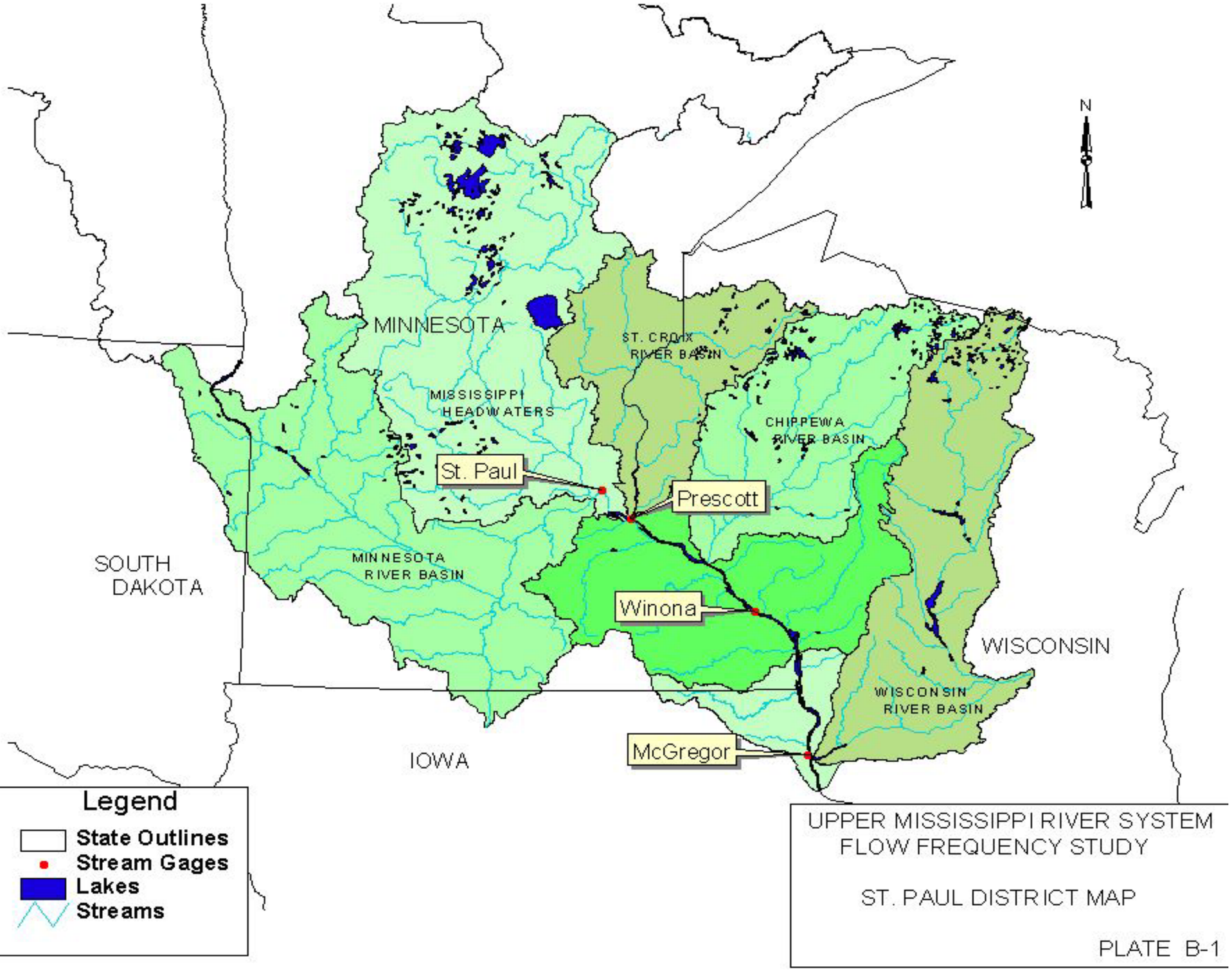
Upper Mississippi River
Flow Frequency Study

PLATES

St. Paul District



UPPER MISSISSIPPI RIVER SYSTEM
FLOW FREQUENCY STUDY

ST. PAUL DISTRICT MAP

PLATE B-1

St. Paul District
GIS CENTER
US Army Corps of Engineers®

UPPER MISSISSIPPI RIVER SYSTEM

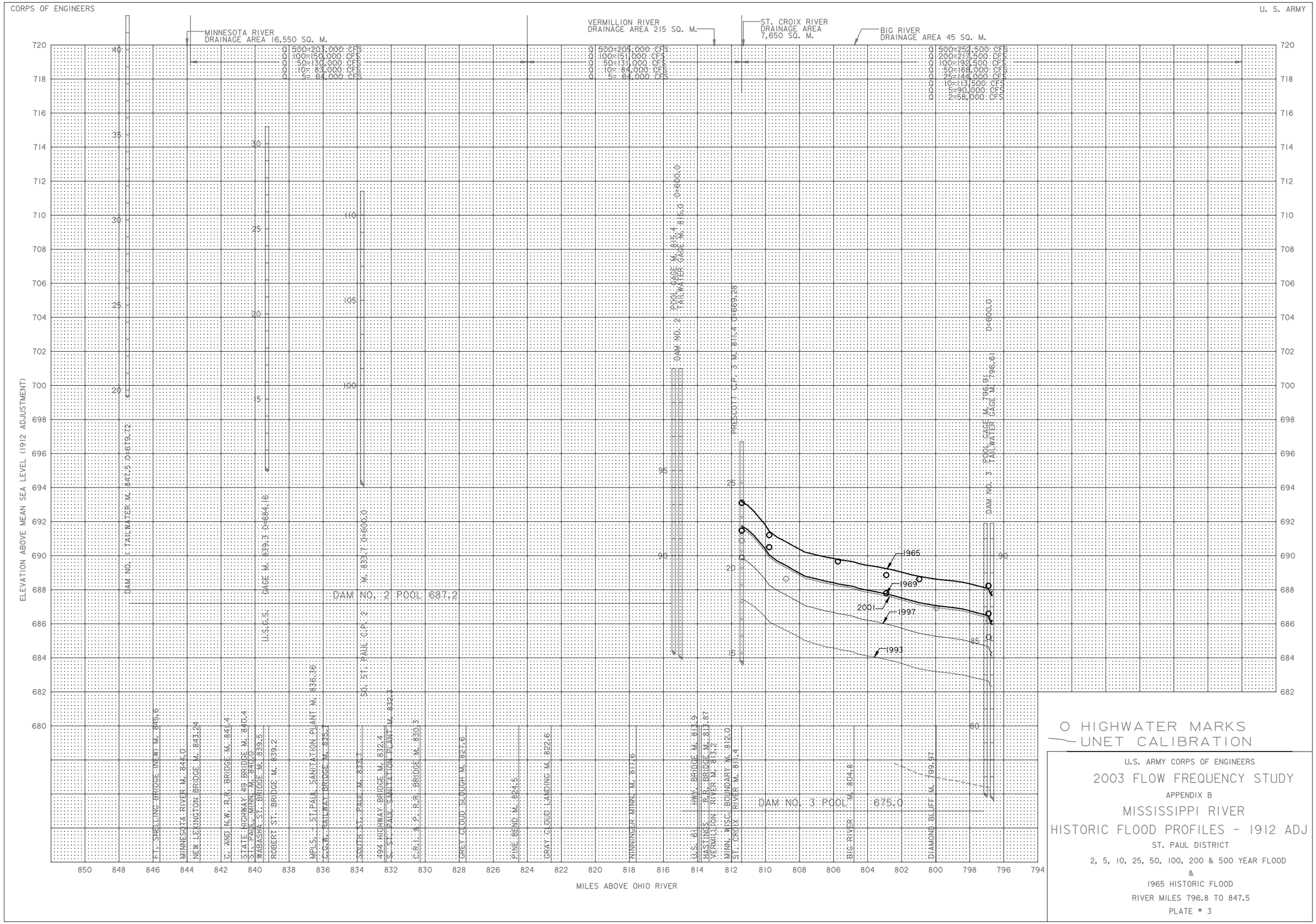
9 - Foot Navigation Channel Project Area

20 0 20 40 Miles

Project Types
Flood Control
EMP
Recreation Site
City
Lock and Dam
Project Locations
Land
Water
County Boundary
State Boundary

N W E S

PLATE # 2



U.S. ARMY CORPS OF ENGINEERS

2003 FLOW FREQUENCY STUDY

APPENDIX B

MISSISSIPPI RIVER

HISTORIC FLOOD PROFILES - 1912 ADJ

ST. PAUL DISTRICT

2, 5, 10, 25, 50, 100, 200 & 500 YEAR FLOOD

&

1965 HISTORIC FLOOD

RIVER MILES 796.8 TO 847.5

PLATE # 3

CORPS OF ENGINEERS

U. S. ARMY

CANNON RIVER
DRAINAGE AREA 1,440 SQ. M.

Q 500=257,000 CFS
Q 200=222,000 CFS
Q 100=197,000 CFS
Q 50=172,500 CFS
Q 25=148,500 CFS
Q 10=117,500 CFS
Q 5= 94,000 CFS
Q 2= 60,500 CFS

RUSH RIVER
DRAINAGE AREA 240 SQ. M.

Q 500=257,000 CFS
Q 200=222,000 CFS
Q 100=197,000 CFS
Q 50=172,500 CFS
Q 25=148,500 CFS
Q 10=117,500 CFS
Q 5= 94,000 CFS
Q 2= 60,500 CFS

CHIPPEWA RIVER
DRAINAGE AREA 9,480 SQ. M.

Q 500=259,000 CFS
Q 200=224,000 CFS
Q 100=199,000 CFS
Q 50=174,000 CFS
Q 25=150,000 CFS
Q 10=119,000 CFS
Q 5= 95,500 CFS
Q 2= 62,000 CFS

BUFFALO RIVER
DRAINAGE AREA
465 SQ. M.

Q 500=290,000 CFS
Q 200=255,000 CFS
Q 100=230,000 CFS
Q 50=204,000 CFS
Q 25=179,000 CFS
Q 10=146,000 CFS
Q 5=120,000 CFS
Q 2= 82,000 CFS

ZUMBRO RIVER
DRAINAGE AREA
1,380 SQ. M.

Q 500=291,000CFS
Q 200=257,000CFS
Q 100=231,000CFS
Q 50=206,000CFS
Q 25=181,000CFS
Q 10=147,500 CFS
Q 5=121,500 CFS
Q 2= 83,000 CFS

WHITEWATER RIVER
DRAINAGE AREA 302 SQ. M.

Q 500=296,000 CFS
Q 200=261,500 CFS
Q 100=236,000 CFS
Q 50=210,500 CFS
Q 25=185,500 CFS
Q 10=152,000 CFS
Q 5=125,500 CFS
Q 2= 86,000 CFS

Q 500=298,500 CFS
Q 200=264,000 CFS
Q 100=238,500 CFS
Q 50=213,000 CFS
Q 25=187,500 CFS
Q 10=154,000 CFS
Q 5=127,500 CFS
Q 2= 88,000 CFS

1965
2001
1969
1997
1993

DAM NO. 3
POOL 675.0

DAM NO. 4 POOL 667.0

DAM NO. 5 POOL 660.0

POOL GAGE M. 796.81
TAILWATER GAGE M. 796.61
0=600.0

RED WING, MINN. M. 790.9 0=665.13

LAKE CITY, MINN. M. 772.83 0=600.0

WABASHA GAGE M. 760.45
0=600.0

DAM NO. 4 POOL M. 752.95
TAILWATER M. 752.6
0=600.0

C.P. 5 M. 748.5 0=600.0

POOL GAGE M. 738.27
TAILWATER GAGE M. 737.90
0=600.0

DAM NO. 3

RED WING, MINN. M. 790.97

BAY CITY, WIS. M. 786.19

CANNON RIVER M. 794.67

RUSH RIVER M. 780.19

FRONTENAC, MINN. M. 779.9

LAKE CITY, MINN. M. 772.56

PEPIN, WIS. M. 767.61

CHIPPEWA RIVER M. 762.08

STATE HIGHWAY 25 BRIDGE M. 760.21

WABASHA, MINN. M. 759.92

TEEPEE ON A POINT M. 756.1

BUFFALO (BEEF) RIVER M. 754.53

ALMA, WIS. M. 752.6

ZUMBRO RIVER M. 750.08

BUFFALO, WIS. M. 744.0

WHITEWATER RIVER M. 742.5

ELEVATION ABOVE MEAN SEA LEVEL (1912 ADJUSTMENT)

MILES ABOVE OHIO RIVER

O HIGHWATER MARKS
UNET CALIBRATION

U.S. ARMY CORPS OF ENGINEERS

2003 FLOW FREQUENCY STUDY

APPENDIX B

MISSISSIPPI RIVER
HISTORIC FLOOD PROFILES - 1912 ADJ

ST. PAUL DISTRICT

2, 5, 10, 25, 50, 100, 200 & 500 YEAR FLOOD
&
1965 HISTORIC FLOOD
RIVER MILES 737.9 TO 796.7
PLATE * 4

CORPS OF ENGINEERS

U. S. ARMY

TREMPEALEAU RIVER DRAINAGE AREA 750 SQ. M.

Q 500=298,500 CFS
Q 200=264,000 CFS
Q 100=238,500 CFS
Q 50=213,000 CFS
Q 25=187,500 CFS
Q 10=154,000 CFS
Q 5=127,500 CFS
Q 2=88,000 CFS

BLACK RIVER CAHNNEL DRAINAGE AREA 2,250 SQ. M.

Q 500=300,000 CFS
Q 200=266,000 CFS
Q 100=240,000 CFS
Q 50=215,000 CFS
Q 25=189,500 CFS
Q 10=156,000 CFS
Q 5=129,000 CFS
Q 2=89,500 CFS

LACROSSE RIVER DRAINAGE AREA 480 SQ. M.

Q 500=303,000 CFS
Q 200=269,000 CFS
Q 100=244,000 CFS
Q 50=219,000 CFS
Q 25=194,000 CFS
Q 10=160,000 CFS
Q 5=133,000 CFS
Q 2= 93,000 CFS

ROOT RIVER DRAINAGE AREA 1660 SQ. M.

Q 500=304,000 CFS
Q 200=270,000 CFS
Q 100=245,000 CFS
Q 50=220,000 CFS
Q 25=195,000 CFS
Q 10=161,000 CFS
Q 5=134,000 CFS
Q 2=94,000 CFS

COON CREEK DRAINAGE AREA 140 SQ. M.

Q 500=306,500 CFS
Q 200=273,000 CFS
Q 100=248,000 CFS
Q 50=223,000 CFS
Q 25=198,000 CFS
Q 10=164,500 CFS
Q 5=137,500 CFS
Q 2=97,000 CFS

WINONA, MN
FEDERAL LEVEE
TOP OF LEVEE PROFILE

DAM NO. 5
POOL 660.0

DAM NO. 5A POOL 651.0

DAM NO. 6 POOL 645.5

DAM NO. 7 POOL 639.0

DAM NO. 8 POOL 631.0

1965
2001
1969
1997
1993

ELEVATION ABOVE MEAN SEA LEVEL (1912 ADJUSTMENT)

MILES ABOVE OHIO RIVER

O HIGHWATER MARKS
UNET CALIBRATION

U.S. ARMY CORPS OF ENGINEERS

2003 FLOW FREQUENCY STUDY

APPENDIX B

MISSISSIPPI RIVER
HISTORIC FLOOD PROFILES - 1912 ADJ

ST. PAUL DISTRICT

2, 5, 10, 25, 50, 100, 200 & 500 YEAR FLOOD
&
1965 HISTORIC FLOOD
RIVER MILES 679.08 TO 737.9

PLATE * 5

CORPS OF ENGINEERS

U. S. ARMY

BAD AXE RIVER DRAINAGE AREA 170 SQ. M.

UPPER IOWA RIVER DRAINAGE AREA 1,060 SQ. M.

YELLOW RIVER DRAINAGE AREA 245 SQ. M.

WISCONSIN RIVER DRAINAGE AREA 11,700 SQ. M.

Q 500=306,500 CFS
Q 200=273,000 CFS
Q 100=248,000 CFS
Q 50=223,000 CFS
Q 25=198,000 CFS
Q 10=164,500 CFS
Q 5=137,500 CFS
Q 2=97,000 CFS

Q 500=309,000 CFS
Q 200=276,000 CFS
Q 100=251,000 CFS
Q 50=226,000 CFS
Q 25=201,000 CFS
Q 10=167,500 CFS
Q 5=140,500 CFS
Q 2=100,000 CFS

Q 500=352,000 CFS
Q 200=318,000 CFS
Q 100=289,000 CFS
Q 50=262,000 CFS
Q 25=234,500 CFS
Q 10=197,000 CFS
Q 5=167,000 CFS
Q 2=120,500 CFS

1965
2001
1969
1993
1997

Guttenberg, Iowa
Federal Levee
Top of Levee Profile

DAM NO. 9 POOL 620.0

DAM NO. 10 POOL 615.2 GAGE 0=600.0
DAM NO. 10 TAILWATER M. 614.8

DAM NO. 8 POOL M. 679.39 GAGE 0=600.0
DAM NO. 8 TAILWATER M. 678.94

GAGE 0=600.0

GAGE 0=612.28

DAM NO. 9 POOL M. 648.09 GAGE 0=600.0
DAM NO. 9 TAILWATER M. 647.72

GAGE 0=600.0

GAGE 0=605.3

GAGE 0=602.6

BAGLEY, WIS. M. 623.15

DAM NO. 10 POOL 611.0

ELEVATION ABOVE MEAN SEA LEVEL (1912 ADJUSTMENT)

MILES ABOVE OHIO RIVER

GENOA, WIS. M. 679.69
BAD AXE RIVER M. 675.10
MINN. - IA. BOUNDARY M. 673.9
VICTORY, WIS. M. 672.97
UPPER IOWA RIVER M. 671.08
DESOTO, WIS. M. 667.59
STATE HIGHWAY #2 BRIDGE M. 663.42
LANSING, IA. (C.P. 01 M. 663.0
HARPER'S FERRY, IA. M. 645.89
E. WAUCON JCT., IA. M. 641.07
YELLOW RIVER M. 637.7
PRAIRIE DUCHIEN, WIS. M. 635.03
FEDERAL HIGHWAY 18 BRIDGE M. 634.72
MCGREGOR, IA. M. 633.6
WISCONSIN RIVER M. 631.9
WYALUSING, WIS. M. 627.5
CLAYTON, IA. (C.P. 10) M. 624.8

O HIGHWATER MARKS
UNET CALIBRATION

U.S. ARMY CORPS OF ENGINEERS

2003 FLOW FREQUENCY STUDY

APPENDIX B

MISSISSIPPI RIVER

HISTORIC FLOOD PROFILES - 1912 ADJ

ST. PAUL DISTRICT

2, 5, 10, 25, 50, 100, 200 & 500 YEAR FLOOD
&
1965 HISTORIC FLOOD

RIVER MILES 615.0 TO 679.08

PLATE * 6

CORPS OF ENGINEERS

U. S. ARMY

MINNESOTA RIVER
DRAINAGE AREA 16,550 SQ. M.

Q 500=203,000 CFS
Q 100=150,000 CFS
Q 50=130,000 CFS
Q 10= 83,000 CFS
Q 5= 64,000 CFS

VERMILLION RIVER
DRAINAGE AREA 215 SQ. M.

Q 500=205,000 CFS
Q 100=151,000 CFS
Q 50=131,000 CFS
Q 10= 84,000 CFS
Q 5= 64,000 CFS

ST. CROIX RIVER
DRAINAGE AREA
7,650 SQ. M.

BIG RIVER
DRAINAGE AREA 45 SQ. M.

Q 500=252,500 CFS
Q 200=217,500 CFS
Q 100=192,500 CFS
Q 50=168,000 CFS
Q 25=144,000 CFS
Q 10=113,500 CFS
Q 5=90,000 CFS
Q 2=58,000 CFS

FLOOD PROFILES UPSTREAM OF THE CONFLUENCE WITH THE SAINT CROIX RIVER HAVE BEEN TAKEN FROM THE 1979 STUDY.

FLOOD PROFILES DOWNSTREAM OF THE CONFLUENCE WITH THE SAINT CROIX RIVER (RIVER MILE 811.4 THROUGH 615.2) HAVE BEEN DEVELOPED FROM THE 2003 FLOW FREQUENCY STUDY.

ELEVATION ABOVE MEAN SEA LEVEL (NGVD 1929)

720, 718, 716, 714, 712, 710, 708, 706, 704, 702, 700, 698, 696, 694, 692, 690, 688, 686, 684, 682, 680

DAM NO. 1 TAILWATER M. 847.5 O=679.22

DAM NO. 2 POOL 686.7

U.S.G.S. GAGE M. 839.3 O=683.66

DAM NO. 2 TAILWATER GAGE M. 815.0 O=599.5

DAM NO. 2 POOL GAGE M. 815.4 O=599.5

PRESCOTT, C.P. 3 M. 811.4 O=668.78

DAM NO. 3 TAILWATER GAGE M. 796.91 O=596.5

DAM NO. 3 POOL GAGE M. 796.61 O=596.5

DAM NO. 3 POOL 674.5

500 YEAR
200 YEAR
1965
100 YEAR
50 YEAR
25 YEAR
10 YEAR
5 YEAR
2 YEAR

Ft. SNELLING BRIDGE (NEW) M. 845.6
MINNESOTA RIVER M. 844.0
NEW LEXINGTON BRIDGE M. 843.24
C. AND N.W. R.R. BRIDGE M. 841.4
STATE HIGHWAY 49 BRIDGE M. 840.4
St. PAUL, MINN. M. 840.0
WABASHA ST. BRIDGE M. 839.5
ROBERT ST. BRIDGE M. 839.2
MPLS. - ST. PAUL SANITATION PLANT M. 836.36
C.G.W. RAILWAY BRIDGE M. 835.1
SOUTH ST. PAUL M. 833.7
SO. ST. PAUL G.P. 2 M. 833.7 O=599.5
494 HIGHWAY BRIDGE M. 832.4
S. ST. PAUL SANITATION PLANT M. 832.3
C.R.I. & P. R.R. BRIDGE M. 830.3
GREY CLOUD SLOUGH M. 827.6
PINE BEND M. 824.5
GRAY CLOUD LANDING M. 822.6
NININGER, MINN. M. 817.6
U.S. 61 HWY. BRIDGE M. 813.9
HASTINGS R.R. BRIDGE M. 813.87
VERMILLION RIVER M. 813.2
MINN.-WIS. BOUNDARY M. 812.0
ST. CROIX RIVER M. 811.4
BIG RIVER M. 804.8
DIAMOND BLUFF M. 799.97

850, 848, 846, 844, 842, 840, 838, 836, 834, 832, 830, 828, 826, 824, 822, 820, 818, 816, 814, 812, 810, 808, 806, 804, 802, 800, 798, 796, 794

MILES ABOVE OHIO RIVER

U.S. ARMY CORPS OF ENGINEERS

2003 FLOW FREQUENCY STUDY

APPENDIX B

MISSISSIPPI RIVER
FLOOD PROFILES - NGVD 1929

ST. PAUL DISTRICT

2, 5, 10, 25, 50, 100, 200 & 500 YEAR FLOOD
&
1965 HISTORIC FLOOD

RIVER MILES 796.8 TO 847.5

PLATE * 7

CORPS OF ENGINEERS

U. S. ARMY

CANNON RIVER
DRAINAGE AREA 1,440 SQ. M.

Q 500=257,000 CFS
Q 200=222,000 CFS
Q 100=197,000 CFS
Q 50=172,500 CFS
Q 25=148,500 CFS
Q 10=117,500 CFS
Q 5= 94,000 CFS
Q 2= 60,500 CFS

RUSH RIVER
DRAINAGE AREA 240 SQ. M.

Q 500=257,000 CFS
Q 200=222,000 CFS
Q 100=197,000 CFS
Q 50=172,500 CFS
Q 25=148,500 CFS
Q 10=117,500 CFS
Q 5= 94,000 CFS
Q 2= 60,500 CFS

Q 500=259,000 CFS
Q 200=224,000 CFS
Q 100=199,000 CFS
Q 50=174,000 CFS
Q 25=150,000 CFS
Q 10=119,000 CFS
Q 5= 95,500 CFS
Q 2= 62,000 CFS

CHIPPEWA RIVER
DRAINAGE AREA 9,480 SQ. M.

Q 500=290,000 CFS
Q 200=255,000 CFS
Q 100=230,000 CFS
Q 50=204,000 CFS
Q 25=179,000 CFS
Q 10=146,000 CFS
Q 5=120,000 CFS
Q 2= 82,000 CFS.

BUFFALO RIVER
DRAINAGE AREA
465 SQ. M.

Q500=291,000CFS
Q200=257,000CFS
Q100=231,000CFS
Q 50=206,000CFS
Q 25=181,000CFS
Q 10=147,500 CFS
Q 5=121,500 CFS
Q 2= 83,000 CFS

ZUMBRO RIVER
DRAINAGE AREA
1,380 SQ. M.

Q 500=296,000 CFS
Q 200=261,500 CFS
Q 100=236,000 CFS
Q 50=210,500 CFS
Q 25=185,500 CFS
Q 10=152,000 CFS
Q 5=125,500 CFS
Q 2= 86,000 CFS

WHITEWATER RIVER
DRAINAGE AREA 302 SQ. M.

Q 500=298,500 CFS
Q 200=264,000 CFS
Q 100=238,500 CFS
Q 50=213,000 CFS
Q 25=187,500 CFS
Q 10=154,000 CFS
Q 5=127,500 CFS
Q 2= 88,000 CFS

1965

500 YEAR
200 YEAR
100 YEAR
50 YEAR
25 YEAR
10 YEAR
5 YEAR
2 YEAR

DAM NO. 3
POOL 674.5

DAM NO. 4 POOL 666.5

DAM NO. 5 POOL 659.5

POOL GAGE M. 796.91
TAILWATER GAGE M. 796.61
0=599.5

WING, MINN. M. 790.9 0=664.63

LAKE CITY GAGE M. 772.83 0=599.5

WABASHA GAGE M. 760.45 0=599.5

DAM NO. 4 POOL M. 752.95
TAILWATER M. 752.6
0=599.5

C.P. 5 M. 748.5 0=599.5

DAM NO. 5 POOL GAGE M. 738.27
TAILWATER GAGE M. 737.90
0=599.5

BUFFALO, WIS.
M. 744.0

WHITEWATER RIVER
M. 742.5

ELEVATION ABOVE MEAN SEA LEVEL (NGVD 1929)

692 690 688 686 684 682 680 678 676 674 672 670 668 666 664 662 660 658 656 654 652 650 648 646

MILES ABOVE OHIO RIVER

802 800 798 796 794 792 790 788 786 784 782 780 778 776 774 772 770 768 766 764 762 760 758 756 754 752 750 748 746

744 742 740 738

CANNON RIVER M. 794.67
RED WING, MINN. M. 790.97
BAY CITY, WIS. M. 786.19
RUSH RIVER M. 780.19
FRONTENAC, MINN. M. 779.0
LAKE CITY, MINN. M. 772.56
PEPIN, WIS. M. 767.81
CHIPPEWA RIVER M. 763.08
STATE HIGHWAY 25 BRIDGE M. 760.21
WABASHA, MINN. M. 759.92
TEPPEOTA POINT M. 757.1
BUFFALO (BEEF) RIVER M. 754.59
ALMA, WIS. M. 752.6
ZUMBRO RIVER M. 750.08

U.S. ARMY CORPS OF ENGINEERS

2003 FLOW FREQUENCY STUDY

APPENDIX B

MISSISSIPPI RIVER
FLOOD PROFILES - NGVD 1929

ST. PAUL DISTRICT

2, 5, 10, 25, 50, 100, 200 & 500 YEAR FLOOD
&
1965 HISTORIC FLOOD
RIVER MILES 737.9 TO 796.7
PLATE # 8

CORPS OF ENGINEERS

U. S. ARMY

TREMPEALEAU RIVER
DRAINAGE AREA 750 SQ. M.

Q 500=298,500 CFS
Q 200=264,000 CFS
Q 100=238,500 CFS
Q 50=213,000 CFS
Q 25=187,500 CFS
Q 10=154,000 CFS
Q 5=127,500 CFS
Q 2=88,000 CFS

BLACK RIVER CAHNNEL
DRAINAGE AREA 2,250 SQ. M.

Q 500=300,000 CFS
Q 200=266,000 CFS
Q 100=240,000 CFS
Q 50=215,000 CFS
Q 25=189,500 CFS
Q 10=156,000 CFS
Q 5=129,000 CFS
Q 2=89,500 CFS

LACROSSE RIVER
DRAINAGE AREA
480 SQ. M.

Q 500=303,000 CFS
Q 200=269,000 CFS
Q 100=244,000 CFS
Q 50=219,000 CFS
Q 25=194,000 CFS
Q 10=160,000 CFS
Q 5=133,000 CFS
Q 2= 93,000 CFS.

ROOT RIVER
DRAINAGE AREA 1660 SQ. M.

Q 500=304,000 CFS
Q 200=270,000 CFS
Q 100=245,000 CFS
Q 50=220,000 CFS
Q 25=195,000 CFS
Q 10=161,000 CFS
Q 5=134,000 CFS
Q 2=94,000 CFS.

COON CREEK
DRAINAGE AREA 140 SQ. M.

Q 500=306,500 CFS
Q 200=273,000 CFS
Q 100=248,000 CFS
Q 50=223,000 CFS
Q 25=198,000 CFS
Q 10=164,500 CFS
Q 5=137,500 CFS
Q 2=97,000 CFS.

WINONA, MN
FEDERAL LEVEE
TOP OF LEVEE PROFILE

DAM NO. 5
POOL 659.5

DAM NO. 5A POOL 650.5

DAM NO. 6 POOL 645.0

DAM NO. 7 POOL 638.5

DAM NO. 8 POOL 630.5

500 YEAR
200 YEAR
100 YEAR
50 YEAR
25 YEAR
10 YEAR
5 YEAR
2 YEAR

1965

DAM NO. 5 POOL M. 738.27 TAILWATER M. 737.90 GAGE O=599.5

DAM NO. 5A POOL M. 728.65 TAILWATER M. 728.28 GAGE O=599.5

WINONA GAGE M. 725.5 O=639.62

DAM NO. 6 POOL M. 714.44 TAILWATER M. 714.07 GAGE O=599.5

DAM NO. 7 POOL M. 702.61 TAILWATER M. 702.32 GAGE O=599.5

DAKOTA (C.P. 7) M. 707.23 GAGE O=599.5

LACROSSE, WIS. (U.S. W.B. GAGE) M. 697.78 GAGE O=625.82

LACROSSE, WIS. (C.P. 8) M. 696.85 GAGE O=599.5

BROWNSVILLE, MINN. M. 688.25 GAGE O=599.5

DAM NO. 8 POOL M. 679.39 TAILWATER M. 678.94 GAGE O=599.5

ELEVATION ABOVE MEAN SEA LEVEL (NGVD 1929)

MILES ABOVE OHIO RIVER

FOUNTAIN CITY, WIS. M. 733.4

STATE HIGHWAY 54 BRIDGE M. 726.83
CHICAGO & NORTHWESTERN R.R. BRIDGE
WINONA, MINN. M. 725.66

TREMPEALEAU RIVER M. 717.21

BLACK RIVER CHANNEL M. 709.08

DRESBACH, MINN. 705.73

INTERSTATE 90 HWY BRIDGE M. 701.82

LECRESCENT, MINN. M. 700.37

CHICAGO MILW. ST.P. & P. R.R. BR. M. 699.8

LACROSSE RIVER M. 698.37

STATE HWY. 61 BRIDGE M. 697.52

ROOT RIVER M. 693.99

BROWNSVILLE, MINN. M. 688.25

U.S. ARMY CORPS OF ENGINEERS

2003 FLOW FREQUENCY STUDY

APPENDIX B

MISSISSIPPI RIVER
FLOOD PROFILES - NGVD 1929

ST. PAUL DISTRICT

2, 5, 10, 25, 50, 100, 200 & 500 YEAR FLOOD
&
1965 HISTORIC FLOOD

RIVER MILES 679.08 TO 737.9

PLATE * 9

CORPS OF ENGINEERS

U. S. ARMY

BAD AXE RIVER DRAINAGE AREA 170 SQ. M.

UPPER IOWA RIVER DRAINAGE AREA 1,060 SQ. M.

YELLOW RIVER DRAINAGE AREA 245 SQ. M.

WISCONSIN RIVER DRAINAGE AREA 11,700 SQ. M.

Q 500=306,500 CFS
Q 200=273,000 CFS
Q 100=248,000 CFS
Q 50=223,000 CFS
Q 25=198,000 CFS
Q 10=164,500 CFS
Q 5=137,500 CFS
Q 2=97,000 CFS

Q 500=309,000 CFS
Q 200=276,000 CFS
Q 100=251,000 CFS
Q 50=226,000 CFS
Q 25=201,000 CFS
Q 10=167,500 CFS
Q 5=140,500 CFS
Q 2=100,000 CFS

Q 500=348,000 CFS
Q 200=313,000 CFS
Q 100=287,000 CFS
Q 50=260,000 CFS
Q 25=233,000 CFS
Q 10=196,000 CFS
Q 5=168,500 CFS
Q 2=121,000 CFS

1965

500 YEAR
200 YEAR
100 YEAR
50 YEAR
25 YEAR
10 YEAR
5 YEAR
2 YEAR

Guttenberg, Iowa
Federal Levee
Top of Levee Profile

DAM NO. 9 POOL 619.5

DAM NO. 10 POOL 610.5

DAM NO. 10 : POOL M. 615.2 : TAILWATER M. 614.8 GAGE 0=599.5

DAM NO. 9 : POOL M. 679.39 : TAILWATER M. 678.94 GAGE 0=599.5

DAM NO. 9 : POOL M. 648.09 : TAILWATER M. 647.72 GAGE 0=599.5

GAGE 0=599.5

GAGE 0=611.76

GAGE 0=599.5

GAGE 0=604.8

GAGE 0=602.1

BAGLEY, WIS. M. 623.15

GENOA, WIS. M. 679.69

BAD AXE RIVER M. 675.10

MIN. - IA. BOUNDARY M. 673.9

VICTORY, WIS. M. 672.97

UPPER IOWA RIVER M. 671.08

DESOTO, WIS. M. 667.59

STATE HIGHWAY 82 BRIDGE M. 663.42
LANSING, IA. (C.P. 9) M. 663.0

HARPER'S FERRY, IA. M. 645.89

E. WAUKON JCT., IA. M. 641.07

YELLOW RIVER M. 637.7

PRAIRIE DUCHIEN, WIS. M. 635.03

FEDERAL HIGHWAY 18 BRIDGE M. 634.72

MCGREGOR, IA. M. 633.6

WISCONSIN RIVER M. 631.0

WYALUSING, WIS. M. 627.5

CLAYTON, IA. (C.P. 10) M. 624.8

ELEVATION ABOVE MEAN SEA LEVEL (NGVD 1929)

MILES ABOVE OHIO RIVER

U.S. ARMY CORPS OF ENGINEERS

2003 FLOW FREQUENCY STUDY

APPENDIX B

MISSISSIPPI RIVER
FLOOD PROFILES - NGVD 1929

ST. PAUL DISTRICT

2, 5, 10, 25, 50, 100, 200 & 500 YEAR FLOOD
&
1965 HISTORIC FLOOD

RIVER MILES 615.0 TO 679.08

PLATE # 10

CORPS OF ENGINEERS

U. S. ARMY

MINNESOTA RIVER
DRAINAGE AREA 16,550 SQ. M.

Q 500=203,000 CFS
Q 100=150,000 CFS
Q 50=130,000 CFS
Q 10= 83,000 CFS
Q 5= 64,000 CFS

VERMILLION RIVER
DRAINAGE AREA 215 SQ. M.

Q 500=205,000 CFS
Q 100=151,000 CFS
Q 50=131,000 CFS
Q 10= 84,000 CFS
Q 5= 64,000 CFS

ST. CROIX RIVER
DRAINAGE AREA
7,650 SQ. M.

BIG RIVER
DRAINAGE AREA 45 SQ. M.

Q 500=252,500 CFS
Q 200=217,500 CFS
Q 100=192,500 CFS
Q 50=168,000 CFS
Q 25=144,000 CFS
Q 10=113,500 CFS
Q 5=90,000 CFS
Q 2=58,000 CFS

FLOOD PROFILES UPSTREAM OF THE CONFLUENCE WITH THE SAINT CROIX RIVER HAVE BEEN TAKEN FROM THE 1979 STUDY.

FLOOD PROFILES DOWNSTREAM OF THE CONFLUENCE WITH THE SAINT CROIX RIVER (RIVER MILE 811.4 THROUGH 615.2) HAVE BEEN DEVELOPED FROM THE 2003 FLOW FREQUENCY STUDY.

ELEVATION ABOVE MEAN SEA LEVEL (1912 ADJUSTMENT)

720, 718, 716, 714, 712, 710, 708, 706, 704, 702, 700, 698, 696, 694, 692, 690, 688, 686, 684, 682, 680

DAM NO. 1 TAILWATER M. 847.5 Q=679.72

DAM NO. 1 POOL M. 841.16 Q=684.16

DAM NO. 2 TAILWATER GAGE M. 815.4
DAM NO. 2 TAILWATER M. 815.0 Q=600.0

DAM NO. 2 POOL M. 687.2

U.S.G.S. GAGE M. 839.3 Q=684.16

SO. ST. PAUL C.P. 2 M. 833.7 Q=600.0

PRESCOTT C.P. 3 M. 811.4 Q=669.28

DAM NO. 3 TAILWATER GAGE M. 796.91
DAM NO. 3 TAILWATER M. 796.61 Q=600.0

DAM NO. 3 POOL 675.0

FT. SNELLING BRIDGE (NEW) M. 845.6	
MINNESOTA RIVER M. 844.0	
NEW LEXINGTON BRIDGE M. 843.24	
C. AND N.W. R.R. BRIDGE M. 841.4	
STATE HIGHWAY 49 BRIDGE M. 840.4	
ST. PAUL, MINN. M. 840.0	
WABASHA ST. BRIDGE M. 839.5	
ROBERT ST. BRIDGE M. 839.2	
MPLS. - ST.PAUL SANITATION PLANT M. 836.36	
C.G.W. RAILWAY BRIDGE M. 835.7	
SOUTH ST. PAUL M. 833.7	SO. ST. PAUL C.P. 2 M. 833.7 Q=600.0
494 HIGHWAY BRIDGE M. 832.4	
S. ST. PAUL SANITATION PLANT M. 832.3	
C.R.I. & P. R.R. BRIDGE M. 830.3	
GREY CLOUD SLOUGH M. 827.6	
PINE BEND M. 824.5	
GRAY CLOUD LANDING M. 822.6	
NININGER MINN. M. 817.6	
U.S. 61 HWY. BRIDGE M. 813.9	
HASTINGS R.R. BRIDGE M. 813.87	
VERMILLION RIVER M. 813.2	
MINN.-WISC. BOUNDARY M. 812.0	
ST. CROIX RIVER M. 811.4	
BIG RIVER M. 804.8	
DIAMOND BLUFF M. 799.97	

850, 848, 846, 844, 842, 840, 838, 836, 834, 832, 830, 828, 826, 824, 822, 820, 818, 816, 814, 812, 810, 808, 806, 804, 802, 800, 798, 796, 794

MILES ABOVE OHIO RIVER

500 YEAR
200 YEAR
100 YEAR
50 YEAR
25 YEAR
10 YEAR
5 YEAR
2 YEAR

1965
1969
1997
2001
1993

U.S. ARMY CORPS OF ENGINEERS

2003 FLOW FREQUENCY STUDY

APPENDIX B

MISSISSIPPI RIVER
FLOOD PROFILES - 1912 ADJ

ST. PAUL DISTRICT

2, 5, 10, 25, 50, 100, 200 & 500 YEAR FLOOD
&
1965 HISTORIC FLOOD

RIVER MILES 796.8 TO 847.5

PLATE # 11

CORPS OF ENGINEERS

U. S. ARMY

CANNON RIVER
DRAINAGE AREA 1,440 SQ. M.

Q 500=257,000 CFS
Q 200=222,000 CFS
Q 100=197,000 CFS
Q 50=172,500 CFS
Q 25=148,500 CFS
Q 10=117,500 CFS
Q 5= 94,000 CFS
Q 2= 60,500 CFS

RUSH RIVER
DRAINAGE AREA 240 SQ. M.

Q 500=257,000 CFS
Q 200=222,000 CFS
Q 100=197,000 CFS
Q 50=172,500 CFS
Q 25=148,500 CFS
Q 10=117,500 CFS
Q 5= 94,000 CFS
Q 2= 60,500 CFS

Q 500=259,000 CFS
Q 200=224,000 CFS
Q 100=199,000 CFS
Q 50=174,000 CFS
Q 25=150,000 CFS
Q 10=119,000 CFS
Q 5= 95,500 CFS
Q 2= 62,000 CFS

CHIPPEWA RIVER
DRAINAGE AREA 9,480 SQ. M.

Q 500=290,000 CFS
Q 200=255,000 CFS
Q 100=230,000 CFS
Q 50=204,000 CFS
Q 25=179,000 CFS
Q 10=146,000 CFS
Q 5=120,000 CFS
Q 2= 82,000 CFS.

BUFFALO RIVER
DRAINAGE AREA
465 SQ. M.

Q 500=291,000CFS
Q200=257,000CFS
Q 100=231,000CFS
Q 50=206,000CFS
Q 25=181,000CFS
Q 10=147,500 CFS
Q 5=121,500 CFS
Q 2= 83,000 CFS

ZUMBRO RIVER
DRAINAGE AREA
1,380 SQ. M.

Q 500=296,000 CFS
Q 200=261,500 CFS
Q 100=236,000 CFS
Q 50=210,500 CFS
Q 25=185,500 CFS
Q 10=152,000 CFS
Q 5=125,500 CFS
Q 2= 86,000 CFS

WHITEWATER RIVER
DRAINAGE AREA 302 SQ. M.

Q 500=298,500 CFS
Q 200=264,000 CFS
Q 100=238,500 CFS
Q 50=213,000 CFS
Q 25=187,500 CFS
Q 10=154,000 CFS
Q 5=127,500 CFS
Q 2= 88,000 CFS

500 YEAR
200 YEAR
100 YEAR
50 YEAR
25 YEAR
10 YEAR
5 YEAR
2 YEAR

1965
2001
1969
1997
1993

DAM NO. 3
POOL 675.0

DAM NO. 4 POOL 667.0

DAM NO. 5 POOL 660.0

POOL GAGE M. 796.91
TAILWATER GAGE M. 796.61
0=600.0

DAM NO. 3

RED WING, MINN. M. 790.9 0=665.13

LAKE CITY GAGE M. 772.83 0=600.0

WABASHA GAGE M. 760.45 0=600.0

DAM NO. 4 POOL M. 752.95
TAILWATER M. 752.6
0=600.0

C.P. 5 M. 748.5 0=600.0

DAM NO. 5 POOL GAGE M. 738.27
TAILWATER GAGE M. 737.90
0=600.0

BUFFALO, WIS. M. 744.0

WHITEWATER RIVER M. 742.5

ELEVATION ABOVE MEAN SEA LEVEL (1912 ADJUSTMENT)

692 690 688 686 684 682 680 678 676 674 672 670 668 666 664 662 660 658 656 654 652 650 648 646

MILES ABOVE OHIO RIVER

802 800 798 796 794 792 790 788 786 784 782 780 778 776 774 772 770 768 766 764 762 760 758 756 754 752 750 748 746 744 742 740 738

GANNON RIVER M. 794.67
RED WING, MINN. M. 790.97
BAY CITY, WIS. M. 786.19
RUSH RIVER M. 780.19
FRONTENAC, MINN. M. 779.0
LAKE CITY, MINN. M. 772.56
PEPIN, WIS. M. 767.61
CHIPPEWA RIVER M. 763.08
STATE HIGHWAY 25 BRIDGE M. 760.21
WABASHA, MINN. M. 759.92
TEEPEEOTA POINT M. 757.1
BUFFALO (BEEF) RIVER M. 754.59
ALMA, WIS. M. 752.6
ZUMBRO RIVER M. 750.08

U.S. ARMY CORPS OF ENGINEERS

2003 FLOW FREQUENCY STUDY

APPENDIX B

MISSISSIPPI RIVER
FLOOD PROFILES - 1912 ADJ

ST. PAUL DISTRICT

2, 5, 10, 25, 50, 100, 200 & 500 YEAR FLOOD
&
1965 HISTORIC FLOOD

RIVER MILES 737.9 TO 796.7

PLATE # 12

CORPS OF ENGINEERS

U. S. ARMY

TREMPEALEAU RIVER DRAINAGE AREA 750 SQ. M.
Q 500=298,500 CFS
Q 200=264,000 CFS
Q 100=238,500 CFS
Q 50=213,000 CFS
Q 25=187,500 CFS
Q 10=154,000 CFS
Q 5=127,500 CFS
Q 2=88,000 CFS

BLACK RIVER CAHNNEL DRAINAGE AREA 2,250 SQ. M.
Q 500=300,000 CFS
Q 200=266,000 CFS
Q 100=240,000 CFS
Q 50=215,000 CFS
Q 25=189,500 CFS
Q 10=156,000 CFS
Q 5=129,000 CFS
Q 2=89,500 CFS

LACROSSE RIVER DRAINAGE AREA 480 SQ. M.
Q 500=303,000 CFS
Q 200=269,000 CFS
Q 100=244,000 CFS
Q 50=219,000 CFS
Q 25=194,000 CFS
Q 10=160,000 CFS
Q 5=133,000 CFS
Q 2= 93,000 CFS.

ROOT RIVER DRAINAGE AREA 1660 SQ. M.
Q 500=304,000 CFS
Q 200=270,000 CFS
Q 100=245,000 CFS
Q 50=220,000 CFS
Q 25=195,000 CFS
Q 10=161,000 CFS
Q 5=134,000 CFS
Q 2=94,000 CFS.

COON CREEK DRAINAGE AREA 140 SQ. M.
Q 500=306,500 CFS
Q 200=273,000 CFS
Q 100=248,000 CFS
Q 50=223,000 CFS
Q 25=198,000 CFS
Q 10=164,500 CFS
Q 5=137,500 CFS
Q 2=97,000 CFS.

WINONA, MN
FEDERAL LEVEE
TOP OF LEVEE PROFILE

DAM NO. 5
POOL 660.0

DAM NO. 5A POOL 651.0

DAM NO. 6 POOL 645.5

DAM NO. 7 POOL 639.0

DAM NO. 8 POOL 631.0

500 YEAR
200 YEAR
100 YEAR
50 YEAR
25 YEAR
10 YEAR
5 YEAR
2 YEAR

1965
2001
1969
1997
1993

DAM NO. 5 POOL M. 738.27 TAILWATER M. 737.90 GAGE 0=600.0

DAM NO. 5A POOL M. 728.65 TAILWATER M. 728.28 GAGE 0=600.0

WINONA GAGE M. 725.5 0=640.12

DAM NO. 6 POOL M. 714.44 TAILWATER M. 714.07 GAGE 0=600.0

DAM NO. 7 POOL M. 702.61 TAILWATER M. 702.32 GAGE 0=600.0

DAKOTA (C.P. 7) M. 707.23 GAGE 0=600.0

LACROSSE, WIS. (U.S. W.B. GAGE) M. 697.78 GAGE 0=626.32

LACROSSE, WIS. (C.P. 8) M. 696.85 GAGE 0=600.0

BROWNSVILLE, MINN. M. 688.25 GAGE 0=600.0

DAM ON. 8 POOL M. 679.39 TAILWATER M. 678.94 GAGE 0=600.0

FOUNTAIN CITY, WIS. M. 733.4

STATE HIGHWAY 54 BRIDGE M. 725.83

CHICAGO & NORTHWESTERN R.R. BRIDGE WINONA, MINN. M. 725.66

TREMPEALEAU RIVER M. 717.21

BLACK RIVER CHANNEL M. 709.08

DRESBACH, MINN. 705.73

INTERSTATE 90 HWY BRIDGE M. 701.82

LECRESCENT, MINN. M. 700.37

CHICAGO MILW. ST.P. & P. R.R. BR. M. 699.8

LACROSSE RIVER M. 698.37

STATE HWY 61 BRIDGE M. 697.52

ROOT RIVER M. 693.99

ELEVATION ABOVE MEAN SEA LEVEL (1912 ADJUSTMENT)

MILES ABOVE OHIO RIVER

U.S. ARMY CORPS OF ENGINEERS

2003 FLOW FREQUENCY STUDY

APPENDIX B

MISSISSIPPI RIVER
FLOOD PROFILES - 1912 ADJ

ST. PAUL DISTRICT

2, 5, 10, 25, 50, 100, 200 & 500 YEAR FLOOD
&
1965 HISTORIC FLOOD

RIVER MILES 679.08 TO 737.9

PLATE * 13

CORPS OF ENGINEERS

U. S. ARMY

BAD AXE RIVER
DRAINAGE AREA
170 SQ. M.

UPPER IOWA RIVER
DRAINAGE AREA 1,060 SQ. M.

YELLOW RIVER
DRAINAGE AREA
245 SQ. M.

WISCONSIN RIVER
DRAINAGE AREA 11,700 SQ. M.

Q 500=306,500 CFS
Q 200=273,000 CFS
Q 100=248,000 CFS
Q 50=223,000 CFS
Q 25=198,000 CFS
Q 10=164,500 CFS
Q 5=137,500 CFS
Q 2=97,000 CFS.

Q 500=309,000 CFS
Q 200=276,000 CFS
Q 100=251,000 CFS
Q 50=226,000 CFS
Q 25=201,000 CFS
Q 10=167,500 CFS
Q 5=140,500 CFS
Q 2=100,000 CFS.

Q 500=348,000 CFS
Q 200=313,000 CFS
Q 100=287,000 CFS
Q 50=260,000 CFS
Q 25=233,000 CFS
Q 10=196,000 CFS
Q 5=168,500 CFS
Q 2=121,000 CFS.

1965
2001
1969
1993
1997

500 YEAR
200 YEAR
100 YEAR
50 YEAR
25 YEAR
10 YEAR
5 YEAR
2 YEAR

Guttenberg, Iowa
Federal Levee
Top of Levee Profile

DAM NO. 10 POOL M. 615.2 TAILWATER M. 614.8 GAGE 0=600.0

DAM NO. 9 POOL 620.0

DAM ON 8 POOL M. 679.39 TAILWATER M. 678.94 GAGE 0=600.0

GAGE 0=690.0

GAGE 0=612.26

DAM NO. 9 POOL M. 648.09 TAILWATER M. 647.72 GAGE 0=600.0

GAGE 0=600.0

DAM NO. 10 POOL 611.0

GAGE 0=605.3

GAGE 0=602.6

BAGLEY, WIS. M. 623.15

ELEVATION ABOVE MEAN SEA LEVEL (1912 ADJUSTMENT)

MILES ABOVE OHIO RIVER

GENOA, WIS. M. 679.69
BAD AXE RIVER M. 675.10
MINN. - IA. BOUNDARY M. 673.9
VICTORY, WIS. M. 672.97
UPPER IOWA RIVER M. 671.08
DESOTO, WIS. M. 667.59
STATE HIGHWAY 82 BRIDGE M. 663.42
LANSING, IA. (C.P. 9) M. 663.0
HARPERS FERRY, IA. M. 645.89
E. WAUKON JCT., IA. M. 641.07
YELLOW RIVER M. 637.7
PRAIRIE DUCHIEN, WIS. M. 635.03
FEDERAL HIGHWAY 18 BRIDGE M. 634.72
MCGREGOR, IA. M. 633.6
WISCONSIN RIVER M. 631.0
WYALUSING, WIS. M. 627.5
CLAYTON, IA. (C.P. 10) M. 624.8

U.S. ARMY CORPS OF ENGINEERS

2003 FLOW FREQUENCY STUDY

APPENDIX B

MISSISSIPPI RIVER
FLOOD PROFILES - 1912 ADJ

ST. PAUL DISTRICT

2, 5, 10, 25, 50, 100, 200 & 500 YEAR FLOOD
&
1965 HISTORIC FLOOD

RIVER MILES 615.0 TO 679.08

PLATE # 14