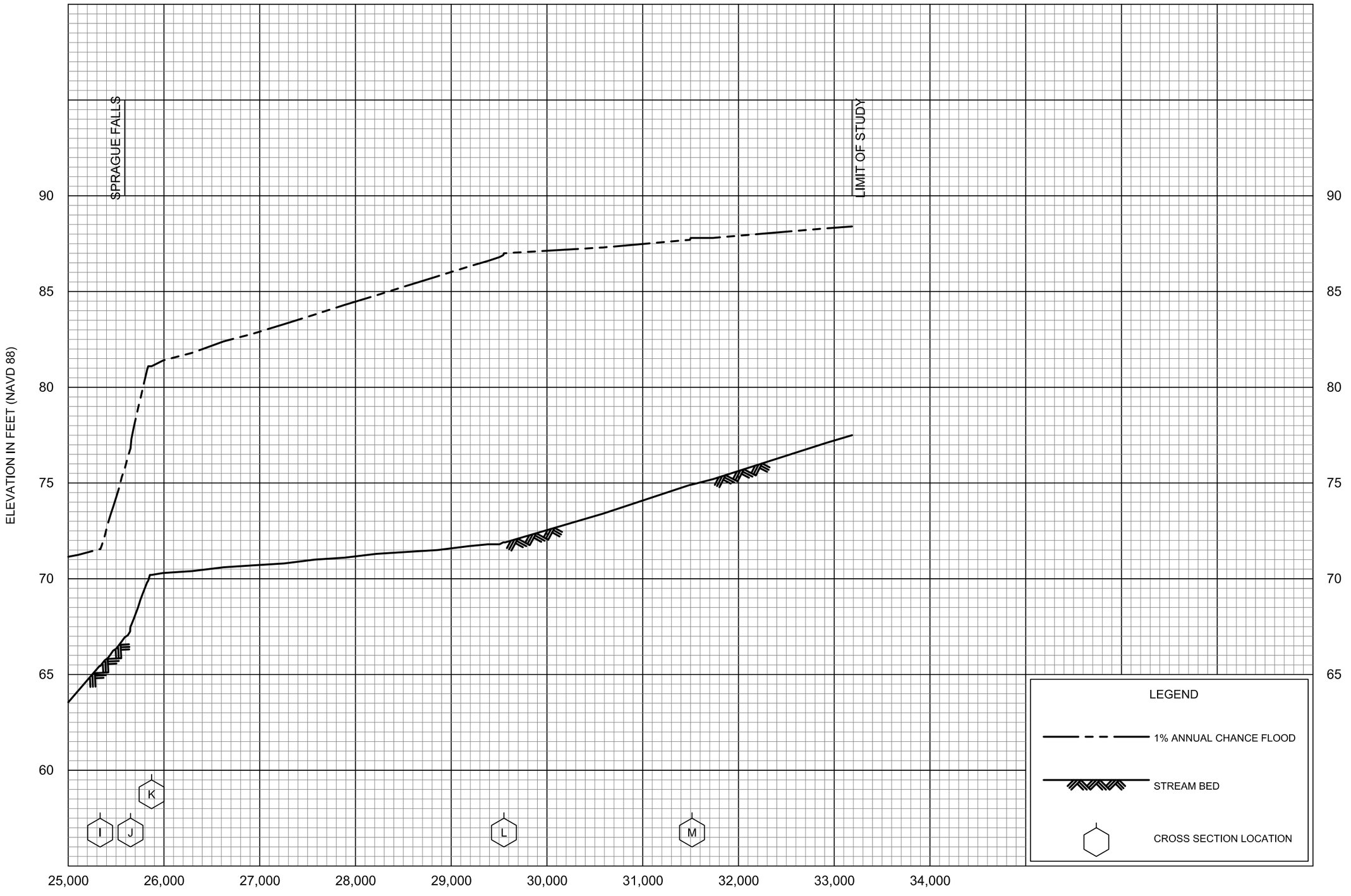
WEST BRANCH NARRAGUAGUS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)

20P



FLOOD PROFILES

WEST BRANCH NARRAGUAGUS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON COUNTY, ME

(ALL JURISDICTIONS)