Appendix A – Hydrologic Modeling Approach

Table A1: Basin Development Factor, Tc and R Calculations (Existing Conditions)

	Total Area of Subbasin	Percent impervious cover within subbasin	Length of natural channel	Length of improved channel	Length of concrete channel	Undeveloped area	Open space graded to drain	Developed area served by roadside ditch	Pre-1992 developed area served by storm sewer	Post-1992 developed area served by storm sewer	Basin Development Factor	Lag Time	Channel slope	Overland slope	Slope factor (≤ 1)	Detention rate for sub-basin	Detention Correction Factor (DR>10)	Percentage of the watershed affected by ponding	Adjustment factor (500-year)	Adjustment factor (100-year)	Adjustment factor (50-year)	Adjustment factor (10-year)	Adjusted Time of Concentration	Adjusted Clark Storage Coefficient (500-Year)	Adjusted Clark Storage Coefficient (100-Year)	Adjusted Clark Storage Coefficient (50-Year)	Adjusted Clark Storage Coefficient (10-Year)
Subbasin	**Area**	**%imp**	**N**	**I**	**C**	**U**	**OS**	**R**	**SS (pre-1992)**	**SS (post-1992)**	**BDF**	**Tr**	**S**	**So**	**Ks**	**DR**	**Cf**	**DPP**	**RM 500**	**RM 100**	**RM 50**	**RM 10**	**TC**	**R 500YR**	**R 100YR**	**R 50YR**	**R 10YR**
I.D.	**(acres)**	**(%)**	**(ft)**	**(ft)**	**(ft)**	**(ac)**	**(ac)**	**(ac)**	**(ac)**	**(ac)**		**(hr)**	**(ft/mi)**	**(ft/mi)**		**(ac-ft/ Sq mi)**		**(%)**					**(hr)**	**(hr)**	**(hr)**	**(hr)**	**(hr)**
10100A	1058.0	29	9342.0	0.0	0.0	241.6	120.6	412.2	0.0	283.7	**2.3**	2.3	4.1	11.7	0.9	110.1	1.3	0.0	1.0	1.0	1.0	1.0	**3.3**	**8.7**	**8.7**	**8.7**	**8.7**
10100B	559.8	0	7178.9	0.0	0.0	324.8	117.1	117.9	0.0	0.0	**0.5**	2.2	4.0	4.1	1.0	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**2.7**	**7.4**	**7.4**	**7.4**	**7.4**
10100C	329.0	0	4745.2	0.0	0.0	328.8	0.0	0.0	0.0	0.0	**0.0**	1.9	1.0	13.8	1.0	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**2.3**	**6.4**	**6.4**	**6.4**	**6.4**
10100D	1034.0	12	7375.0	0.0	0.0	463.7	441.9	110.0	0.0	18.6	**0.7**	2.8	3.1	5.5	1.0	7.9	1.0	0.0	1.0	1.0	1.0	1.0	**3.4**	**9.1**	**9.1**	**9.1**	**9.1**
10100E	681.2	19	4187.4	8098.2	0.0	428.0	118.0	88.9	0.0	46.4	**2.8**	1.8	6.7	12.7	0.8	27.5	1.0	0.0	1.0	1.0	1.0	1.0	**1.9**	**4.9**	**4.9**	**4.9**	**4.9**
10100F	1273.9	54	9167.6	0.0	0.0	375.6	156.3	104.2	0.0	638.5	**3.3**	2.2	1.8	6.2	1.0	240.6	2.5	0.0	1.0	1.0	1.0	1.0	**7.3**	**18.5**	**18.5**	**18.5**	**18.5**
10100G	1285.3	0	1786.4	4528.3	0.0	740.2	439.3	105.8	0.0	0.0	**2.6**	2.4	4.3	9.4	0.9	27.5	1.0	2186.5	2.3	3.3	4.0	5.9	**2.9**	**16.6**	**24.5**	**29.3**	**43.4**
10100H	1362.8	0	315.2	25648.3	0.0	1005.7	201.6	155.3	0.0	0.0	**3.3**	2.3	5.1	8.8	0.9	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**2.7**	**6.9**	**6.9**	**6.9**	**6.9**
10101A	991.9	24	0.0	10061.6	0.0	420.5	55.7	400.2	0.0	115.5	**4.4**	1.7	2.9	5.2	1.0	46.8	1.0	0.0	1.0	1.0	1.0	1.0	**2.4**	**6.0**	**6.0**	**6.0**	**6.0**
10102A	3135.6	51	0.0	13586.2	0.0	428.1	173.4	1207.3	0.0	1327.3	**6.2**	2.2	5.4	7.3	0.9	186.8	1.9	0.0	1.0	1.0	1.0	1.0	**5.8**	**12.9**	**12.9**	**12.9**	**12.9**
10103A	2359.5	54	0.0	16363.9	0.0	808.7	243.8	34.0	0.0	1271.0	**6.4**	1.9	4.2	6.9	1.0	216.1	2.2	0.0	1.0	1.0	1.0	1.0	**6.3**	**14.0**	**14.0**	**14.0**	**14.0**
10104A	626.1	3	20.8	12288.5	0.0	486.2	23.4	116.5	0.0	0.0	**3.3**	1.6	6.9	6.7	0.9	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**1.9**	**5.0**	**5.0**	**5.0**	**5.0**
10105A	1449.1	51	0.0	13987.2	0.0	675.1	55.9	69.1	0.0	649.0	**5.8**	1.7	4.2	6.5	1.0	173.8	1.7	0.0	1.0	1.0	1.0	1.0	**4.2**	**9.9**	**9.9**	**9.9**	**9.9**
10105B	1242.7	40	0.0	14921.3	0.0	204.7	380.2	208.7	0.0	449.1	**5.7**	1.6	4.3	9.5	0.9	168.0	1.7	0.0	1.0	1.0	1.0	1.0	**3.6**	**8.5**	**8.5**	**8.5**	**8.5**
10200A	1255.0	72	0.0	9178.9	0.0	219.5	184.2	0.0	0.0	851.0	**7.2**	1.4	5.3	6.9	0.9	276.9	3.0	8761.9	2.6	4.0	4.9	7.8	**5.9**	**33.7**	**52.9**	**65.1**	**102.8**
10200B	619.0	13	2990.3	1514.7	0.0	221.3	322.2	55.1	0.0	20.5	**1.9**	2.0	3.2	6.3	1.0	13.8	1.0	0.0	1.0	1.0	1.0	1.0	**2.4**	**6.5**	**6.5**	**6.5**	**6.5**
10200C	730.9	7	0.0	7118.1	0.0	323.2	284.3	120.9	0.0	2.6	**3.7**	1.7	3.9	6.2	1.0	17.6	1.0	5767.8	2.5	3.8	4.6	7.2	**2.2**	**13.9**	**21.3**	**26.0**	**40.3**
10200D	883.8	1	5710.7	7456.1	0.0	153.5	609.5	122.3	0.0	0.0	**2.6**	2.1	3.9	8.0	1.0	37.1	1.0	16913.1	2.7	4.4	5.5	8.9	**2.6**	**18.3**	**29.7**	**37.0**	**60.3**
10200E	371.5	2	3737.1	0.0	0.0	48.0	280.4	42.9	0.0	0.0	**0.9**	1.8	5.2	15.6	0.8	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**1.7**	**4.9**	**4.9**	**4.9**	**4.9**
10201A	717.3	1	10582.0	4609.8	0.0	71.3	550.7	97.0	0.0	0.0	**1.9**	2.1	5.2	6.8	0.9	0.0	1.0	20272.5	2.7	4.5	5.6	9.2	**2.4**	**17.9**	**29.2**	**36.6**	**60.1**
10300A	1405.6	0	0.0	11430.8	0.0	294.8	1110.8	0.0	0.0	0.0	**3.8**	2.2	4.0	5.8	1.0	75.8	1.1	26426.2	2.8	4.6	5.8	9.7	**3.2**	**22.2**	**36.7**	**46.3**	**76.9**
10300B	1279.6	1	0.0	11355.0	0.0	826.6	357.0	95.8	0.0	0.0	**3.4**	2.2	4.4	8.1	1.0	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**2.7**	**6.9**	**6.9**	**6.9**	**6.9**
10300C	1185.4	7	0.0	5596.9	0.0	512.8	535.5	120.8	0.0	16.3	**3.7**	2.0	7.8	4.0	1.0	29.9	1.0	26257.4	2.8	4.6	5.8	9.7	**2.6**	**18.6**	**30.7**	**38.6**	**64.2**
10300D	540.9	6	4289.4	1768.1	0.0	150.2	313.7	77.6	0.0	0.0	**1.7**	1.9	3.1	3.7	1.0	70.6	1.1	13363.8	2.6	4.2	5.3	8.5	**2.5**	**18.3**	**29.2**	**36.3**	**58.4**
10300E	1379.5	4	1667.3	7154.7	0.0	130.4	1148.4	100.7	0.0	0.0	**3.4**	2.2	4.0	4.7	1.0	21.7	1.0	41174.3	2.9	4.9	6.3	10.6	**2.9**	**21.7**	**36.5**	**46.4**	**78.7**
10301A	746.6	0	0.0	14254.4	0.0	117.2	538.1	91.6	0.0	0.0	**3.9**	1.6	5.5	5.5	1.0	17.6	1.0	45752.2	2.9	5.0	6.4	10.8	**2.1**	**15.7**	**26.7**	**34.0**	**57.9**

Table A2. Basin Development Factor, Tc and R Calculations (CIP Conditions)

	Total Area of Subbasin	Percent impervious cover within subbasin	Length of natural channel	Length of improved channel	Length of concrete channel	Undeveloped area	Open space graded to drain	Developed area served by roadside ditch	Pre-1992 developed area served by storm sewer	Post-1992 developed area served by storm sewer	Basin Development Factor	Lag Time	Channel slope	Overland slope	Slope factor (≤ 1)	Detention rate for sub-basin	Detention Correction Factor (DR>10)	Percentage of the watershed affected by ponding	Adjustment factor (500-year)	Adjustment factor (100-year)	Adjustment factor (50-year)	Adjustment factor (10-year)	Adjusted Time of Concentration	Adjusted Clark Storage Coefficient (500-Year)	Adjusted Clark Storage Coefficient (100-Year)	Adjusted Clark Storage Coefficient (50-Year)	Adjusted Clark Storage Coefficient (10-Year)
Subbasin	**Area**	**%imp**	**N**	**I**	**C**	**U**	**OS**	**R**	**SS (pre-1992)**	**SS (post-1992)**	**BDF**	**Tr**	**S**	**So**	**Ks**	**DR**	**Cf**	**DPP**	**RM 500**	**RM 100**	**RM 50**	**RM 10**	**TC**	**R 500YR**	**R 100YR**	**R 50YR**	**R 10YR**
I.D.	**(acres)**	**(%)**	**(ft)**	**(ft)**	**(ft)**	**(ac)**	**(ac)**	**(ac)**	**(ac)**	**(ac)**		**(hr)**	**(ft/mi)**	**(ft/mi)**		**(ac-ft/ Sq mi)**		**(%)**					**(hr)**	**(hr)**	**(hr)**	**(hr)**	**(hr)**
10100A	1058.0	29	9342.0	0.0	0.0	241.6	120.6	412.2	0.0	283.7	**2.3**	2.3	4.1	11.7	0.9	110.1	1.3	0.0	1.0	1.0	1.0	1.0	**3.3**	**8.7**	**8.7**	**8.7**	**8.7**
10100B	559.8	0	7178.9	0.0	0.0	324.8	117.1	117.9	0.0	0.0	**0.5**	2.2	4.0	4.1	1.0	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**2.7**	**7.4**	**7.4**	**7.4**	**7.4**
10100C	329.0	0	4745.2	0.0	0.0	328.8	0.0	0.0	0.0	0.0	**0.0**	1.9	1.0	13.8	1.0	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**2.3**	**6.4**	**6.4**	**6.4**	**6.4**
10100D	1034.0	12	7375.0	0.0	0.0	463.7	441.9	110.0	0.0	18.6	**0.7**	2.8	3.1	5.5	1.0	7.9	1.0	0.0	1.0	1.0	1.0	1.0	**3.4**	**9.1**	**9.1**	**9.1**	**9.1**
10100E	681.2	19	4187.4	8098.2	0.0	428.0	118.0	88.9	0.0	46.4	**2.8**	1.8	6.7	12.7	0.8	27.5	1.0	0.0	1.0	1.0	1.0	1.0	**1.9**	**4.9**	**4.9**	**4.9**	**4.9**
10100F	1273.9	54	9167.6	0.0	0.0	375.6	156.3	104.2	0.0	638.5	**3.3**	2.2	1.8	6.2	1.0	240.6	2.5	0.0	1.0	1.0	1.0	1.0	**7.3**	**18.5**	**18.5**	**18.5**	**18.5**
10100G	1285.3	0	1786.4	4528.3	0.0	740.2	439.3	105.8	0.0	0.0	**2.6**	2.4	4.3	9.4	0.9	27.5	1.0	2186.5	2.3	3.3	4.0	5.9	**2.9**	**16.6**	**24.5**	**29.3**	**43.4**
10100H	1362.8	0	315.2	25648.3	0.0	1005.7	201.6	155.3	0.0	0.0	**3.3**	2.3	5.1	8.8	0.9	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**2.7**	**6.9**	**6.9**	**6.9**	**6.9**
10101A	991.9	24	0.0	10061.6	0.0	420.5	55.7	400.2	0.0	115.5	**4.4**	1.7	2.9	5.2	1.0	46.8	1.0	0.0	1.0	1.0	1.0	1.0	**2.4**	**6.0**	**6.0**	**6.0**	**6.0**
10102A	3135.6	51	0.0	13586.2	0.0	428.1	173.4	1207.3	0.0	1327.3	**6.2**	2.2	5.4	7.3	0.9	186.8	1.9	0.0	1.0	1.0	1.0	1.0	**5.8**	**12.9**	**12.9**	**12.9**	**12.9**
10103A	2359.5	54	0.0	16363.9	0.0	808.7	243.8	34.0	0.0	1271.0	**6.4**	1.9	4.2	6.9	1.0	216.1	2.2	0.0	1.0	1.0	1.0	1.0	**6.3**	**14.0**	**14.0**	**14.0**	**14.0**
10104A	626.1	3	20.8	12288.5	0.0	486.2	23.4	116.5	0.0	0.0	**3.3**	1.6	6.9	6.7	0.9	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**1.9**	**5.0**	**5.0**	**5.0**	**5.0**
10105A	1449.1	51	0.0	13987.2	0.0	675.1	55.9	69.1	0.0	649.0	**5.8**	1.7	4.2	6.5	1.0	173.8	1.7	0.0	1.0	1.0	1.0	1.0	**4.2**	**9.9**	**9.9**	**9.9**	**9.9**
10105B	1242.7	40	0.0	14921.3	0.0	204.7	380.2	208.7	0.0	449.1	**5.7**	1.6	4.3	9.5	0.9	168.0	1.7	0.0	1.0	1.0	1.0	1.0	**3.6**	**8.5**	**8.5**	**8.5**	**8.5**
10200A	1255.0	72	0.0	9178.9	0.0	219.5	184.2	0.0	0.0	851.0	**7.2**	1.4	5.3	6.9	0.9	276.9	3.0	8761.9	2.6	4.0	4.9	7.8	**5.9**	**33.7**	**52.9**	**65.1**	**102.8**
10200B	619.0	13	2990.3	1514.7	0.0	221.3	322.2	55.1	0.0	20.5	**1.9**	2.0	3.2	6.3	1.0	13.8	1.0	0.0	1.0	1.0	1.0	1.0	**2.4**	**6.5**	**6.5**	**6.5**	**6.5**
10200C	730.9	7	0.0	7118.1	0.0	323.2	284.3	120.9	0.0	2.6	**3.7**	1.7	3.9	6.2	1.0	17.6	1.0	5767.8	2.5	3.8	4.6	7.2	**2.2**	**13.9**	**21.3**	**26.0**	**40.3**
10200D	883.8	1	5710.7	7456.1	0.0	153.5	609.5	122.3	0.0	0.0	**2.6**	2.1	3.9	8.0	1.0	37.1	1.0	16913.1	2.7	4.4	5.5	8.9	**2.6**	**18.3**	**29.7**	**37.0**	**60.3**
10200E	371.5	2	3737.1	0.0	0.0	48.0	280.4	42.9	0.0	0.0	**0.9**	1.8	5.2	15.6	0.8	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**1.7**	**4.9**	**4.9**	**4.9**	**4.9**
10201A	717.3	1	10582.0	4609.8	0.0	71.3	550.7	97.0	0.0	0.0	**1.9**	2.1	5.2	6.8	0.9	0.0	1.0	20272.5	2.7	4.5	5.6	9.2	**2.4**	**17.9**	**29.2**	**36.6**	**60.1**
10300A	1405.6	0	0.0	11430.8	0.0	294.8	1110.8	0.0	0.0	0.0	**3.8**	2.2	4.0	5.8	1.0	75.8	1.1	26426.2	2.8	4.6	5.8	9.7	**3.2**	**22.2**	**36.7**	**46.3**	**76.9**
10300B	1279.6	1	0.0	11355.0	0.0	826.6	357.0	95.8	0.0	0.0	**3.4**	2.2	4.4	8.1	1.0	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**2.7**	**6.9**	**6.9**	**6.9**	**6.9**
10300C	1185.4	7	0.0	5596.9	0.0	512.8	535.5	120.8	0.0	16.3	**3.7**	2.0	7.8	4.0	1.0	29.9	1.0	26257.4	2.8	4.6	5.8	9.7	**2.6**	**18.6**	**30.7**	**38.6**	**64.2**
10300D	540.9	6	4289.4	1768.1	0.0	150.2	313.7	77.6	0.0	0.0	**1.7**	1.9	3.1	3.7	1.0	70.6	1.1	13363.8	2.6	4.2	5.3	8.5	**2.5**	**18.3**	**29.2**	**36.3**	**58.4**
10300E	1379.5	4	1667.3	7154.7	0.0	130.4	1148.4	100.7	0.0	0.0	**3.4**	2.2	4.0	4.7	1.0	21.7	1.0	41174.3	2.9	4.9	6.3	10.6	**2.9**	**21.7**	**36.5**	**46.4**	**78.7**
10301A	746.6	0	0.0	14254.4	0.0	117.2	538.1	91.6	0.0	0.0	**3.9**	1.6	5.5	5.5	1.0	17.6	1.0	45752.2	2.9	5.0	6.4	10.8	**2.1**	**15.7**	**26.7**	**34.0**	**57.9**

Table A3. Basin Development Factor, Tc and R Calculations (Alternative Conditions)

	Total Area of Subbasin	Percent impervious cover within subbasin	Length of natural channel	Length of improved channel	Length of concrete channel	Undeveloped area	Open space graded to drain	Developed area served by roadside ditch	Pre-1992 developed area served by storm sewer	Post-1992 developed area served by storm sewer	Basin Development Factor	Lag Time	Channel slope	Overland slope	Slope factor (≤ 1)	Detention rate for sub-basin	Detention Correction Factor (DR>10)	Percentage of the watershed affected by ponding	Adjustment factor (500-year)	Adjustment factor (100-year)	Adjustment factor (50-year)	Adjustment factor (10-year)	Adjusted Time of Concentration	Adjusted Clark Storage Coefficient (500-Year)	Adjusted Clark Storage Coefficient (100-Year)	Adjusted Clark Storage Coefficient (50-Year)	Adjusted Clark Storage Coefficient (10-Year)
Subbasin	**Area**	**%imp**	**N**	**I**	**C**	**U**	**OS**	**R**	**SS (pre-1992)**	**SS (post-1992)**	**BDF**	**Tr**	**S**	**So**	**Ks**	**DR**	**Cf**	**DPP**	**RM 500**	**RM 100**	**RM 50**	**RM 10**	**TC**	**R 500YR**	**R 100YR**	**R 50YR**	**R 10YR**
I.D.	**(acres)**	**(%)**	**(ft)**	**(ft)**	**(ft)**	**(ac)**	**(ac)**	**(ac)**	**(ac)**	**(ac)**		**(hr)**	**(ft/mi)**	**(ft/mi)**		**(ac-ft/ Sq mi)**		**(%)**					**(hr)**	**(hr)**	**(hr)**	**(hr)**	**(hr)**
10100A	1058.0	29	0.0	9342.0	0.0	241.6	120.6	412.2	0.0	283.7	**5.3**	1.6	4.1	11.7	0.9	110.1	1.3	0.0	1.0	1.0	1.0	1.0	**2.5**	**6.1**	**6.1**	**6.1**	**6.1**
10100B	559.8	0	0.0	7178.9	0.0	324.8	117.1	117.9	0.0	0.0	**3.5**	1.5	4.0	4.1	1.0	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**2.0**	**5.2**	**5.2**	**5.2**	**5.2**
10100C	329.0	31	0.0	4745.2	0.0	225.3	103.5	0.0	0.0	0.0	**3.3**	1.3	1.0	13.8	1.0	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**1.6**	**4.4**	**4.4**	**4.4**	**4.4**
10100D	1034.0	12	0.0	7375.0	0.0	463.7	441.9	110.0	0.0	18.6	**3.7**	1.9	3.1	5.5	1.0	7.9	1.0	0.0	1.0	1.0	1.0	1.0	**2.5**	**6.4**	**6.4**	**6.4**	**6.4**
10100E	681.2	27	0.0	12285.6	0.0	373.4	172.5	88.9	0.0	46.4	**3.9**	1.6	6.7	12.7	0.8	27.5	1.0	0.0	1.0	1.0	1.0	1.0	**1.7**	**4.3**	**4.3**	**4.3**	**4.3**
10100F	1277.2	56	0.0	9167.6	0.0	362.8	172.4	104.2	0.0	638.5	**6.3**	1.5	1.8	6.2	1.0	240.0	2.5	0.0	1.0	1.0	1.0	1.0	**5.6**	**13.0**	**13.0**	**13.0**	**13.0**
10100G	1298.0	5	0.0	6314.7	0.0	691.4	500.8	105.8	0.0	0.0	**3.5**	2.2	4.3	9.4	0.9	27.2	1.0	2165.1	2.3	3.3	4.0	5.9	**2.6**	**15.0**	**22.1**	**26.4**	**39.2**
10100H	1362.8	0	0.0	25963.5	0.0	1005.7	201.6	155.3	0.0	0.0	**3.3**	2.3	5.1	8.8	0.9	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**2.7**	**6.8**	**6.8**	**6.8**	**6.8**
10101A	991.9	24	0.0	10061.6	0.0	420.5	55.7	400.2	0.0	115.5	**4.4**	1.7	2.9	5.2	1.0	46.8	1.0	0.0	1.0	1.0	1.0	1.0	**2.4**	**6.0**	**6.0**	**6.0**	**6.0**
10102A	3135.6	51	0.0	13586.2	0.0	428.1	173.4	1207.2	0.0	1327.3	**6.2**	2.2	5.4	7.3	0.9	186.8	1.9	0.0	1.0	1.0	1.0	1.0	**5.8**	**12.9**	**12.9**	**12.9**	**12.9**
10103A	2359.5	54	0.0	16363.9	0.0	808.7	243.8	34.0	0.0	1271.0	**6.4**	1.9	4.2	6.9	1.0	216.1	2.2	0.0	1.0	1.0	1.0	1.0	**6.3**	**14.0**	**14.0**	**14.0**	**14.0**
10104A	626.1	3	0.0	12309.3	0.0	486.2	23.4	116.5	0.0	0.0	**3.3**	1.6	6.9	6.7	0.9	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**1.9**	**5.0**	**5.0**	**5.0**	**5.0**
10105A	1449.1	51	0.0	13987.2	0.0	675.1	55.9	69.1	0.0	649.0	**5.8**	1.7	4.2	6.5	1.0	173.8	1.7	0.0	1.0	1.0	1.0	1.0	**4.2**	**9.9**	**9.9**	**9.9**	**9.9**
10105B	1226.7	41	0.0	14921.3	0.0	199.5	369.5	208.7	0.0	449.1	**5.8**	1.6	4.3	9.5	0.9	170.1	1.7	0.0	1.0	1.0	1.0	1.0	**3.6**	**8.6**	**8.6**	**8.6**	**8.6**
10200A	1255.0	72	0.0	9178.9	0.0	219.5	184.2	0.0	0.0	851.0	**7.2**	1.4	5.3	6.9	0.9	276.9	3.0	8761.9	2.6	4.0	4.9	7.8	**5.9**	**33.7**	**52.9**	**65.1**	**102.8**
10200B	619.0	13	0.0	4504.9	0.0	221.3	322.2	55.1	0.0	20.5	**3.9**	1.5	3.2	6.3	1.0	13.8	1.0	0.0	1.0	1.0	1.0	1.0	**2.0**	**5.2**	**5.2**	**5.2**	**5.2**
10200C	730.9	16	0.0	7118.1	0.0	259.7	347.7	120.8	0.0	2.6	**3.7**	1.7	3.9	6.2	1.0	17.6	1.0	5767.8	2.5	3.8	4.6	7.2	**2.2**	**13.7**	**21.1**	**25.8**	**40.0**
10200D	883.8	1	0.0	13166.7	0.0	153.5	609.5	122.3	0.0	0.0	**3.9**	1.8	3.9	8.0	1.0	37.1	1.0	16913.1	2.7	4.4	5.5	8.9	**2.3**	**15.7**	**25.5**	**31.8**	**51.7**
10200E	371.5	2	0.0	3737.1	0.0	48.0	280.4	42.9	0.0	0.0	**3.9**	1.2	5.2	15.6	0.8	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**1.3**	**3.4**	**3.4**	**3.4**	**3.4**
10201A	717.3	14	0.0	15191.8	0.0	71.3	550.7	97.0	0.0	0.0	**4.0**	1.6	5.2	6.8	0.9	0.0	1.0	10689.6	2.6	4.1	5.1	8.1	**2.0**	**13.3**	**21.0**	**26.0**	**41.5**
10300A	1405.6	0	0.0	11430.8	0.0	294.8	1110.8	0.0	0.0	0.0	**3.8**	2.2	4.0	5.8	1.0	75.8	1.1	26426.2	2.8	4.6	5.8	9.7	**3.2**	**22.2**	**36.7**	**46.3**	**76.9**
10300B	1279.6	1	0.0	11355.0	0.0	826.6	357.0	95.8	0.0	0.0	**3.4**	2.2	4.4	8.1	1.0	0.0	1.0	0.0	1.0	1.0	1.0	1.0	**2.7**	**6.9**	**6.9**	**6.9**	**6.9**
10300C	1185.4	7	0.0	5596.9	0.0	512.8	535.5	120.8	0.0	16.3	**3.7**	2.0	7.8	4.0	1.0	29.9	1.0	26257.4	2.8	4.6	5.8	9.7	**2.6**	**18.6**	**30.7**	**38.6**	**64.2**
10300D	540.9	6	0.0	6057.5	0.0	150.2	313.7	77.6	0.0	0.0	**3.8**	1.5	3.1	3.7	1.0	70.6	1.1	13363.8	2.6	4.2	5.3	8.5	**2.1**	**14.3**	**22.8**	**28.3**	**45.6**
10300E	1379.5	11	0.0	8822.0	0.0	130.4	1148.4	100.7	0.0	0.0	**3.9**	2.1	4.0	4.7	1.0	21.7	1.0	36188.3	2.9	4.8	6.1	10.3	**2.8**	**20.1**	**33.6**	**42.6**	**71.9**
10301A	746.6	0	0.0	14254.4	0.0	117.2	538.1	91.6	0.0	0.0	**3.9**	1.6	5.5	5.5	1.0	17.6	1.0	45752.2	2.9	5.0	6.4	10.8	**2.1**	**15.7**	**26.7**	**34.0**	**57.9**

Legend

- Impervious Area
- HEC-HMS Subbasins
- Open space graded to drain area
- Developed area served by roadside ditch
- Post-1992 developed area served by storm sewer
- Undeveloped Area

N

Feet

0 3,000 6,000

Esri, NASA, NGA, USGS, FEMA, City of Alvin, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, Foursquare, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

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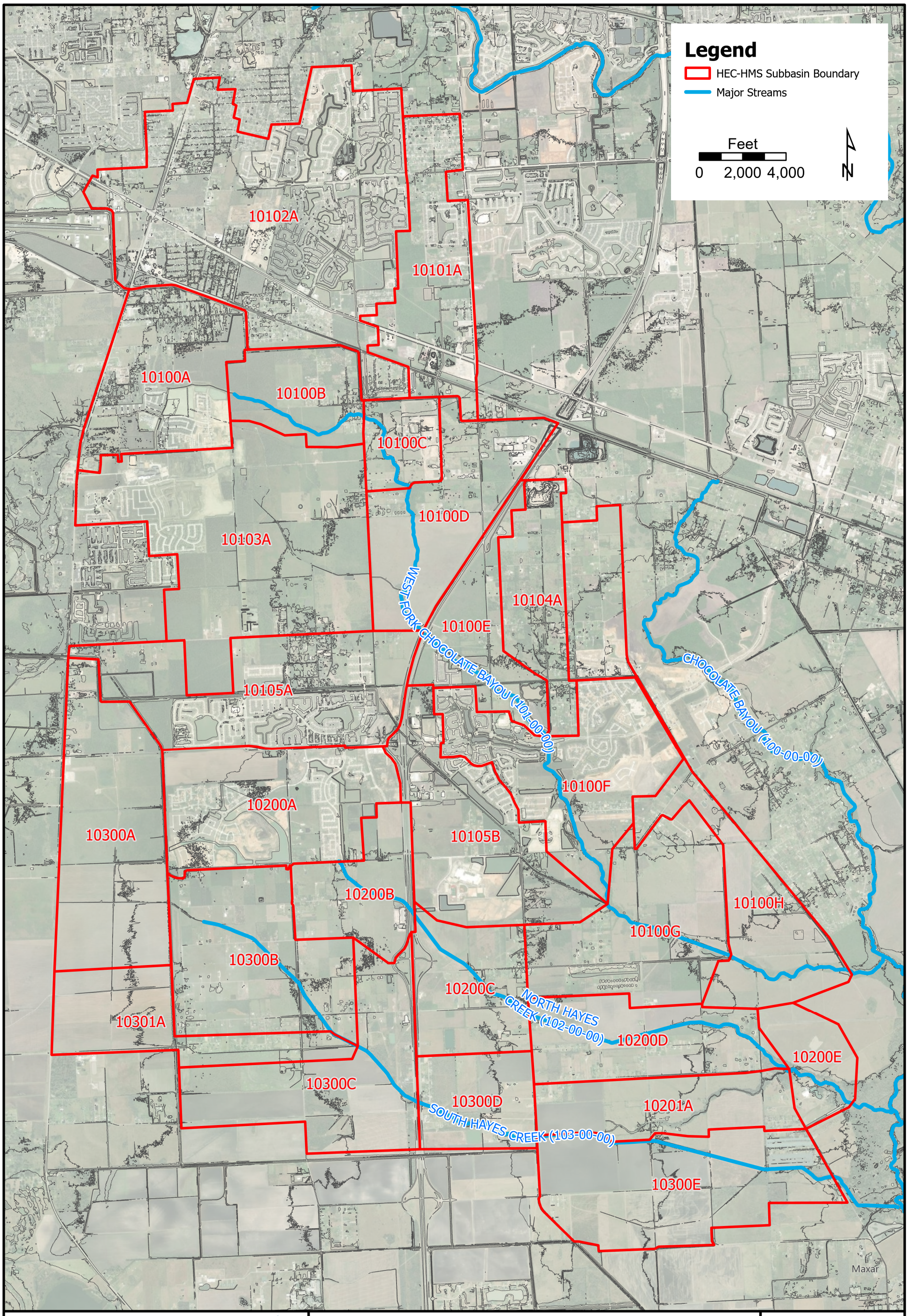
CITY OF IOWA COLONY MASTER DRAINAGE PLAN

WATERSHED LANDUSE

EXHIBIT A-1

5/30/2023



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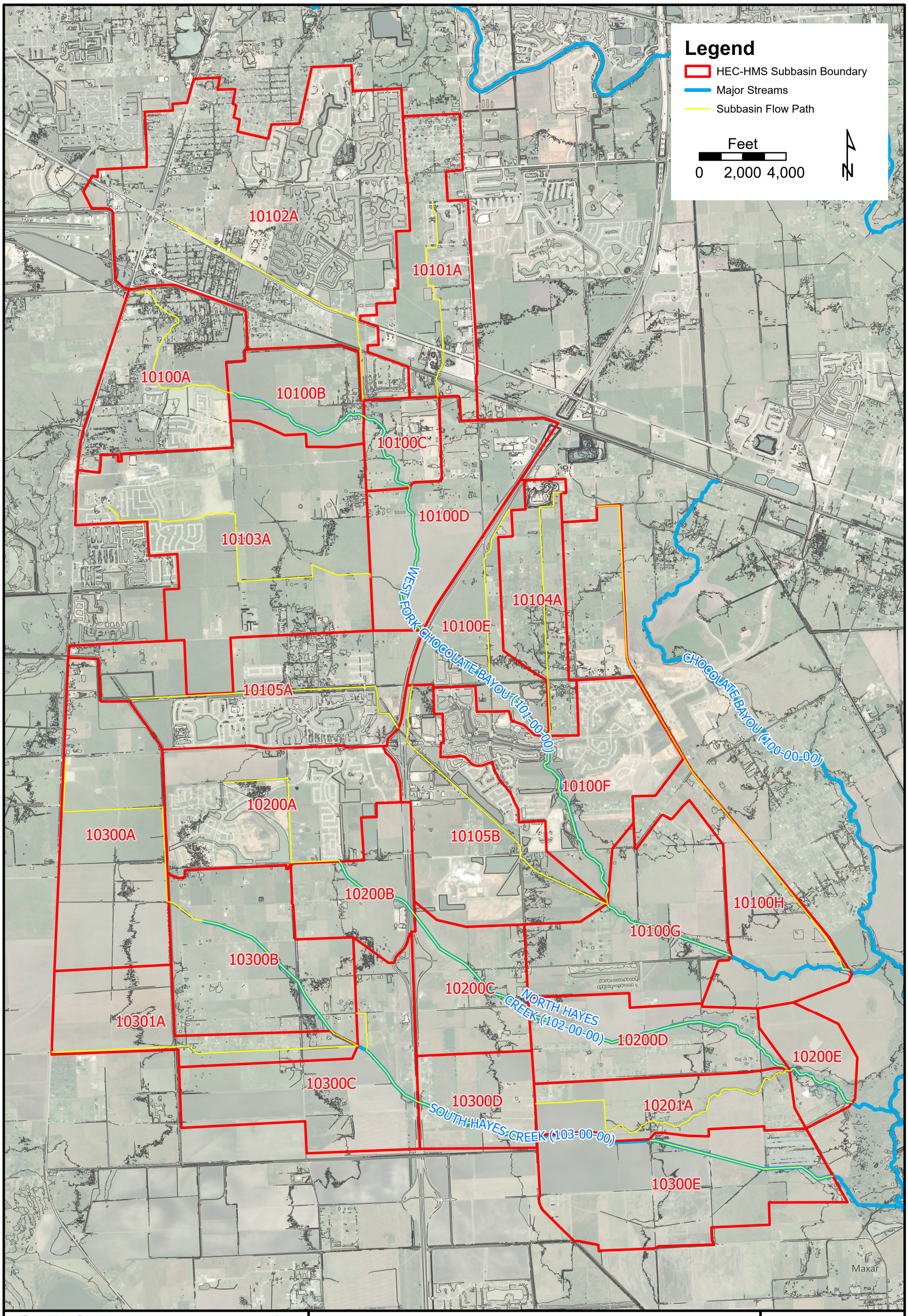
MASTER DRAINAGE PLAN

HEC-HMS WATERSHED SUBBASINS

EXHIBIT A-2

5/30/2023



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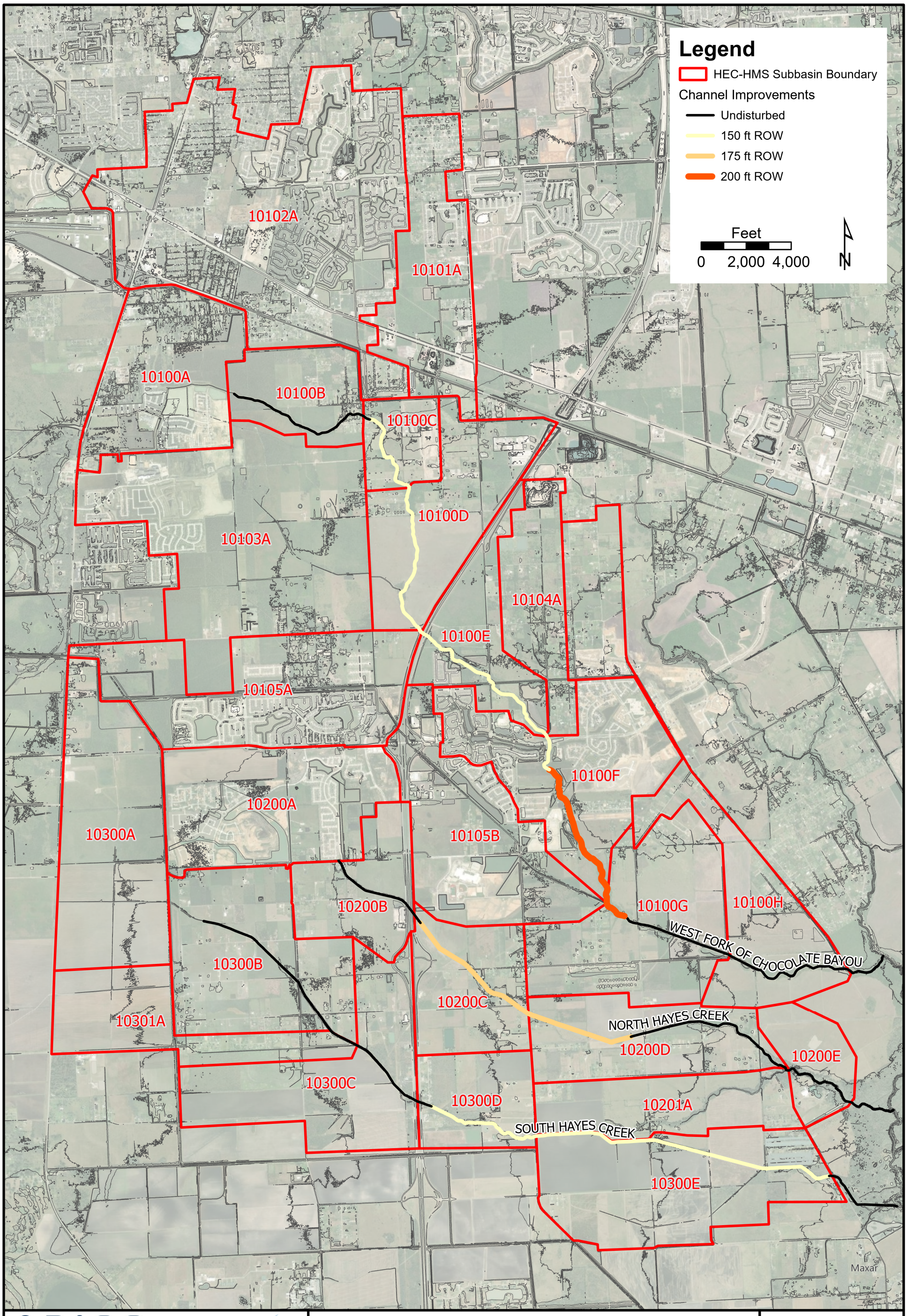
HEC-HMS SUBBASIN FLOW PATHS

EXHIBIT A-3

5/30/2023



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HEC-HMS ALT SUBBASIN CHANNEL MODIFICATIONS

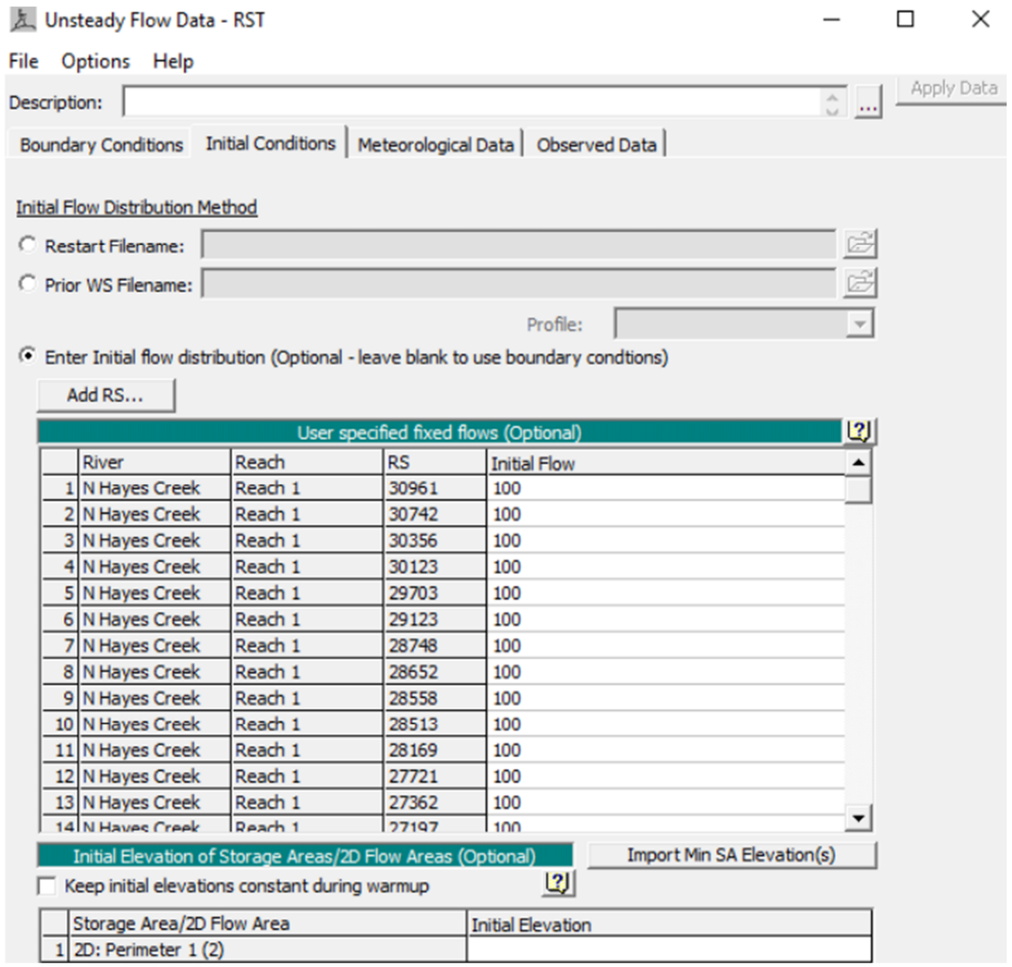
EXHIBIT A-4

5/30/2023

Appendix B – Hydraulic Modeling Approach

B.1 Unsteady Flow Data and Plans

The unsteady flow data for the restart file was included as such. **Figure B-1** shows the initial flow values added in the table.



	River	Reach	RS	Initial Flow
1	N Hayes Creek	Reach 1	30961	100
2	N Hayes Creek	Reach 1	30742	100
3	N Hayes Creek	Reach 1	30356	100
4	N Hayes Creek	Reach 1	30123	100
5	N Hayes Creek	Reach 1	29703	100
6	N Hayes Creek	Reach 1	29123	100
7	N Hayes Creek	Reach 1	28748	100
8	N Hayes Creek	Reach 1	28652	100
9	N Hayes Creek	Reach 1	28558	100
10	N Hayes Creek	Reach 1	28513	100
11	N Hayes Creek	Reach 1	28169	100
12	N Hayes Creek	Reach 1	27721	100
13	N Hayes Creek	Reach 1	27362	100
14	N Hayes Creek	Reach 1	27197	100

	Storage Area/2D Flow Area	Initial Elevation
1	2D: Perimeter 1 (2)	

Figure B-1. Restart Initial Flow Input

The unsteady flow analysis typical runtime information for the restart plans is shown in **Figure B-2** with the computation and tolerances for the restart files shown **in Figure B-3**.

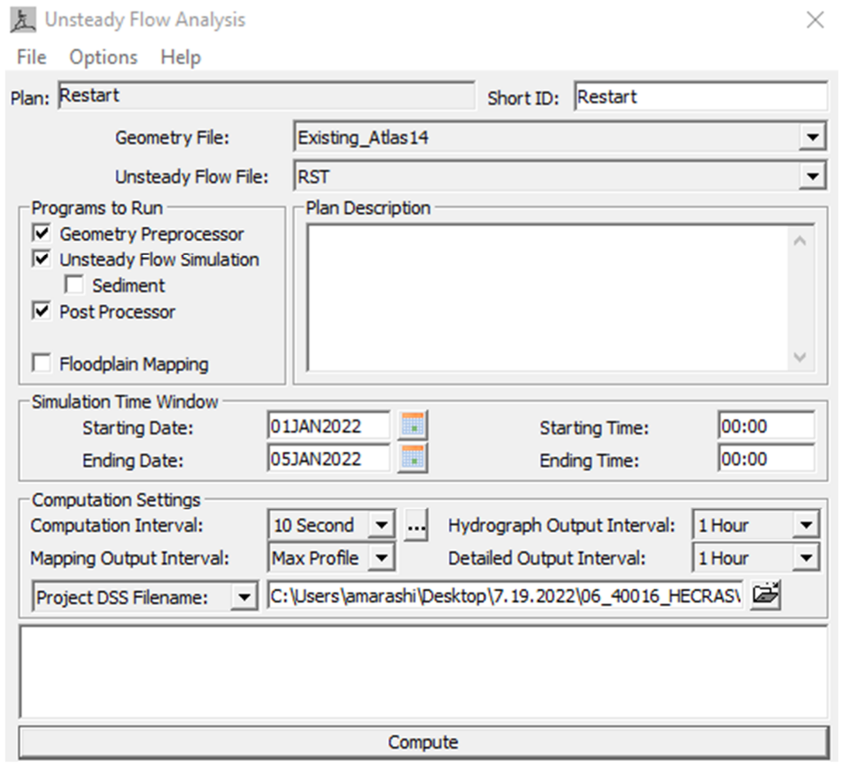


Figure B-2. Unsteady Flow Analysis Runtime Set Up

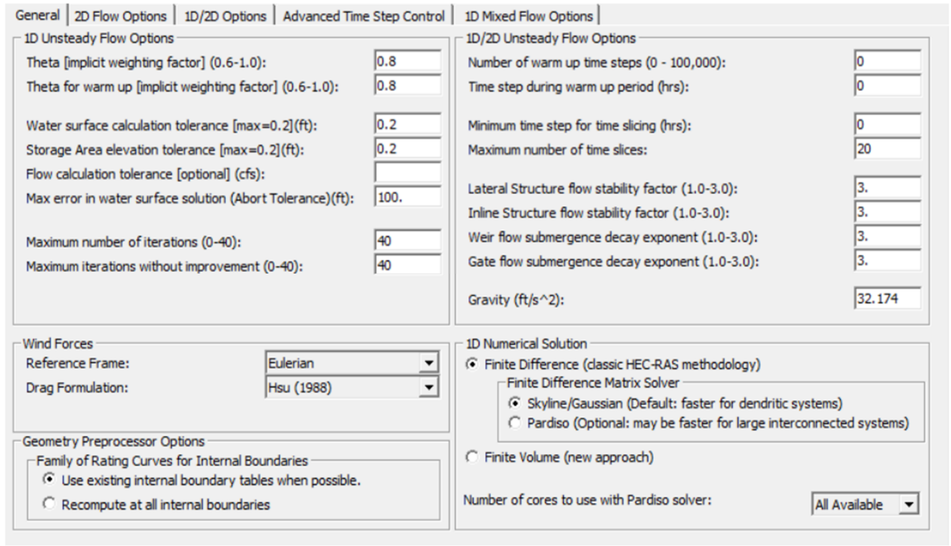


Figure B-3. Restart Computation and Tolerances

The inflow for each model varied based on the hydrologic results obtain from the HEC-HMS file. **Table B-1** shows the HEC-HMS subbasin and where they are input into the HEC-RAS model.

Table B-1. HEC-RAS River Stations Input Locations for HEC-HMS Hydrographs

HEC-RAS River	HEC-RAS River Stat	Flow Type	HEC-HMS Subbasin
N Hayes	30948	Flow Hydrograph	10200A
N Hayes	30741	Uniform Lateral: Upstream	10200B
N Hayes	27176	Uniform Lateral: Downstream	10200B
N Hayes	26461	Uniform Lateral: Upstream	10200C
N Hayes	19383	Uniform Lateral: Downstream	10200C
N Hayes	19263	Uniform Lateral: Upstream	10200D
N Hayes	6711	Uniform Lateral: Downstream	10200D
N Hayes	6045	Lateral Inflow	10201A
N Hayes	5376	Uniform Lateral: Upstream	10200E
N Hayes	2095	Uniform Lateral: Downstream	10200E
S Hayes	37203	Uniform Lateral: Upstream/Flow Hydrograph	10300B/10300A
S Hayes	28085	Lateral Inflow/Uniform Lateral: Downstream	10301A/10300B
S Hayes	27494	Uniform Lateral: Upstream	10300C
S Hayes	24219	Uniform Lateral: Downstream	10300C
S Hayes	23735	Uniform Lateral: Upstream	10300D
S Hayes	18011	Uniform Lateral: Downstream	10300D
S Hayes	17882	Uniform Lateral: Upstream	10300E
S Hayes	3683	Uniform Lateral: Downstream	10300E
W Fork	51004	Flow Hydrograph	10100A
W Fork	50013	Uniform Lateral: Upstream	10100B
W Fork	44363	Uniform Lateral: Downstream	10100B
W Fork	44263	Uniform Lateral: Upstream	10100C
W Fork	40328	Uniform Lateral: Upstream	10100C
W Fork	39472	Uniform Lateral: Upstream/Lateral Inflow/Lateral Inflow	10100D/10101A/10102A
W Fork	32646	Uniform Lateral: Downstream	10100D
W Fork	32096	Lateral Infow	10105A
W Fork	31777	Uniform Lateral: Upstream	10100E
W Fork	23947	Uniform Lateral: Downstream	10100E
W Fork	23518	Uniform Lateral: Upstream/Lateral Inflow	10100F/10104A
W Fork	14911	Uniform Lateral: Downstream	10100F
W Fork	14440	Uniform Lateral: Upstream/Lateral Inflow	10100G/10105B
W Fork	8352	Uniform Lateral: Downstream	10100G
W Fork	8320	Uniform Lateral: Upstream	10100H
W Fork	2449	Uniform Lateral: Downstream	10100H

The runtime settings for the design storm events are identical, use of the Finite Difference method, 40 maximum iterations, and a tolerance of 500-ft was set. **Figure B-4** shows the settings for 1D/2D options of the computations and tolerances options in plans.

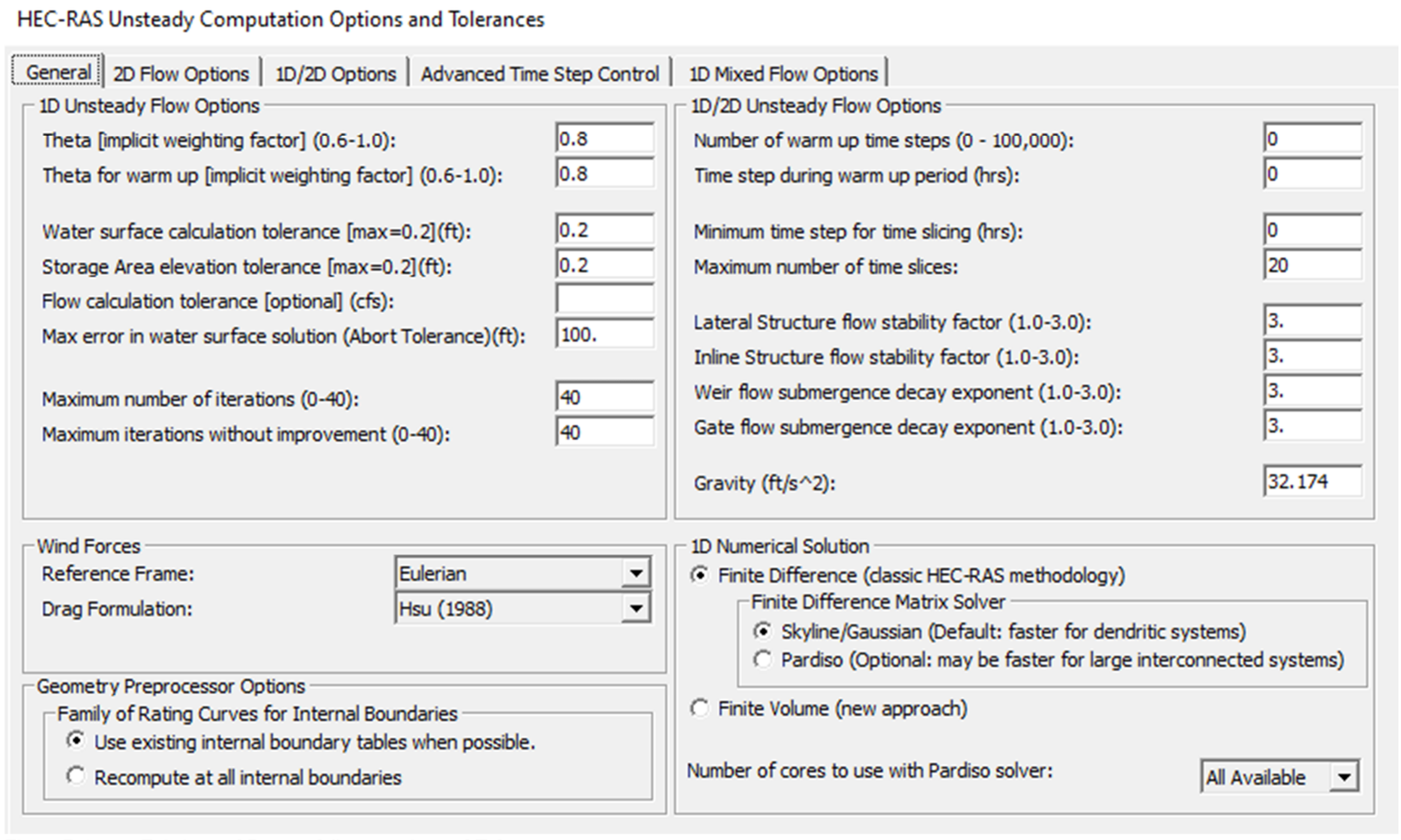


Figure B-4. Existing and Proposed Computation and Tolerances

A comparison of water surface elevation for the Existing vs. CIP and Existing vs. Alt conditions is shown **on Table B-2 to B-5.**

B.2 HEC-RAS 1D/2D Results and Comparison

Table B-2. 1D Resulting WSEL for Existing versus Capital Improvements Plan and Alternative (10-Year Storm)

River	River Station	Existing W.S. Elevation	CIP W.S. Elevation	Difference	Existing W.S. Elevation	ALT W.S. Elevation	Difference	Existing Q Total	CIP Q Total	Difference	Existing Q Total	Alt Q Total	Difference
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
W Fork	51004	57.45	57.44	-0.01	57.45	57.53	0.08	84.81	85.37	0.56	84.81	92.03	7.22
W Fork	50013	57.32	57.31	-0.01	57.32	57.37	0.05	186.87	188.19	1.32	186.87	213.59	26.72
W Fork	49293	57.22	57.20	-0.02	57.22	57.24	0.02	249.24	252.03	2.79	249.24	291.72	42.48
W Fork	48383	57.07	57.05	-0.02	57.07	57.05	-0.02	281.28	284.89	3.61	281.28	330.05	48.77
W Fork	46928	56.83	56.79	-0.04	56.83	56.71	-0.12	297.42	306.51	9.09	297.42	368.55	71.13
W Fork	46759	56.82	56.77	-0.05	56.82	56.68	-0.14	303.43	314.08	10.65	303.43	378.05	74.62
W Fork	46225	56.75	56.71	-0.04	56.75	56.56	-0.19	292.64	306.39	13.75	292.64	381.31	88.67
W Fork	45659	56.70	56.64	-0.06	56.70	56.45	-0.25	275.15	291.44	16.29	275.15	376.05	100.90
W Fork	45050	56.66	56.60	-0.06	56.66	56.35	-0.31	228.49	246.04	17.55	228.49	339.69	111.20
W Fork	44689	56.66	56.59	-0.07	56.66	56.32	-0.34	103.64	123.55	19.91	103.64	261.59	157.95
W Fork	44447	56.66	56.59	-0.07	56.66	56.32	-0.34	-50.43	-34.62	15.81	-50.43	169.30	219.73
W Fork	44363	56.66	56.59	-0.07	56.66	56.32	-0.34	-86.93	-70.91	16.02	-86.93	154.91	241.84
W Fork	44263	56.67	56.60	-0.07	56.67	56.31	-0.36	-95.61	-80.72	14.89	-95.61	154.21	249.82
W Fork	44147	56.67	56.60	-0.07	56.67	56.31	-0.36	-155.62	-137.17	18.45	-155.62	110.22	265.84
W Fork	43626	56.36	56.22	-0.14	56.36	56.04	-0.32	839.58	898.98	59.40	839.58	1203.53	363.95
W Fork	43089	56.05	55.80	-0.25	56.05	55.79	-0.26	798.68	892.64	93.96	798.68	1237.82	439.14
W Fork	42405	55.71	55.45	-0.26	55.71	55.35	-0.36	718.85	670.37	-48.48	718.85	1154.71	435.86
W Fork	41481	55.37	55.19	-0.18	55.37	55.00	-0.37	593.34	427.53	-165.81	593.34	647.02	53.68
W Fork	40328	55.05	54.84	-0.21	55.05	54.84	-0.21	635.49	714.51	79.02	635.49	564.86	-70.63
W Fork	39472	54.96	54.68	-0.28	54.96	54.74	-0.22	327.83	437.61	109.78	327.83	759.23	431.40
W Fork	38398	54.73	54.44	-0.29	54.73	54.55	-0.18	557.44	493.44	-64.00	557.44	958.81	401.37
W Fork	38222	54.70	54.42	-0.28	54.70	54.52	-0.18	494.30	443.78	-50.52	494.30	918.38	424.08
W Fork	38170	54.68	54.40	-0.28	54.68	54.49	-0.19	484.71	437.90	-46.81	484.71	858.10	373.39
W Fork	38079	54.61	54.34	-0.27	54.61	54.29	-0.32	482.17	437.51	-44.66	482.17	850.98	368.81
W Fork	38058	54.61	54.34	-0.27	54.61	54.31	-0.30	486.80	441.45	-45.35	486.80	874.28	387.48
W Fork	37923	54.58	54.31	-0.27	54.58	54.28	-0.30	491.04	441.01	-50.03	491.04	933.02	441.98
W Fork	37297	54.45	54.17	-0.28	54.45	54.14	-0.31	471.62	434.62	-37.00	471.62	1021.74	550.12
W Fork	36707	54.33	54.06	-0.27	54.33	54.01	-0.32	427.49	395.42	-32.07	427.49	977.64	550.15
W Fork	36123	54.21	53.92	-0.29	54.21	53.88	-0.33	462.87	443.44	-19.43	462.87	1051.27	588.40
W Fork	35439	54.03	53.72	-0.31	54.03	53.69	-0.34	544.05	515.67	-28.38	544.05	1118.92	574.87
W Fork	33855	53.76	53.50	-0.26	53.76	53.33	-0.43	479.54	369.29	-110.25	479.54	1228.77	749.23
W Fork	33191	53.42	53.13	-0.29	53.42	53.02	-0.40	1165.69	1123.66	-42.03	1165.69	1948.55	782.86
W Fork	32646	53.02	52.73	-0.29	53.02	52.74	-0.28	1334.10	1236.98	-97.12	1334.10	1988.85	654.75

W Fork	32138	52.71	52.45	-0.26	52.71	52.39	-0.32	1709.03	1505.85	-203.18	1709.03	2110.15	401.12
W Fork	32096	52.71	52.45	-0.26	52.71	52.41	-0.30	1709.27	1505.80	-203.47	1709.27	2117.88	408.61
W Fork	31777	52.55	52.34	-0.21	52.55	52.16	-0.39	1708.22	1504.83	-203.39	1708.22	2117.07	408.85
W Fork	31726	52.53	52.33	-0.20	52.53	52.16	-0.37	1697.72	1495.04	-202.68	1697.72	2122.41	424.69
W Fork	31011	52.17	51.98	-0.19	52.17	51.76	-0.41	1140.65	1052.86	-87.79	1140.65	1902.15	761.50
W Fork	30397	51.86	51.68	-0.18	51.86	51.34	-0.52	738.10	685.83	-52.27	738.10	1802.10	1064.00
W Fork	29875	51.61	51.42	-0.19	51.61	51.00	-0.61	821.15	778.92	-42.23	821.15	1858.35	1037.20
W Fork	29493	51.52	51.33	-0.19	51.52	50.82	-0.70	645.46	623.50	-21.96	645.46	1874.17	1228.71
W Fork	27829	50.72	50.56	-0.16	50.72	50.39	-0.33	932.92	876.39	-56.53	932.92	1787.17	854.25
W Fork	27814	50.71	50.55	-0.16	50.71	50.39	-0.32	933.84	877.37	-56.47	933.84	1762.54	828.70
W Fork	27717	50.65	50.50	-0.15	50.65	49.91	-0.74	932.42	877.22	-55.20	932.42	1762.34	829.92
W Fork	27700	50.65	50.49	-0.16	50.65	49.90	-0.75	932.53	877.34	-55.19	932.53	1789.27	856.74
W Fork	27474	50.49	50.35	-0.14	50.49	49.78	-0.71	928.98	879.90	-49.08	928.98	1709.51	780.53
W Fork	27110	50.34	50.19	-0.15	50.34	49.69	-0.65	791.72	759.80	-31.92	791.72	1515.19	723.47
W Fork	27070	50.30	50.15	-0.15	50.30	49.68	-0.62	774.53	746.32	-28.21	774.53	1476.60	702.07
W Fork	27053	50.24	50.09	-0.15	50.24	49.10	-1.14	773.31	744.63	-28.68	773.31	1472.04	698.73
W Fork	27004	50.22	50.06	-0.16	50.22	49.07	-1.15	819.14	793.56	-25.58	819.14	1457.36	638.22
W Fork	26409	49.90	49.74	-0.16	49.90	48.87	-1.03	934.41	909.75	-24.66	934.41	1292.52	358.11
W Fork	25744	49.64	49.46	-0.18	49.64	48.64	-1.00	840.09	830.80	-9.29	840.09	1281.03	440.94
W Fork	24706	49.37	49.18	-0.19	49.37	48.35	-1.02	812.94	777.53	-35.41	812.94	1070.97	258.03
W Fork	24589	49.31	49.12	-0.19	49.31	48.33	-0.98	809.35	774.88	-34.47	809.35	1069.24	259.89
W Fork	24122	49.13	48.93	-0.20	49.13	48.19	-0.94	851.18	807.74	-43.44	851.18	1398.89	547.71
W Fork	23947	49.04	48.85	-0.19	49.04	48.10	-0.94	847.06	799.76	-47.30	847.06	1717.50	870.44
W Fork	23604	48.87	48.69	-0.18	48.87	47.84	-1.03	1063.40	1003.29	-60.11	1063.40	1918.94	855.54
W Fork	23518	48.82	48.64	-0.18	48.82	47.78	-1.04	1105.17	1046.49	-58.68	1105.17	1909.92	804.75
W Fork	23373	48.75	48.57	-0.18	48.75	47.30	-1.45	1105.14	1046.48	-58.66	1105.14	1907.62	802.48
W Fork	23306	48.71	48.53	-0.18	48.71	47.19	-1.52	1081.56	1026.17	-55.39	1081.56	1887.25	805.69
W Fork	22672	48.10	47.93	-0.17	48.10	46.34	-1.76	1077.96	1019.21	-58.75	1077.96	2071.75	993.79
W Fork	22162	47.74	47.57	-0.17	47.74	46.17	-1.57	1273.81	1216.96	-56.85	1273.81	2154.49	880.68
W Fork	21791	47.51	47.33	-0.18	47.51	46.06	-1.45	1153.26	1133.18	-20.08	1153.26	2168.27	1015.01
W Fork	21283	47.32	47.13	-0.19	47.32	45.86	-1.46	987.46	976.65	-10.81	987.46	2250.12	1262.66
W Fork	20513	46.85	46.65	-0.20	46.85	45.61	-1.24	1276.92	1212.51	-64.41	1276.92	2069.04	792.12
W Fork	19920	46.49	46.29	-0.20	46.49	45.46	-1.03	1107.98	1061.14	-46.84	1107.98	2130.36	1022.38
W Fork	19519	46.34	46.13	-0.21	46.34	45.37	-0.97	1076.87	1033.74	-43.13	1076.87	2041.26	964.39
W Fork	19452	46.37	46.16	-0.21	46.37	45.38	-0.99	918.75	881.27	-37.48	918.75	2019.35	1100.60
W Fork	19439	46.36	46.15	-0.21	46.36	45.37	-0.99	851.64	816.43	-35.21	851.64	2005.29	1153.65
W Fork	19366	46.32	46.11	-0.21	46.32	45.36	-0.96	852.84	817.75	-35.09	852.84	1985.18	1132.34
W Fork	18605	45.99	45.78	-0.21	45.99	45.21	-0.78	844.42	809.39	-35.03	844.42	1869.60	1025.18
W Fork	17779	45.43	45.21	-0.22	45.43	45.05	-0.38	1068.96	1058.09	-10.87	1068.96	2006.91	937.95
W Fork	17721	45.39	45.16	-0.23	45.39	45.06	-0.33	1119.37	1123.44	4.07	1119.37	1903.72	784.35
W Fork	17656	45.23	44.99	-0.24	45.23	44.42	-0.81	1118.06	1123.30	5.24	1118.06	1891.80	773.74

W Fork	17575	45.18	44.94	-0.24	45.18	44.39	-0.79	1131.72	1140.33	8.61	1131.72	2020.43	888.71
W Fork	16646	44.76	44.49	-0.27	44.76	44.21	-0.55	1231.59	1068.13	-163.46	1231.59	1846.21	614.62
W Fork	15846	44.38	44.17	-0.21	44.38	44.14	-0.24	1096.85	952.12	-144.73	1096.85	1487.01	390.16
W Fork	15394	44.12	43.96	-0.16	44.12	44.12	0.00	1102.21	968.87	-133.34	1102.21	1395.13	292.92
W Fork	14911	43.95	43.76	-0.19	43.95	44.10	0.15	908.34	922.69	14.35	908.34	1124.00	215.66
W Fork	14440	43.80	43.60	-0.20	43.80	44.06	0.26	951.86	960.10	8.24	951.86	969.81	17.95
W Fork	13933	43.63	43.32	-0.31	43.63	43.98	0.35	1035.22	1256.28	221.06	1035.22	1054.44	19.22
W Fork	13771	43.59	43.22	-0.37	43.59	43.96	0.37	1022.12	1261.88	239.76	1022.12	1019.13	-2.99
W Fork	13736	43.57	43.20	-0.37	43.57	43.96	0.39	1018.43	1257.12	238.69	1018.43	1021.09	2.66
W Fork	13713	43.52	43.09	-0.43	43.52	43.91	0.39	1018.40	1256.65	238.25	1018.40	1020.76	2.36
W Fork	13680	43.51	43.09	-0.42	43.51	43.91	0.40	1050.53	1261.63	211.10	1050.53	1051.30	0.77
W Fork	13220	43.25	42.81	-0.44	43.25	43.75	0.50	1408.41	1377.93	-30.48	1408.41	1721.47	313.06
W Fork	12944	43.09	42.69	-0.40	43.09	43.61	0.52	1540.45	1349.00	-191.45	1540.45	1792.37	251.92
W Fork	12854	43.05	42.64	-0.41	43.05	43.61	0.56	1447.80	1303.05	-144.75	1447.80	1609.86	162.06
W Fork	12769	42.80	42.43	-0.37	42.80	43.22	0.42	1447.37	1301.31	-146.06	1447.37	1607.76	160.39
W Fork	12703	42.66	42.30	-0.36	42.66	43.07	0.41	1443.01	1300.60	-142.41	1443.01	1606.34	163.33
W Fork	12244	42.38	42.01	-0.37	42.38	42.77	0.39	1135.78	1024.19	-111.59	1135.78	1256.82	121.04
W Fork	11115	41.64	41.29	-0.35	41.64	41.92	0.28	1146.32	1045.04	-101.28	1146.32	1225.77	79.45
W Fork	11040	41.63	41.28	-0.35	41.63	41.91	0.28	1247.97	1134.85	-113.12	1247.97	1348.91	100.94
W Fork	10968	41.61	41.26	-0.35	41.61	41.89	0.28	1303.54	1180.68	-122.86	1303.54	1407.42	103.88
W Fork	10945	41.59	41.24	-0.35	41.59	41.88	0.29	1304.00	1179.11	-124.89	1304.00	1410.71	106.71
W Fork	9364	40.92	40.56	-0.36	40.92	41.19	0.27	1055.34	978.86	-76.48	1055.34	1164.36	109.02
W Fork	8384	40.35	40.06	-0.29	40.35	40.67	0.32	1291.23	939.77	-351.46	1291.23	1405.82	114.59
W Fork	8352	40.32	40.07	-0.25	40.32	40.67	0.35	1316.85	844.90	-471.95	1316.85	1380.78	63.93
W Fork	8320	40.22	40.03	-0.19	40.22	40.52	0.30	1316.82	838.40	-478.42	1316.82	1380.17	63.35
W Fork	8282	40.20	39.91	-0.29	40.20	40.51	0.31	1315.34	1240.64	-74.70	1315.34	1419.80	104.46
W Fork	7427	39.80	39.50	-0.30	39.80	40.08	0.28	1048.57	983.46	-65.11	1048.57	1135.18	86.61
W Fork	6777	39.49	39.19	-0.30	39.49	39.77	0.28	1126.86	1069.06	-57.80	1126.86	1168.41	41.55
W Fork	6131	39.14	38.85	-0.29	39.14	39.45	0.31	1288.07	1190.11	-97.96	1288.07	1302.16	14.09
W Fork	5494	38.80	38.53	-0.27	38.80	39.08	0.28	1339.16	1239.54	-99.62	1339.16	1461.75	122.59
W Fork	5087	38.60	38.34	-0.26	38.60	38.83	0.23	1285.33	1186.28	-99.05	1285.33	1477.71	192.38
W Fork	4024	38.09	37.84	-0.25	38.09	38.33	0.24	1134.04	1069.80	-64.24	1134.04	1211.89	77.85
W Fork	2968	37.51	37.28	-0.23	37.51	37.72	0.21	1265.55	1163.26	-102.29	1265.55	1362.80	97.25
W Fork	2449	37.26	37.06	-0.20	37.26	37.45	0.19	1317.61	1190.75	-126.86	1317.61	1429.34	111.73
W Fork	1392	36.95	36.78	-0.17	36.95	37.12	0.17	1180.68	1101.43	-79.25	1180.68	1256.45	75.77
W Fork	165	36.73	36.56	-0.17	36.73	36.89	0.16	960.18	923.36	-36.82	960.18	994.43	34.25
S Hayes	37203	52.51	52.51	0.00	52.51	52.39	-0.12	67.26	67.25	-0.01	67.26	70.71	3.45
S Hayes	36329	52.38	52.38	0.00	52.38	52.23	-0.15	62.71	62.65	-0.06	62.71	65.38	2.67
S Hayes	34868	52.05	52.05	0.00	52.05	51.82	-0.23	190.23	190.24	0.01	190.23	193.67	3.44
S Hayes	34779	52.04	52.04	0.00	52.04	51.80	-0.24	197.54	197.54	0.00	197.54	200.35	2.81
S Hayes	34618	51.97	51.97	0.00	51.97	51.74	-0.23	197.54	197.54	0.00	197.54	200.06	2.52

S Hayes	34512	51.92	51.92	0.00	51.92	51.67	-0.25	198.42	198.41	-0.01	198.42	197.91	-0.51
S Hayes	34331	51.81	51.81	0.00	51.81	51.57	-0.24	214.98	214.98	0.00	214.98	202.70	-12.28
S Hayes	33541	51.41	51.41	0.00	51.41	51.17	-0.24	258.09	258.04	-0.05	258.09	217.95	-40.14
S Hayes	32687	51.03	51.03	0.00	51.03	50.84	-0.19	257.11	257.19	0.08	257.11	247.57	-9.54
S Hayes	32190	50.88	50.88	0.00	50.88	50.70	-0.18	243.57	243.63	0.06	243.57	290.04	46.47
S Hayes	32114	50.87	50.87	0.00	50.87	50.68	-0.19	250.42	250.48	0.06	250.42	288.55	38.13
S Hayes	31903	50.71	50.71	0.00	50.71	50.46	-0.25	250.42	250.49	0.07	250.42	287.71	37.29
S Hayes	31806	50.67	50.67	0.00	50.67	50.43	-0.24	260.21	260.28	0.07	260.21	320.76	60.55
S Hayes	31054	50.48	50.48	0.00	50.48	50.25	-0.23	283.80	283.86	0.06	283.80	300.27	16.47
S Hayes	30342	50.26	50.26	0.00	50.26	50.05	-0.21	339.52	339.55	0.03	339.52	336.78	-2.74
S Hayes	30248	50.25	50.25	0.00	50.25	50.05	-0.20	348.78	348.81	0.03	348.78	301.75	-47.03
S Hayes	30101	50.03	50.03	0.00	50.03	49.87	-0.16	348.77	348.81	0.04	348.77	301.52	-47.25
S Hayes	30007	49.99	49.99	0.00	49.99	49.85	-0.14	355.16	355.21	0.05	355.16	349.91	-5.25
S Hayes	29429	49.81	49.81	0.00	49.81	49.70	-0.11	372.16	372.19	0.03	372.16	389.32	17.16
S Hayes	29291	49.76	49.76	0.00	49.76	49.66	-0.10	381.26	381.26	0.00	381.26	386.29	5.03
S Hayes	29262	49.76	49.76	0.00	49.76	49.65	-0.11	383.44	383.54	0.10	383.44	382.46	-0.98
S Hayes	29140	49.50	49.50	0.00	49.50	49.39	-0.11	376.27	376.41	0.14	376.27	381.43	5.16
S Hayes	29063	49.48	49.48	0.00	49.48	49.35	-0.13	377.48	377.47	-0.01	377.48	394.45	16.97
S Hayes	28680	49.31	49.31	0.00	49.31	49.17	-0.14	392.50	392.82	0.32	392.50	413.01	20.51
S Hayes	28085	49.06	49.06	0.00	49.06	48.87	-0.19	427.05	427.19	0.14	427.05	458.35	31.30
S Hayes	27494	48.85	48.85	0.00	48.85	48.65	-0.20	454.55	455.16	0.61	454.55	446.29	-8.26
S Hayes	27067	48.70	48.70	0.00	48.70	48.46	-0.24	472.27	472.89	0.62	472.27	516.90	44.63
S Hayes	26377	48.39	48.39	0.00	48.39	48.14	-0.25	454.22	454.40	0.18	454.22	476.16	21.94
S Hayes	25799	48.13	48.13	0.00	48.13	47.71	-0.42	434.80	435.64	0.84	434.80	591.34	156.54
S Hayes	24663	47.59	47.58	-0.01	47.59	46.35	-1.24	508.34	509.25	0.91	508.34	641.36	133.02
S Hayes	24358	47.32	47.31	-0.01	47.32	45.66	-1.66	595.14	595.29	0.15	595.14	643.61	48.47
S Hayes	24279	47.29	47.28	-0.01	47.29	45.47	-1.82	594.98	595.14	0.16	594.98	654.42	59.44
S Hayes	23735	47.26	47.25	-0.01	47.26	45.31	-1.95	594.92	595.07	0.15	594.92	654.42	59.50
S Hayes	23636	47.18	47.17	-0.01	47.18	45.23	-1.95	612.11	612.64	0.53	612.11	717.40	105.29
S Hayes	23016	46.83	46.81	-0.02	46.83	44.84	-1.99	555.53	558.49	2.96	555.53	717.34	161.81
S Hayes	22457	46.52	46.50	-0.02	46.52	44.56	-1.96	547.82	552.12	4.30	547.82	717.30	169.48
S Hayes	22221	46.41	46.38	-0.03	46.41	44.47	-1.94	547.49	551.48	3.99	547.49	717.27	169.78
S Hayes	21326	45.89	45.83	-0.06	45.89	44.14	-1.75	543.17	553.47	10.30	543.17	717.24	174.07
S Hayes	20923	45.55	45.46	-0.09	45.55	44.00	-1.55	586.31	594.94	8.63	586.31	717.21	130.90
S Hayes	20417	45.18	45.08	-0.10	45.18	43.77	-1.41	582.33	585.38	3.05	582.33	717.20	134.87
S Hayes	19676	44.65	44.52	-0.13	44.65	43.37	-1.28	610.01	617.20	7.19	610.01	717.19	107.18
S Hayes	19089	44.32	44.17	-0.15	44.32	43.02	-1.30	589.82	605.50	15.68	589.82	717.19	127.37
S Hayes	18667	44.10	43.92	-0.18	44.10	42.80	-1.30	561.65	585.77	24.12	561.65	717.18	155.53
S Hayes	18131	43.81	43.51	-0.30	43.81	42.50	-1.31	528.78	588.56	59.78	528.78	716.74	187.96
S Hayes	18011	43.76	43.44	-0.32	43.76	42.44	-1.32	527.34	588.20	60.86	527.34	716.23	188.89
S Hayes	17882	43.64	43.26	-0.38	43.64	42.13	-1.51	527.34	588.19	60.85	527.34	716.09	188.75

S Hayes	17819	43.61	43.22	-0.39	43.61	42.04	-1.57	622.17	682.27	60.10	622.17	828.98	206.81
S Hayes	17625	43.50	43.10	-0.40	43.50	41.94	-1.56	622.03	616.77	-5.26	622.03	828.98	206.95
S Hayes	16929	43.14	42.74	-0.40	43.14	41.68	-1.46	602.85	556.29	-46.56	602.85	828.97	226.12
S Hayes	16252	42.72	42.32	-0.40	42.72	41.48	-1.24	600.50	556.18	-44.32	600.50	798.96	198.46
S Hayes	15710	42.41	41.98	-0.43	42.41	41.36	-1.05	589.97	556.07	-33.90	589.97	751.49	161.52
S Hayes	15029	42.10	41.69	-0.41	42.10	41.26	-0.84	571.39	502.14	-69.25	571.39	589.20	17.81
S Hayes	14384	41.82	41.42	-0.40	41.82	41.21	-0.61	568.79	502.06	-66.73	568.79	474.92	-93.87
S Hayes	14005	41.62	41.24	-0.38	41.62	41.07	-0.55	574.66	500.74	-73.92	574.66	473.31	-101.35
S Hayes	13292	41.23	40.88	-0.35	41.23	40.68	-0.55	560.73	495.56	-65.17	560.73	454.80	-105.93
S Hayes	12382	40.77	40.45	-0.32	40.77	40.32	-0.45	546.82	494.14	-52.68	546.82	445.93	-100.89
S Hayes	11488	40.20	39.87	-0.33	40.20	39.82	-0.38	525.87	481.66	-44.21	525.87	439.59	-86.28
S Hayes	10519	39.25	38.92	-0.33	39.25	38.80	-0.45	536.13	489.81	-46.32	536.13	448.78	-87.35
S Hayes	10267	39.03	38.70	-0.33	39.03	38.56	-0.47	535.78	489.70	-46.08	535.78	448.64	-87.14
S Hayes	9653	38.66	38.36	-0.30	38.66	38.22	-0.44	535.51	489.51	-46.00	535.51	448.41	-87.10
S Hayes	9246	38.41	38.13	-0.28	38.41	38.02	-0.39	535.16	489.28	-45.88	535.16	448.17	-86.99
S Hayes	8443	37.90	37.65	-0.25	37.90	37.61	-0.29	525.09	484.76	-40.33	525.09	444.24	-80.85
S Hayes	7748	37.49	37.25	-0.24	37.49	37.23	-0.26	507.52	479.96	-27.56	507.52	440.24	-67.28
S Hayes	6801	36.59	36.35	-0.24	36.59	36.41	-0.18	501.07	476.39	-24.68	501.07	432.66	-68.41
S Hayes	6039	35.83	35.56	-0.27	35.83	35.79	-0.04	494.87	472.92	-21.95	494.87	419.74	-75.13
S Hayes	5587	35.36	35.09	-0.27	35.36	35.35	-0.01	512.85	480.19	-32.66	512.85	429.24	-83.61
S Hayes	4889	34.52	34.24	-0.28	34.52	34.21	-0.31	510.78	479.57	-31.21	510.78	431.04	-79.74
S Hayes	4426	34.09	33.82	-0.27	34.09	33.65	-0.44	512.72	482.93	-29.79	512.72	436.06	-76.66
S Hayes	3865	33.73	33.49	-0.24	33.73	33.34	-0.39	541.26	486.86	-54.40	541.26	447.38	-93.88
S Hayes	3683	33.69	33.45	-0.24	33.69	33.30	-0.39	527.58	483.93	-43.65	527.58	443.89	-83.69
S Hayes	3538	33.63	33.40	-0.23	33.63	33.26	-0.37	527.58	483.93	-43.65	527.58	441.93	-85.65
S Hayes	3380	33.54	33.32	-0.22	33.54	33.18	-0.36	525.90	483.76	-42.14	525.90	441.94	-83.96
S Hayes	2974	33.24	33.05	-0.19	33.24	32.89	-0.35	505.68	471.92	-33.76	505.68	431.66	-74.02
S Hayes	2913	33.22	33.03	-0.19	33.22	32.88	-0.34	505.55	471.86	-33.69	505.55	431.64	-73.91
S Hayes	2835	32.99	32.83	-0.16	32.99	32.72	-0.27	505.22	471.86	-33.36	505.22	431.58	-73.64
S Hayes	2769	32.94	32.79	-0.15	32.94	32.67	-0.27	505.09	471.86	-33.23	505.09	431.57	-73.52
S Hayes	2619	32.80	32.66	-0.14	32.80	32.55	-0.25	505.01	471.78	-33.23	505.01	431.50	-73.51
S Hayes	2137	32.37	32.27	-0.10	32.37	32.21	-0.16	494.37	465.70	-28.67	494.37	429.11	-65.26
S Hayes	1905	32.26	32.17	-0.09	32.26	32.12	-0.14	485.52	459.80	-25.72	485.52	424.61	-60.91
S Hayes	1622	32.16	32.07	-0.09	32.16	32.04	-0.12	484.07	459.18	-24.89	484.07	423.90	-60.17
S Hayes	1185	32.06	31.98	-0.08	32.06	31.95	-0.11	466.19	441.02	-25.17	466.19	408.18	-58.01
S Hayes	707	32.00	31.92	-0.08	32.00	31.90	-0.10	391.51	378.28	-13.23	391.51	362.96	-28.55
S Hayes	284	31.97	31.89	-0.08	31.97	31.87	-0.10	292.42	286.84	-5.58	292.42	285.23	-7.19
N Hayes	30961	49.39	49.39	0.00	49.39	49.32	-0.07	74.08	74.06	-0.02	74.08	67.45	-6.63
N Hayes	30742	49.34	49.34	0.00	49.34	49.28	-0.06	73.65	73.58	-0.07	73.65	64.55	-9.10
N Hayes	30356	49.29	49.29	0.00	49.29	49.23	-0.06	105.91	105.92	0.01	105.91	104.00	-1.91
N Hayes	30123	49.24	49.24	0.00	49.24	49.17	-0.07	113.40	113.50	0.10	113.40	119.45	6.05

N Hayes	29703	49.14	49.14	0.00	49.14	49.03	-0.11	137.87	138.04	0.17	137.87	154.18	16.31
N Hayes	29123	48.97	48.97	0.00	48.97	48.77	-0.20	183.40	183.72	0.32	183.40	221.06	37.66
N Hayes	28748	48.87	48.87	0.00	48.87	48.57	-0.30	202.47	202.97	0.50	202.47	256.16	53.69
N Hayes	28652	48.85	48.84	-0.01	48.85	48.52	-0.33	203.88	204.37	0.49	203.88	260.75	56.87
N Hayes	28558	48.74	48.74	0.00	48.74	48.34	-0.40	203.87	204.37	0.50	203.87	260.75	56.88
N Hayes	28513	48.73	48.72	-0.01	48.73	48.30	-0.43	210.38	210.90	0.52	210.38	266.12	55.74
N Hayes	28169	48.62	48.62	0.00	48.62	48.05	-0.57	244.76	245.46	0.70	244.76	311.66	66.90
N Hayes	27721	48.44	48.43	-0.01	48.44	47.42	-1.02	267.97	269.18	1.21	267.97	359.88	91.91
N Hayes	27362	48.31	48.30	-0.01	48.31	46.76	-1.55	289.15	291.03	1.88	289.15	400.14	110.99
N Hayes	27197	48.27	48.26	-0.01	48.27	46.53	-1.74	332.99	334.80	1.81	332.99	419.70	86.71
N Hayes	26405	48.26	48.25	-0.01	48.26	46.55	-1.71	332.97	334.86	1.89	332.97	419.70	86.73
N Hayes	26348	48.22	48.21	-0.01	48.22	46.52	-1.70	314.20	316.19	1.99	314.20	420.02	105.82
N Hayes	25970	48.01	48.00	-0.01	48.01	46.30	-1.71	317.93	320.63	2.70	317.93	425.63	107.70
N Hayes	25468	47.76	47.74	-0.02	47.76	46.04	-1.72	316.59	319.99	3.40	316.59	433.19	116.60
N Hayes	25135	47.62	47.58	-0.04	47.62	45.90	-1.72	312.30	316.31	4.01	312.30	438.29	125.99
N Hayes	24504	47.30	47.25	-0.05	47.30	45.60	-1.70	323.55	331.11	7.56	323.55	448.41	124.86
N Hayes	23880	46.81	46.66	-0.15	46.81	45.30	-1.51	314.26	329.73	15.47	314.26	457.88	143.62
N Hayes	23475	46.46	46.21	-0.25	46.46	45.09	-1.37	317.81	334.90	17.09	317.81	464.01	146.20
N Hayes	23175	46.21	45.85	-0.36	46.21	44.91	-1.30	320.18	336.78	16.60	320.18	468.53	148.35
N Hayes	22938	46.01	45.53	-0.48	46.01	44.78	-1.23	309.43	334.54	25.11	309.43	472.12	162.69
N Hayes	22883	45.99	45.49	-0.50	45.99	44.75	-1.24	310.86	335.46	24.60	310.86	472.93	162.07
N Hayes	22839	45.97	45.43	-0.54	45.97	44.72	-1.25	321.94	356.93	34.99	321.94	473.85	151.91
N Hayes	22732	45.69	45.06	-0.63	45.69	44.19	-1.50	321.48	356.93	35.45	321.48	472.46	150.98
N Hayes	22663	45.64	44.97	-0.67	45.64	44.15	-1.49	322.26	357.80	35.54	322.26	473.21	150.95
N Hayes	22356	45.48	44.61	-0.87	45.48	43.98	-1.50	329.35	366.28	36.93	329.35	477.48	148.13
N Hayes	21810	45.17	44.14	-1.03	45.17	43.70	-1.47	343.47	296.55	-46.92	343.47	484.86	141.39
N Hayes	21491	44.99	43.92	-1.07	44.99	43.56	-1.43	353.48	293.15	-60.33	353.48	489.37	135.89
N Hayes	20586	44.53	43.36	-1.17	44.53	43.29	-1.24	363.03	278.19	-84.84	363.03	502.42	139.39
N Hayes	20278	44.39	43.20	-1.19	44.39	43.21	-1.18	346.79	244.49	-102.30	346.79	507.07	160.28
N Hayes	20159	44.37	43.17	-1.20	44.37	43.19	-1.18	347.47	246.27	-101.20	347.47	508.97	161.50
N Hayes	19934	44.29	43.14	-1.15	44.29	43.06	-1.23	347.47	246.27	-101.20	347.47	508.39	160.92
N Hayes	19841	44.25	43.11	-1.14	44.25	43.04	-1.21	359.13	247.47	-111.66	359.13	509.61	150.48
N Hayes	19659	44.20	43.06	-1.14	44.20	43.00	-1.20	356.65	250.04	-106.61	356.65	512.31	155.66
N Hayes	19505	44.13	43.00	-1.13	44.13	42.97	-1.16	358.57	252.19	-106.38	358.57	514.58	156.01
N Hayes	19394	44.11	42.96	-1.15	44.11	42.95	-1.16	355.75	253.64	-102.11	355.75	515.63	159.88
N Hayes	19263	44.01	42.87	-1.14	44.01	42.83	-1.18	355.75	253.64	-102.11	355.75	514.89	159.14
N Hayes	19172	43.97	42.82	-1.15	43.97	42.81	-1.16	361.48	254.26	-107.22	361.48	515.66	154.18
N Hayes	18658	43.68	42.52	-1.16	43.68	42.71	-0.97	364.38	259.00	-105.38	364.38	518.82	154.44
N Hayes	18218	43.43	42.26	-1.17	43.43	42.63	-0.80	369.91	260.62	-109.29	369.91	521.62	151.71
N Hayes	17823	43.26	42.09	-1.17	43.26	42.55	-0.71	376.15	263.25	-112.90	376.15	522.88	146.73
N Hayes	17784	43.20	42.04	-1.16	43.20	42.55	-0.65	375.35	263.52	-111.83	375.35	523.07	147.72

N Hayes	17725	43.22	42.04	-1.18	43.22	42.38	-0.84	377.16	263.52	-113.64	377.16	521.67	144.51
N Hayes	17684	43.20	42.02	-1.18	43.20	42.37	-0.83	379.32	263.80	-115.52	379.32	521.92	142.60
N Hayes	16695	42.81	41.59	-1.22	42.81	42.16	-0.65	378.77	270.39	-108.38	378.77	527.97	149.20
N Hayes	16144	42.42	41.24	-1.18	42.42	42.05	-0.37	380.66	274.08	-106.58	380.66	501.09	120.43
N Hayes	15295	41.75	40.68	-1.07	41.75	41.90	0.15	375.32	279.73	-95.59	375.32	496.03	120.71
N Hayes	14581	41.25	40.22	-1.03	41.25	41.78	0.53	388.69	284.46	-104.23	388.69	498.33	109.64
N Hayes	14073	40.76	39.71	-1.05	40.76	41.44	0.68	391.47	287.87	-103.60	391.47	499.89	108.42
N Hayes	13846	40.51	39.42	-1.09	40.51	41.25	0.74	392.29	269.79	-122.50	392.29	495.62	103.33
N Hayes	13776	40.41	39.30	-1.11	40.41	41.16	0.75	389.78	268.54	-121.24	389.78	486.91	97.13
N Hayes	13476	40.28	39.17	-1.11	40.28	41.00	0.72	390.26	268.54	-121.72	390.26	482.15	91.89
N Hayes	12804	39.85	38.76	-1.09	39.85	40.58	0.73	399.84	272.97	-126.87	399.84	485.38	85.54
N Hayes	12148	39.36	38.31	-1.05	39.36	40.12	0.76	397.25	276.82	-120.43	397.25	484.80	87.55
N Hayes	11610	38.89	37.85	-1.04	38.89	39.59	0.70	400.01	280.13	-119.88	400.01	490.79	90.78
N Hayes	11065	38.31	37.26	-1.05	38.31	38.92	0.61	387.87	282.59	-105.28	387.87	500.83	112.96
N Hayes	10229	37.46	36.43	-1.03	37.46	38.12	0.66	430.03	297.79	-132.24	430.03	497.90	67.87
N Hayes	9624	37.03	36.01	-1.02	37.03	37.70	0.67	435.74	300.91	-134.83	435.74	534.30	98.56
N Hayes	9030	36.66	35.67	-0.99	36.66	37.34	0.68	440.17	303.46	-136.71	440.17	519.16	78.99
N Hayes	8148	36.14	35.18	-0.96	36.14	36.81	0.67	444.39	309.27	-135.12	444.39	552.65	108.26
N Hayes	7969	36.02	35.06	-0.96	36.02	36.68	0.66	460.06	322.36	-137.70	460.06	543.14	83.08
N Hayes	7937	36.03	35.07	-0.96	36.03	36.70	0.67	459.12	322.40	-136.72	459.12	544.05	84.93
N Hayes	7824	35.95	35.01	-0.94	35.95	36.63	0.68	459.12	322.40	-136.72	459.12	533.91	74.79
N Hayes	7749	35.92	34.98	-0.94	35.92	36.59	0.67	459.32	322.97	-136.35	459.32	534.22	74.90
N Hayes	7678	35.86	34.93	-0.93	35.86	36.53	0.67	459.40	323.42	-135.98	459.40	534.68	75.28
N Hayes	7607	35.81	34.88	-0.93	35.81	36.48	0.67	459.33	323.92	-135.41	459.33	535.19	75.86
N Hayes	7510	35.75	34.82	-0.93	35.75	36.43	0.68	459.87	324.23	-135.64	459.87	535.80	75.93
N Hayes	7159	35.54	34.62	-0.92	35.54	36.25	0.71	465.16	329.83	-135.33	465.16	539.63	74.47
N Hayes	6711	35.21	34.34	-0.87	35.21	35.93	0.72	466.30	331.47	-134.83	466.30	539.79	73.49
N Hayes	6045	34.74	33.97	-0.77	34.74	35.51	0.77	449.02	327.30	-121.72	449.02	550.17	101.15
N Hayes	5377	34.15	33.46	-0.69	34.15	34.96	0.81	499.60	371.96	-127.64	499.60	640.69	141.09
N Hayes	4771	33.83	33.19	-0.64	33.83	34.68	0.85	520.57	400.58	-119.99	520.57	644.30	123.73
N Hayes	3997	33.63	33.02	-0.61	33.63	34.50	0.87	547.35	442.25	-105.10	547.35	660.57	113.22
N Hayes	3899	33.63	33.02	-0.61	33.63	34.50	0.87	552.54	448.74	-103.80	552.54	656.93	104.39
N Hayes	3798	33.50	32.91	-0.59	33.50	34.39	0.89	550.16	448.74	-101.42	550.16	656.86	106.70
N Hayes	3689	33.39	32.81	-0.58	33.39	34.29	0.90	552.59	454.20	-98.39	552.59	669.67	117.08
N Hayes	3370	33.24	32.67	-0.57	33.24	34.09	0.85	564.60	472.74	-91.86	564.60	659.89	95.29
N Hayes	2774	32.80	32.28	-0.52	32.80	33.65	0.85	587.25	500.64	-86.61	587.25	662.32	75.07
N Hayes	2090	32.07	31.59	-0.48	32.07	32.92	0.85	615.94	546.53	-69.41	615.94	722.18	106.24
N Hayes	1311	31.25	30.77	-0.48	31.25	32.03	0.78	615.79	545.26	-70.53	615.79	733.26	117.47
N Hayes	706	30.57	30.09	-0.48	30.57	31.32	0.75	617.41	546.41	-71.00	617.41	733.12	115.71
N Hayes	349	30.22	29.74	-0.48	30.22	30.98	0.76	616.88	546.06	-70.82	616.88	733.11	116.23

Table B-3. 1D Resulting WSEL for Existing versus Capital Improvements Plan and Alternative (50-Year Storm)

River	River Station	Existing W.S. Elevation	CIP W.S. Elevation	Difference	Existing W.S. Elevation	ALT W.S. Elevation	Difference	Existing Q Total	CIP Q Total	Difference	Existing Q Total	Alt Q Total	Difference
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
W Fork	51004	57.87	57.87	0.00	57.87	57.96	0.09	92.34	92.80	0.46	92.34	101.39	9.05
W Fork	50013	57.74	57.73	-0.01	57.74	57.80	0.06	230.33	231.67	1.34	230.33	263.15	32.82
W Fork	49293	57.64	57.63	-0.01	57.64	57.67	0.03	299.16	302.72	3.56	299.16	358.43	59.27
W Fork	48383	57.50	57.48	-0.02	57.50	57.47	-0.03	337.06	343.24	6.18	337.06	411.75	74.69
W Fork	46928	57.32	57.28	-0.04	57.32	57.15	-0.17	282.37	292.18	9.81	282.37	396.11	113.74
W Fork	46759	57.30	57.27	-0.03	57.30	57.13	-0.17	282.01	292.61	10.60	282.01	398.62	116.61
W Fork	46225	57.27	57.24	-0.03	57.27	57.04	-0.23	242.98	256.75	13.77	242.98	378.85	135.87
W Fork	45659	57.26	57.21	-0.05	57.26	56.97	-0.29	190.18	207.44	17.26	190.18	357.54	167.36
W Fork	45050	57.25	57.20	-0.05	57.25	56.91	-0.34	116.32	139.22	22.90	116.32	332.49	216.17
W Fork	44689	57.25	57.20	-0.05	57.25	56.90	-0.35	-23.01	0.73	23.74	-23.01	228.09	251.10
W Fork	44447	57.24	57.20	-0.04	57.24	56.90	-0.34	-211.79	-192.06	19.73	-211.79	82.10	293.89
W Fork	44363	57.24	57.20	-0.04	57.24	56.90	-0.34	-265.91	-246.03	19.88	-265.91	52.00	317.91
W Fork	44263	57.28	57.23	-0.05	57.28	56.89	-0.39	-306.98	-291.03	15.95	-306.98	43.64	350.62
W Fork	44147	57.27	57.22	-0.05	57.27	56.89	-0.38	-419.98	-402.54	17.44	-419.98	-43.59	376.39
W Fork	43626	56.88	56.79	-0.09	56.88	56.56	-0.32	1115.07	1147.13	32.06	1115.07	1683.59	568.52
W Fork	43089	56.53	56.37	-0.16	56.53	56.24	-0.29	960.88	991.88	31.00	960.88	1664.66	703.78
W Fork	42405	56.21	56.01	-0.20	56.21	55.84	-0.37	813.01	793.55	-19.46	813.01	1375.40	562.39
W Fork	41481	55.90	55.83	-0.07	55.90	55.58	-0.32	672.56	344.12	-328.44	672.56	669.48	-3.08
W Fork	40328	55.60	55.53	-0.07	55.60	55.45	-0.15	721.56	861.44	139.88	721.56	695.16	-26.40
W Fork	39472	55.53	55.41	-0.12	55.53	55.36	-0.17	307.60	436.22	128.62	307.60	852.67	545.07
W Fork	38398	55.30	55.17	-0.13	55.30	55.22	-0.08	660.28	622.71	-37.57	660.28	1138.73	478.45
W Fork	38222	55.28	55.15	-0.13	55.28	55.20	-0.08	569.36	537.02	-32.34	569.36	1067.40	498.04
W Fork	38170	55.26	55.13	-0.13	55.26	55.18	-0.08	551.79	524.40	-27.39	551.79	956.78	404.99
W Fork	38079	55.18	55.06	-0.12	55.18	54.93	-0.25	545.56	521.08	-24.48	545.56	944.74	399.18
W Fork	38058	55.17	55.05	-0.12	55.17	54.95	-0.22	550.63	525.14	-25.49	550.63	979.60	428.97
W Fork	37923	55.15	55.03	-0.12	55.15	54.92	-0.23	554.82	525.61	-29.21	554.82	1073.78	518.96
W Fork	37297	55.03	54.91	-0.12	55.03	54.81	-0.22	533.56	527.68	-5.88	533.56	1240.58	707.02
W Fork	36707	54.94	54.81	-0.13	54.94	54.72	-0.22	477.07	469.00	-8.07	477.07	1199.04	721.97
W Fork	36123	54.84	54.71	-0.13	54.84	54.62	-0.22	488.33	485.07	-3.26	488.33	1257.07	768.74
W Fork	35439	54.70	54.56	-0.14	54.70	54.49	-0.21	572.09	565.94	-6.15	572.09	1335.19	763.10
W Fork	33855	54.55	54.39	-0.16	54.55	54.27	-0.28	348.60	383.71	35.11	348.60	1284.04	935.44
W Fork	33191	54.24	54.07	-0.17	54.24	54.02	-0.22	1361.15	1318.25	-42.90	1361.15	2501.02	1139.87
W Fork	32646	53.86	53.69	-0.17	53.86	53.81	-0.05	1596.63	1555.21	-41.42	1596.63	2600.07	1003.44
W Fork	32138	53.47	53.30	-0.17	53.47	53.45	-0.02	2276.37	2163.31	-113.06	2276.37	2941.09	664.72
W Fork	32096	53.47	53.30	-0.17	53.47	53.45	-0.02	2289.23	2172.53	-116.70	2289.23	2948.03	658.80
W Fork	31777	53.12	53.00	-0.12	53.12	52.82	-0.30	2287.97	2172.05	-115.92	2287.97	2945.75	657.78

W Fork	31726	53.10	52.98	-0.12	53.10	52.82	-0.28	2275.87	2158.22	-117.65	2275.87	2983.57	707.70
W Fork	31011	52.72	52.61	-0.11	52.72	52.44	-0.28	1389.69	1334.64	-55.05	1389.69	2492.38	1102.69
W Fork	30397	52.39	52.28	-0.11	52.39	52.03	-0.36	895.27	860.34	-34.93	895.27	2392.91	1497.64
W Fork	29875	52.15	52.04	-0.11	52.15	51.73	-0.42	936.08	908.17	-27.91	936.08	2367.07	1430.99
W Fork	29493	52.08	51.97	-0.11	52.08	51.58	-0.50	694.20	681.13	-13.07	694.20	2379.35	1685.15
W Fork	27829	51.24	51.14	-0.10	51.24	51.19	-0.05	1103.23	1067.81	-35.42	1103.23	2268.27	1165.04
W Fork	27814	51.22	51.12	-0.10	51.22	51.18	-0.04	1103.57	1068.36	-35.21	1103.57	2220.38	1116.81
W Fork	27717	51.16	51.06	-0.10	51.16	50.58	-0.58	1103.49	1068.31	-35.18	1103.49	2219.20	1115.71
W Fork	27700	51.15	51.06	-0.09	51.15	50.57	-0.58	1103.74	1068.56	-35.18	1103.74	2258.85	1155.11
W Fork	27474	50.97	50.88	-0.09	50.97	50.45	-0.52	1101.98	1071.87	-30.11	1101.98	2150.35	1048.37
W Fork	27110	50.82	50.73	-0.09	50.82	50.40	-0.42	885.32	865.06	-20.26	885.32	1674.81	789.49
W Fork	27070	50.78	50.69	-0.09	50.78	50.39	-0.39	859.36	841.22	-18.14	859.36	1594.25	734.89
W Fork	27053	50.73	50.64	-0.09	50.73	49.67	-1.06	859.30	841.21	-18.09	859.30	1589.49	730.19
W Fork	27004	50.70	50.61	-0.09	50.70	49.64	-1.06	899.22	883.51	-15.71	899.22	1568.75	669.53
W Fork	26409	50.44	50.34	-0.10	50.44	49.52	-0.92	976.64	962.21	-14.43	976.64	1274.60	297.96
W Fork	25744	50.25	50.15	-0.10	50.25	49.42	-0.83	824.50	817.70	-6.80	824.50	1128.17	303.67
W Fork	24706	50.02	49.91	-0.11	50.02	49.29	-0.73	917.08	898.70	-18.38	917.08	1129.50	212.42
W Fork	24589	49.96	49.85	-0.11	49.96	49.28	-0.68	912.63	897.48	-15.15	912.63	1175.83	263.20
W Fork	24122	49.77	49.67	-0.10	49.77	49.19	-0.58	985.99	950.13	-35.86	985.99	1664.11	678.12
W Fork	23947	49.68	49.59	-0.09	49.68	49.13	-0.55	1000.89	954.95	-45.94	1000.89	2056.21	1055.32
W Fork	23604	49.52	49.43	-0.09	49.52	48.92	-0.60	1184.86	1139.93	-44.93	1184.86	2389.13	1204.27
W Fork	23518	49.47	49.38	-0.09	49.47	48.86	-0.61	1287.59	1249.07	-38.52	1287.59	2422.86	1135.27
W Fork	23373	49.38	49.30	-0.08	49.38	48.33	-1.05	1287.55	1249.01	-38.54	1287.55	2417.97	1130.42
W Fork	23306	49.34	49.26	-0.08	49.34	48.25	-1.09	1256.55	1220.90	-35.65	1256.55	2444.86	1188.31
W Fork	22672	48.74	48.66	-0.08	48.74	47.58	-1.16	1251.02	1224.89	-26.13	1251.02	2882.98	1631.96
W Fork	22162	48.39	48.31	-0.08	48.39	47.40	-0.99	1473.35	1453.14	-20.21	1473.35	3113.56	1640.21
W Fork	21791	48.20	48.12	-0.08	48.20	47.27	-0.93	1265.23	1249.96	-15.27	1265.23	3159.95	1894.72
W Fork	21283	48.04	47.95	-0.09	48.04	47.11	-0.93	1071.12	1059.28	-11.84	1071.12	3046.97	1975.85
W Fork	20513	47.57	47.48	-0.09	47.57	46.86	-0.71	1496.70	1460.50	-36.20	1496.70	3049.50	1552.80
W Fork	19920	47.21	47.12	-0.09	47.21	46.68	-0.53	1338.27	1292.70	-45.57	1338.27	3257.13	1918.86
W Fork	19519	47.06	46.98	-0.08	47.06	46.56	-0.50	1268.68	1231.17	-37.51	1268.68	3190.70	1922.02
W Fork	19452	47.09	47.01	-0.08	47.09	46.57	-0.52	1099.60	1065.45	-34.15	1099.60	3167.22	2067.62
W Fork	19439	47.08	47.00	-0.08	47.08	46.56	-0.52	1025.43	993.06	-32.37	1025.43	3147.87	2122.44
W Fork	19366	47.04	46.96	-0.08	47.04	46.54	-0.50	1027.10	995.04	-32.06	1027.10	3120.52	2093.42
W Fork	18605	46.66	46.59	-0.07	46.66	46.35	-0.31	1027.39	998.27	-29.12	1027.39	2873.55	1846.16
W Fork	17779	46.20	46.14	-0.06	46.20	46.21	0.01	1164.38	1136.97	-27.41	1164.38	2502.29	1337.91
W Fork	17721	46.16	46.10	-0.06	46.16	46.23	0.07	1184.59	1163.49	-21.10	1184.59	2249.70	1065.11
W Fork	17656	45.98	45.93	-0.05	45.98	45.38	-0.60	1181.40	1160.66	-20.74	1181.40	2175.09	993.69
W Fork	17575	45.94	45.89	-0.05	45.94	45.35	-0.59	1212.46	1198.29	-14.17	1212.46	2417.51	1205.05
W Fork	16646	45.58	45.52	-0.06	45.58	45.15	-0.43	1382.55	1376.10	-6.45	1382.55	2621.85	1239.30
W Fork	15846	45.26	45.29	0.03	45.26	45.06	-0.20	1268.48	1048.94	-219.54	1268.48	2156.04	887.56

W Fork	15394	45.04	45.11	0.07	45.04	45.02	-0.02	1286.15	1168.91	-117.24	1286.15	2056.51	770.36
W Fork	14911	44.89	44.96	0.07	44.89	45.00	0.11	1085.96	1085.94	-0.02	1085.96	1657.84	571.88
W Fork	14440	44.74	44.84	0.10	44.74	44.95	0.21	1164.22	1109.87	-54.35	1164.22	1445.26	281.04
W Fork	13933	44.55	44.50	-0.05	44.55	44.85	0.30	1327.20	1722.19	394.99	1327.20	1519.62	192.42
W Fork	13771	44.49	44.40	-0.09	44.49	44.83	0.34	1317.77	1697.15	379.38	1317.77	1451.75	133.98
W Fork	13736	44.48	44.38	-0.10	44.48	44.83	0.35	1317.88	1681.86	363.98	1317.88	1448.25	130.37
W Fork	13713	44.42	44.28	-0.14	44.42	44.77	0.35	1317.62	1681.18	363.56	1317.62	1448.16	130.54
W Fork	13680	44.42	44.28	-0.14	44.42	44.76	0.34	1358.80	1686.69	327.89	1358.80	1486.22	127.42
W Fork	13220	44.14	43.99	-0.15	44.14	44.61	0.47	1780.45	1828.36	47.91	1780.45	2163.26	382.81
W Fork	12944	43.99	43.85	-0.14	43.99	44.48	0.49	1851.95	1773.93	-78.02	1851.95	2147.25	295.30
W Fork	12854	43.95	43.80	-0.15	43.95	44.48	0.53	1722.80	1700.70	-22.10	1722.80	1911.61	188.81
W Fork	12769	43.62	43.48	-0.14	43.62	44.07	0.45	1721.99	1700.07	-21.92	1721.99	1911.18	189.19
W Fork	12703	43.47	43.34	-0.13	43.47	43.90	0.43	1728.44	1690.16	-38.28	1728.44	1942.35	213.91
W Fork	12244	43.24	43.12	-0.12	43.24	43.65	0.41	1317.91	1231.67	-86.24	1317.91	1431.56	113.65
W Fork	11115	42.41	42.31	-0.10	42.41	42.71	0.30	1440.91	1406.44	-34.47	1440.91	1542.59	101.68
W Fork	11040	42.41	42.31	-0.10	42.41	42.70	0.29	1565.99	1529.07	-36.92	1565.99	1700.21	134.22
W Fork	10968	42.39	42.28	-0.11	42.39	42.68	0.29	1651.54	1618.87	-32.67	1651.54	1787.48	135.94
W Fork	10945	42.36	42.26	-0.10	42.36	42.66	0.30	1657.10	1624.77	-32.33	1657.10	1795.64	138.54
W Fork	9364	41.66	41.55	-0.11	41.66	41.94	0.28	1252.73	1234.76	-17.97	1252.73	1373.39	120.66
W Fork	8384	41.09	40.95	-0.14	41.09	41.42	0.33	1541.52	1531.20	-10.32	1541.52	1670.85	129.33
W Fork	8352	41.08	40.95	-0.13	41.08	41.44	0.36	1530.47	1470.46	-60.01	1530.47	1585.09	54.62
W Fork	8320	40.91	40.80	-0.11	40.91	41.24	0.33	1528.36	1470.48	-57.88	1528.36	1538.42	10.06
W Fork	8282	40.89	40.78	-0.11	40.89	41.20	0.31	1572.45	1492.69	-79.76	1572.45	1716.28	143.83
W Fork	7427	40.43	40.34	-0.09	40.43	40.72	0.29	1228.29	1195.47	-32.82	1228.29	1371.46	143.17
W Fork	6777	40.10	40.01	-0.09	40.10	40.39	0.29	1326.92	1288.44	-38.48	1326.92	1410.43	83.51
W Fork	6131	39.75	39.66	-0.09	39.75	40.08	0.33	1505.31	1471.10	-34.21	1505.31	1502.29	-3.02
W Fork	5494	39.38	39.29	-0.09	39.38	39.69	0.31	1571.65	1534.37	-37.28	1571.65	1719.35	147.70
W Fork	5087	39.14	39.06	-0.08	39.14	39.41	0.27	1513.50	1478.32	-35.18	1513.50	1757.19	243.69
W Fork	4024	38.63	38.55	-0.08	38.63	38.90	0.27	1273.20	1252.49	-20.71	1273.20	1360.46	87.26
W Fork	2968	38.00	37.92	-0.08	38.00	38.24	0.24	1488.16	1454.66	-33.50	1488.16	1590.51	102.35
W Fork	2449	37.70	37.63	-0.07	37.70	37.94	0.24	1571.16	1535.03	-36.13	1571.16	1685.51	114.35
W Fork	1392	37.37	37.30	-0.07	37.37	37.59	0.22	1301.70	1288.42	-13.28	1301.70	1361.16	59.46
W Fork	165	37.14	37.07	-0.07	37.14	37.36	0.22	1050.03	1034.53	-15.50	1050.03	1099.71	49.68
S Hayes	37203	53.41	53.41	0.00	53.41	53.39	-0.02	107.22	107.22	0.00	107.22	108.23	1.01
S Hayes	36329	53.22	53.22	0.00	53.22	53.19	-0.03	158.74	158.90	0.16	158.74	161.52	2.78
S Hayes	34868	52.70	52.70	0.00	52.70	52.50	-0.20	277.03	277.08	0.05	277.03	303.12	26.09
S Hayes	34779	52.67	52.67	0.00	52.67	52.47	-0.20	287.97	287.99	0.02	287.97	312.57	24.60
S Hayes	34618	52.53	52.53	0.00	52.53	52.31	-0.22	287.01	286.97	-0.04	287.01	312.27	25.26
S Hayes	34512	52.46	52.46	0.00	52.46	52.22	-0.24	269.31	269.33	0.02	269.31	306.67	37.36
S Hayes	34331	52.34	52.34	0.00	52.34	52.10	-0.24	292.87	292.89	0.02	292.87	298.12	5.25
S Hayes	33541	51.93	51.93	0.00	51.93	51.69	-0.24	307.27	307.25	-0.02	307.27	272.72	-34.55

S Hayes	32687	51.56	51.56	0.00	51.56	51.37	-0.19	304.51	304.47	-0.04	304.51	314.63	10.12
S Hayes	32190	51.45	51.45	0.00	51.45	51.24	-0.21	243.86	243.93	0.07	243.86	348.65	104.79
S Hayes	32114	51.44	51.44	0.00	51.44	51.23	-0.21	252.10	252.17	0.07	252.10	328.15	76.05
S Hayes	31903	51.26	51.26	0.00	51.26	50.96	-0.30	252.05	252.14	0.09	252.05	327.26	75.21
S Hayes	31806	51.24	51.24	0.00	51.24	50.93	-0.31	268.40	268.47	0.07	268.40	395.02	126.62
S Hayes	31054	51.07	51.07	0.00	51.07	50.76	-0.31	295.48	295.52	0.04	295.48	351.10	55.62
S Hayes	30342	50.90	50.90	0.00	50.90	50.55	-0.35	357.54	357.53	-0.01	357.54	419.24	61.70
S Hayes	30248	50.89	50.89	0.00	50.89	50.54	-0.35	356.30	356.32	0.02	356.30	361.19	4.89
S Hayes	30101	50.60	50.60	0.00	50.60	50.31	-0.29	355.32	355.29	-0.03	355.32	360.85	5.53
S Hayes	30007	50.57	50.57	0.00	50.57	50.28	-0.29	366.29	366.28	-0.01	366.29	445.31	79.02
S Hayes	29429	50.41	50.41	0.00	50.41	50.13	-0.28	397.63	397.79	0.16	397.63	454.30	56.67
S Hayes	29291	50.36	50.36	0.00	50.36	50.09	-0.27	414.01	414.06	0.05	414.01	395.77	-18.24
S Hayes	29262	50.36	50.36	0.00	50.36	50.09	-0.27	417.48	417.50	0.02	417.48	375.37	-42.11
S Hayes	29140	50.08	50.08	0.00	50.08	49.86	-0.22	409.69	409.67	-0.02	409.69	375.19	-34.50
S Hayes	29063	50.05	50.05	0.00	50.05	49.83	-0.22	405.13	405.15	0.02	405.13	399.84	-5.29
S Hayes	28680	49.92	49.92	0.00	49.92	49.68	-0.24	402.11	402.42	0.31	402.11	440.97	38.86
S Hayes	28085	49.77	49.77	0.00	49.77	49.42	-0.35	373.80	373.78	-0.02	373.80	485.53	111.73
S Hayes	27494	49.67	49.66	-0.01	49.67	49.26	-0.41	372.65	372.72	0.07	372.65	428.37	55.72
S Hayes	27067	49.55	49.55	0.00	49.55	49.10	-0.45	489.28	489.58	0.30	489.28	595.72	106.44
S Hayes	26377	49.34	49.34	0.00	49.34	48.88	-0.46	449.04	449.53	0.49	449.04	486.87	37.83
S Hayes	25799	49.23	49.23	0.00	49.23	48.68	-0.55	330.45	330.62	0.17	330.45	545.12	214.67
S Hayes	24663	48.70	48.70	0.00	48.70	48.16	-0.54	679.10	679.50	0.40	679.10	685.99	6.89
S Hayes	24358	48.18	48.18	0.00	48.18	47.48	-0.70	976.81	977.00	0.19	976.81	1039.30	62.49
S Hayes	24279	48.12	48.12	0.00	48.12	47.24	-0.88	977.42	977.58	0.16	977.42	1164.75	187.33
S Hayes	23735	48.08	48.07	-0.01	48.08	47.06	-1.02	977.39	977.59	0.20	977.39	1164.74	187.35
S Hayes	23636	47.91	47.91	0.00	47.91	46.96	-0.95	1004.44	1004.49	0.05	1004.44	1297.56	293.12
S Hayes	23016	47.55	47.55	0.00	47.55	46.55	-1.00	671.81	673.13	1.32	671.81	1287.29	615.48
S Hayes	22457	47.28	47.27	-0.01	47.28	46.20	-1.08	625.57	627.57	2.00	625.57	1288.60	663.03
S Hayes	22221	47.17	47.16	-0.01	47.17	46.09	-1.08	640.45	642.46	2.01	640.45	1281.24	640.79
S Hayes	21326	46.79	46.77	-0.02	46.79	45.67	-1.12	597.70	602.32	4.62	597.70	1279.87	682.17
S Hayes	20923	46.47	46.45	-0.02	46.47	45.49	-0.98	733.13	740.87	7.74	733.13	1278.21	545.08
S Hayes	20417	46.06	46.01	-0.05	46.06	45.21	-0.85	764.93	774.27	9.34	764.93	1283.37	518.44
S Hayes	19676	45.41	45.30	-0.11	45.41	44.72	-0.69	753.31	775.43	22.12	753.31	1230.09	476.78
S Hayes	19089	45.05	44.87	-0.18	45.05	44.26	-0.79	702.97	737.91	34.94	702.97	1232.77	529.80
S Hayes	18667	44.84	44.61	-0.23	44.84	43.98	-0.86	654.63	671.46	16.83	654.63	1190.19	535.56
S Hayes	18131	44.55	44.25	-0.30	44.55	43.59	-0.96	660.21	680.94	20.73	660.21	1198.61	538.40
S Hayes	18011	44.51	44.18	-0.33	44.51	43.55	-0.96	640.47	693.86	53.39	640.47	1120.58	480.11
S Hayes	17882	44.34	44.00	-0.34	44.34	43.04	-1.30	638.38	693.09	54.71	638.38	1105.98	467.60
S Hayes	17819	44.26	43.92	-0.34	44.26	42.89	-1.37	862.70	880.79	18.09	862.70	1331.89	469.19
S Hayes	17625	44.08	43.85	-0.23	44.08	42.76	-1.32	861.69	674.70	-186.99	861.69	1291.02	429.33
S Hayes	16929	43.61	43.55	-0.06	43.61	42.41	-1.20	753.06	578.62	-174.44	753.06	1134.76	381.70

S Hayes	16252	43.13	43.19	0.06	43.13	42.29	-0.84	708.07	590.52	-117.55	708.07	772.77	64.70
S Hayes	15710	42.78	42.90	0.12	42.78	42.26	-0.52	660.85	634.21	-26.64	660.85	561.46	-99.39
S Hayes	15029	42.47	42.51	0.04	42.47	42.22	-0.25	617.27	717.05	99.78	617.27	523.33	-93.94
S Hayes	14384	42.19	42.15	-0.04	42.19	42.18	-0.01	607.60	691.65	84.05	607.60	571.13	-36.47
S Hayes	14005	42.01	41.94	-0.07	42.01	42.05	0.04	601.49	649.27	47.78	601.49	623.46	21.97
S Hayes	13292	41.64	41.52	-0.12	41.64	41.66	0.02	605.88	618.62	12.74	605.88	628.60	22.72
S Hayes	12382	41.21	41.04	-0.17	41.21	41.27	0.06	597.26	598.70	1.44	597.26	585.18	-12.08
S Hayes	11488	40.69	40.47	-0.22	40.69	40.80	0.11	567.49	565.87	-1.62	567.49	559.16	-8.33
S Hayes	10519	39.78	39.52	-0.26	39.78	39.81	0.03	601.92	573.04	-28.88	601.92	583.92	-18.00
S Hayes	10267	39.56	39.30	-0.26	39.56	39.57	0.01	601.57	572.95	-28.62	601.57	582.81	-18.76
S Hayes	9653	39.18	38.92	-0.26	39.18	39.19	0.01	606.83	569.15	-37.68	606.83	600.27	-6.56
S Hayes	9246	38.92	38.66	-0.26	38.92	38.94	0.02	605.72	568.95	-36.77	605.72	597.44	-8.28
S Hayes	8443	38.44	38.16	-0.28	38.44	38.48	0.04	570.92	551.80	-19.12	570.92	557.61	-13.31
S Hayes	7748	38.15	37.78	-0.37	38.15	38.19	0.04	457.25	506.39	49.14	457.25	440.67	-16.58
S Hayes	6801	37.23	36.90	-0.33	37.23	37.35	0.12	518.35	528.14	9.79	518.35	487.56	-30.79
S Hayes	6039	36.44	36.17	-0.27	36.44	36.69	0.25	522.02	522.54	0.52	522.02	486.50	-35.52
S Hayes	5587	36.00	35.71	-0.29	36.00	36.27	0.27	595.40	566.02	-29.38	595.40	553.57	-41.83
S Hayes	4889	35.18	34.87	-0.31	35.18	35.28	0.10	600.12	566.20	-33.92	600.12	546.43	-53.69
S Hayes	4426	34.72	34.43	-0.29	34.72	34.74	0.02	635.48	583.76	-51.72	635.48	611.70	-23.78
S Hayes	3865	34.30	34.04	-0.26	34.30	34.32	0.02	672.73	602.49	-70.24	672.73	662.14	-10.59
S Hayes	3683	34.26	34.00	-0.26	34.26	34.28	0.02	656.78	587.21	-69.57	656.78	647.92	-8.86
S Hayes	3538	34.15	33.91	-0.24	34.15	34.17	0.02	656.72	587.21	-69.51	656.72	647.66	-9.06
S Hayes	3380	34.05	33.82	-0.23	34.05	34.07	0.02	656.10	587.13	-68.97	656.10	644.50	-11.60
S Hayes	2974	33.71	33.49	-0.22	33.71	33.70	-0.01	590.04	549.87	-40.17	590.04	572.73	-17.31
S Hayes	2913	33.69	33.46	-0.23	33.69	33.68	-0.01	583.41	548.68	-34.73	583.41	565.63	-17.78
S Hayes	2835	33.37	33.18	-0.19	33.37	33.38	0.01	582.67	548.60	-34.07	582.67	563.36	-19.31
S Hayes	2769	33.31	33.13	-0.18	33.31	33.32	0.01	582.48	548.58	-33.90	582.48	562.83	-19.65
S Hayes	2619	33.17	32.99	-0.18	33.17	33.18	0.01	579.74	547.83	-31.91	579.74	559.68	-20.06
S Hayes	2137	32.76	32.54	-0.22	32.76	32.80	0.04	530.45	521.09	-9.36	530.45	506.88	-23.57
S Hayes	1905	32.66	32.44	-0.22	32.66	32.71	0.05	518.73	506.50	-12.23	518.73	500.04	-18.69
S Hayes	1622	32.57	32.33	-0.24	32.57	32.62	0.05	512.84	502.16	-10.68	512.84	488.15	-24.69
S Hayes	1185	32.46	32.23	-0.23	32.46	32.53	0.07	499.69	488.59	-11.10	499.69	472.14	-27.55
S Hayes	707	32.42	32.17	-0.25	32.42	32.50	0.08	351.15	385.47	34.32	351.15	323.06	-28.09
S Hayes	284	32.39	32.14	-0.25	32.39	32.47	0.08	323.99	304.98	-19.01	323.99	329.52	5.53
N Hayes	30961	50.11	50.11	0.00	50.11	50.08	-0.03	141.01	140.97	-0.04	141.01	136.04	-4.97
N Hayes	30742	50.03	50.03	0.00	50.03	50.01	-0.02	140.87	140.74	-0.13	140.87	133.98	-6.89
N Hayes	30356	49.92	49.92	0.00	49.92	49.90	-0.02	191.52	191.54	0.02	191.52	193.35	1.83
N Hayes	30123	49.86	49.86	0.00	49.86	49.83	-0.03	160.57	160.65	0.08	160.57	166.15	5.58
N Hayes	29703	49.76	49.76	0.00	49.76	49.71	-0.05	170.44	170.55	0.11	170.44	184.21	13.77
N Hayes	29123	49.60	49.60	0.00	49.60	49.50	-0.10	220.59	220.85	0.26	220.59	256.75	36.16
N Hayes	28748	49.52	49.52	0.00	49.52	49.36	-0.16	228.71	229.09	0.38	228.71	278.83	50.12

N Hayes	28652	49.50	49.50	0.00	49.50	49.33	-0.17	225.23	225.68	0.45	225.23	281.27	56.04
N Hayes	28558	49.41	49.41	0.00	49.41	49.14	-0.27	224.65	224.99	0.34	224.65	281.25	56.60
N Hayes	28513	49.40	49.40	0.00	49.40	49.11	-0.29	232.92	233.38	0.46	232.92	298.66	65.74
N Hayes	28169	49.30	49.30	0.00	49.30	48.90	-0.40	280.31	280.88	0.57	280.31	378.23	97.92
N Hayes	27721	49.15	49.15	0.00	49.15	48.34	-0.81	301.92	302.65	0.73	301.92	472.23	170.31
N Hayes	27362	49.01	49.01	0.00	49.01	47.77	-1.24	374.23	374.97	0.74	374.23	547.60	173.37
N Hayes	27197	48.96	48.95	-0.01	48.96	47.50	-1.46	490.91	491.76	0.85	490.91	613.91	123.00
N Hayes	26405	48.92	48.91	-0.01	48.92	47.49	-1.43	490.86	491.73	0.87	490.86	613.73	122.87
N Hayes	26348	48.86	48.86	0.00	48.86	47.48	-1.38	442.08	443.14	1.06	442.08	602.51	160.43
N Hayes	25970	48.57	48.56	-0.01	48.57	47.31	-1.26	427.31	429.08	1.77	427.31	615.43	188.12
N Hayes	25468	48.29	48.28	-0.01	48.29	47.10	-1.19	383.66	387.06	3.40	383.66	631.95	248.29
N Hayes	25135	48.14	48.12	-0.02	48.14	46.98	-1.16	371.79	376.04	4.25	371.79	643.44	271.65
N Hayes	24504	47.79	47.75	-0.04	47.79	46.73	-1.06	393.29	400.83	7.54	393.29	664.18	270.89
N Hayes	23880	47.33	47.20	-0.13	47.33	46.48	-0.85	351.66	372.76	21.10	351.66	687.06	335.40
N Hayes	23475	47.02	46.84	-0.18	47.02	46.32	-0.70	360.99	372.68	11.69	360.99	687.63	326.64
N Hayes	23175	46.79	46.56	-0.23	46.79	46.20	-0.59	374.67	374.55	-0.12	374.67	688.39	313.72
N Hayes	22938	46.62	46.34	-0.28	46.62	46.12	-0.50	351.53	363.23	11.70	351.53	702.59	351.06
N Hayes	22883	46.61	46.32	-0.29	46.61	46.11	-0.50	351.51	366.45	14.94	351.51	681.94	330.43
N Hayes	22839	46.61	46.30	-0.31	46.61	46.11	-0.50	338.36	386.44	48.08	338.36	659.41	321.05
N Hayes	22732	46.33	45.93	-0.40	46.33	45.23	-1.10	337.36	372.69	35.33	337.36	659.25	321.89
N Hayes	22663	46.30	45.87	-0.43	46.30	45.20	-1.10	339.62	372.41	32.79	339.62	675.53	335.91
N Hayes	22356	46.16	45.68	-0.48	46.16	45.04	-1.12	363.38	380.52	17.14	363.38	697.70	334.32
N Hayes	21810	45.91	45.53	-0.38	45.91	44.78	-1.13	387.48	193.96	-193.52	387.48	740.96	353.48
N Hayes	21491	45.77	45.49	-0.28	45.77	44.65	-1.12	405.44	209.79	-195.65	405.44	752.47	347.03
N Hayes	20586	45.33	45.24	-0.09	45.33	44.35	-0.98	462.82	361.35	-101.47	462.82	785.16	322.34
N Hayes	20278	45.19	45.06	-0.13	45.19	44.25	-0.94	425.05	476.34	51.29	425.05	791.93	366.88
N Hayes	20159	45.18	45.05	-0.13	45.18	44.22	-0.96	425.70	430.31	4.61	425.70	796.76	371.06
N Hayes	19934	45.08	44.95	-0.13	45.08	44.01	-1.07	424.56	421.31	-3.25	424.56	796.46	371.90
N Hayes	19841	45.04	44.91	-0.13	45.04	43.98	-1.06	458.47	421.37	-37.10	458.47	775.54	317.07
N Hayes	19659	44.99	44.87	-0.12	44.99	43.93	-1.06	436.88	405.35	-31.53	436.88	781.72	344.84
N Hayes	19505	44.94	44.81	-0.13	44.94	43.89	-1.05	444.53	419.15	-25.38	444.53	807.28	362.75
N Hayes	19394	44.92	44.80	-0.12	44.92	43.87	-1.05	433.69	417.00	-16.69	433.69	783.02	349.33
N Hayes	19263	44.75	44.64	-0.11	44.75	43.71	-1.04	432.85	416.29	-16.56	432.85	782.82	349.97
N Hayes	19172	44.70	44.59	-0.11	44.70	43.68	-1.02	466.66	449.96	-16.70	466.66	784.71	318.05
N Hayes	18658	44.43	44.31	-0.12	44.43	43.53	-0.90	473.59	461.18	-12.41	473.59	795.43	321.84
N Hayes	18218	44.15	44.03	-0.12	44.15	43.43	-0.72	489.30	477.49	-11.81	489.30	786.24	296.94
N Hayes	17823	43.94	43.83	-0.11	43.94	43.33	-0.61	477.09	470.26	-6.83	477.09	770.19	293.10
N Hayes	17784	43.87	43.75	-0.12	43.87	43.32	-0.55	479.23	471.31	-7.92	479.23	767.23	288.00
N Hayes	17725	43.88	43.76	-0.12	43.88	43.08	-0.80	479.24	471.33	-7.91	479.24	732.80	253.56
N Hayes	17684	43.85	43.72	-0.13	43.85	43.07	-0.78	485.72	476.46	-9.26	485.72	737.47	251.75
N Hayes	16695	43.37	43.25	-0.12	43.37	42.80	-0.57	492.79	482.45	-10.34	492.79	747.31	254.52

N Hayes	16144	43.02	42.80	-0.22	43.02	42.67	-0.35	471.97	485.28	13.31	471.97	643.34	171.37
N Hayes	15295	42.58	42.17	-0.41	42.58	42.54	-0.04	374.76	388.01	13.25	374.76	483.16	108.40
N Hayes	14581	42.27	41.77	-0.50	42.27	42.49	0.22	425.72	428.32	2.60	425.72	451.41	25.69
N Hayes	14073	41.98	41.37	-0.61	41.98	42.30	0.32	466.22	441.37	-24.85	466.22	473.26	7.04
N Hayes	13846	41.83	41.18	-0.65	41.83	42.18	0.35	478.49	430.57	-47.92	478.49	505.40	26.91
N Hayes	13776	41.78	41.11	-0.67	41.78	42.14	0.36	475.33	424.61	-50.72	475.33	493.60	18.27
N Hayes	13476	41.58	41.01	-0.57	41.58	41.92	0.34	474.85	423.74	-51.11	474.85	488.34	13.49
N Hayes	12804	41.26	40.69	-0.57	41.26	41.57	0.31	538.01	440.69	-97.32	538.01	617.52	79.51
N Hayes	12148	40.97	40.39	-0.58	40.97	41.28	0.31	534.67	442.26	-92.41	534.67	585.91	51.24
N Hayes	11610	40.69	40.06	-0.63	40.69	41.02	0.33	579.78	481.49	-98.29	579.78	623.53	43.75
N Hayes	11065	40.22	39.52	-0.70	40.22	40.60	0.38	625.41	532.24	-93.17	625.41	672.30	46.89
N Hayes	10229	39.59	38.86	-0.73	39.59	40.02	0.43	688.05	570.83	-117.22	688.05	739.26	51.21
N Hayes	9624	39.19	38.50	-0.69	39.19	39.62	0.43	782.31	610.66	-171.65	782.31	849.98	67.67
N Hayes	9030	38.82	38.18	-0.64	38.82	39.25	0.43	787.51	621.94	-165.57	787.51	889.38	101.87
N Hayes	8148	38.23	37.65	-0.58	38.23	38.60	0.37	843.38	693.68	-149.70	843.38	953.71	110.33
N Hayes	7969	38.07	37.50	-0.57	38.07	38.42	0.35	878.86	716.88	-161.98	878.86	1001.33	122.47
N Hayes	7937	38.10	37.53	-0.57	38.10	38.46	0.36	833.17	693.75	-139.42	833.17	958.96	125.79
N Hayes	7824	38.04	37.46	-0.58	38.04	38.38	0.34	832.97	687.63	-145.34	832.97	958.67	125.70
N Hayes	7749	37.99	37.42	-0.57	37.99	38.34	0.35	829.40	690.71	-138.69	829.40	944.71	115.31
N Hayes	7678	37.88	37.33	-0.55	37.88	38.21	0.33	838.37	692.33	-146.04	838.37	954.84	116.47
N Hayes	7607	37.82	37.28	-0.54	37.82	38.14	0.32	843.72	693.27	-150.45	843.72	965.31	121.59
N Hayes	7510	37.75	37.22	-0.53	37.75	38.06	0.31	846.26	696.22	-150.04	846.26	972.05	125.79
N Hayes	7159	37.52	37.01	-0.51	37.52	37.80	0.28	817.93	700.48	-117.45	817.93	933.32	115.39
N Hayes	6711	37.26	36.72	-0.54	37.26	37.49	0.23	748.25	664.68	-83.57	748.25	838.01	89.76
N Hayes	6045	36.93	36.35	-0.58	36.93	37.16	0.23	737.80	676.24	-61.56	737.80	764.73	26.93
N Hayes	5377	36.54	35.92	-0.62	36.54	36.77	0.23	881.79	770.84	-110.95	881.79	941.54	59.75
N Hayes	4771	36.34	35.71	-0.63	36.34	36.56	0.22	954.80	799.02	-155.78	954.80	1042.83	88.03
N Hayes	3997	36.12	35.51	-0.61	36.12	36.33	0.21	1071.71	895.38	-176.33	1071.71	1138.38	66.67
N Hayes	3899	36.12	35.51	-0.61	36.12	36.34	0.22	1108.38	937.07	-171.31	1108.38	1178.51	70.13
N Hayes	3798	36.03	35.41	-0.62	36.03	36.24	0.21	1108.21	936.87	-171.34	1108.21	1178.37	70.16
N Hayes	3689	35.90	35.28	-0.62	35.90	36.12	0.22	1144.42	967.46	-176.96	1144.42	1212.75	68.33
N Hayes	3370	35.67	35.06	-0.61	35.67	35.87	0.20	1144.73	938.96	-205.77	1144.73	1201.03	56.30
N Hayes	2774	35.27	34.66	-0.61	35.27	35.44	0.17	1024.33	867.22	-157.11	1024.33	1075.78	51.45
N Hayes	2090	34.71	34.09	-0.62	34.71	34.88	0.17	1076.92	929.37	-147.55	1076.92	1129.47	52.55
N Hayes	1311	34.03	33.38	-0.65	34.03	34.21	0.18	1043.12	919.90	-123.22	1043.12	1069.28	26.16
N Hayes	706	33.39	32.75	-0.64	33.39	33.57	0.18	1057.84	925.94	-131.90	1057.84	1090.74	32.90
N Hayes	349	33.05	32.42	-0.63	33.05	33.22	0.17	1101.68	939.36	-162.32	1101.68	1149.59	47.91

Table B-4. 1D Resulting WSEL for Existing versus Capital Improvements Plan and Alternative (100-Year Storm)

River	River Station	Existing W.S. Elevation	CIP W.S. Elevation	Difference	Existing W.S. Elevation	ALT W.S. Elevation	Difference	Existing Q Total	CIP Q Total	Difference	Existing Q Total	Alt Q Total	Difference
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
W Fork	51004	58.05	58.04	-0.01	58.05	58.13	0.08	96.64	97.36	0.72	96.64	107.38	10.74
W Fork	50013	57.91	57.90	-0.01	57.91	57.96	0.05	250.44	252.34	1.90	250.44	288.21	37.77
W Fork	49293	57.82	57.80	-0.02	57.82	57.82	0.00	313.31	318.20	4.89	313.31	385.14	71.83
W Fork	48383	57.69	57.67	-0.02	57.69	57.62	-0.07	346.74	352.46	5.72	346.74	439.11	92.37
W Fork	46928	57.53	57.50	-0.03	57.53	57.34	-0.19	265.69	275.67	9.98	265.69	382.82	117.13
W Fork	46759	57.52	57.49	-0.03	57.52	57.32	-0.20	259.56	270.78	11.22	259.56	382.63	123.07
W Fork	46225	57.51	57.47	-0.04	57.51	57.26	-0.25	195.29	211.84	16.55	195.29	347.39	152.10
W Fork	45659	57.50	57.46	-0.04	57.50	57.21	-0.29	120.37	142.95	22.58	120.37	307.51	187.14
W Fork	45050	57.50	57.46	-0.04	57.50	57.17	-0.33	23.41	50.43	27.02	23.41	287.96	264.55
W Fork	44689	57.50	57.46	-0.04	57.50	57.16	-0.34	-123.20	-100.47	22.73	-123.20	200.51	323.71
W Fork	44447	57.49	57.45	-0.04	57.49	57.16	-0.33	-323.16	-304.21	18.95	-323.16	55.06	378.22
W Fork	44363	57.49	57.45	-0.04	57.49	57.16	-0.33	-385.89	-366.63	19.26	-385.89	24.87	410.76
W Fork	44263	57.56	57.51	-0.05	57.56	57.16	-0.40	-435.22	-413.95	21.27	-435.22	13.90	449.12
W Fork	44147	57.55	57.50	-0.05	57.55	57.16	-0.39	-585.24	-562.33	22.91	-585.24	-91.15	494.09
W Fork	43626	57.13	57.03	-0.10	57.13	56.79	-0.34	1270.59	1292.77	22.18	1270.59	1931.68	661.09
W Fork	43089	56.77	56.59	-0.18	56.77	56.46	-0.31	1046.36	1099.55	53.19	1046.36	1882.70	836.34
W Fork	42405	56.44	56.22	-0.22	56.44	56.07	-0.37	864.57	853.92	-10.65	864.57	1511.43	646.86
W Fork	41481	56.14	56.07	-0.07	56.14	55.83	-0.31	719.60	301.93	-417.67	719.60	731.79	12.19
W Fork	40328	55.85	55.80	-0.05	55.85	55.71	-0.14	763.84	871.31	107.47	763.84	759.52	-4.32
W Fork	39472	55.79	55.71	-0.08	55.79	55.63	-0.16	277.15	412.84	135.69	277.15	886.44	609.29
W Fork	38398	55.57	55.47	-0.10	55.57	55.50	-0.07	699.58	674.92	-24.66	699.58	1212.59	513.01
W Fork	38222	55.55	55.46	-0.09	55.55	55.48	-0.07	596.36	573.98	-22.38	596.36	1126.50	530.14
W Fork	38170	55.53	55.43	-0.10	55.53	55.46	-0.07	567.17	550.66	-16.51	567.17	993.57	426.40
W Fork	38079	55.45	55.36	-0.09	55.45	55.22	-0.23	539.72	540.33	0.61	539.72	952.26	412.54
W Fork	38058	55.45	55.35	-0.10	55.45	55.23	-0.22	544.26	543.16	-1.10	544.26	989.36	445.10
W Fork	37923	55.43	55.33	-0.10	55.43	55.21	-0.22	525.76	538.69	12.93	525.76	1091.33	565.57
W Fork	37297	55.34	55.23	-0.11	55.34	55.12	-0.22	521.55	534.66	13.11	521.55	1294.81	773.26
W Fork	36707	55.26	55.15	-0.11	55.26	55.03	-0.23	473.53	468.56	-4.97	473.53	1271.11	797.58
W Fork	36123	55.17	55.06	-0.11	55.17	54.95	-0.22	502.48	497.66	-4.82	502.48	1353.30	850.82
W Fork	35439	55.05	54.93	-0.12	55.05	54.82	-0.23	598.42	590.24	-8.18	598.42	1449.13	850.71
W Fork	33855	54.91	54.79	-0.12	54.91	54.63	-0.28	340.60	334.98	-5.62	340.60	1334.06	993.46
W Fork	33191	54.62	54.49	-0.13	54.62	54.41	-0.21	1438.02	1406.43	-31.59	1438.02	2695.98	1257.96
W Fork	32646	54.27	54.14	-0.13	54.27	54.22	-0.05	1678.63	1635.34	-43.29	1678.63	2785.66	1107.03
W Fork	32138	53.86	53.74	-0.12	53.86	53.87	0.01	2494.07	2429.59	-64.48	2494.07	3256.09	762.02
W Fork	32096	53.86	53.73	-0.13	53.86	53.87	0.01	2515.25	2448.44	-66.81	2515.25	3283.40	768.15
W Fork	31777	53.41	53.31	-0.10	53.41	53.08	-0.33	2514.27	2447.43	-66.84	2514.27	3282.67	768.40

W Fork	31726	53.39	53.29	-0.10	53.39	53.08	-0.31	2510.28	2440.50	-69.78	2510.28	3345.28	835.00
W Fork	31011	52.99	52.90	-0.09	52.99	52.69	-0.30	1535.61	1492.74	-42.87	1535.61	2761.78	1226.17
W Fork	30397	52.65	52.56	-0.09	52.65	52.28	-0.37	982.94	954.62	-28.32	982.94	2650.54	1667.60
W Fork	29875	52.41	52.32	-0.09	52.41	52.00	-0.41	1005.37	981.61	-23.76	1005.37	2599.57	1594.20
W Fork	29493	52.35	52.25	-0.10	52.35	51.85	-0.50	735.78	720.06	-15.72	735.78	2613.22	1877.44
W Fork	27829	51.48	51.39	-0.09	51.48	51.46	-0.02	1182.07	1153.81	-28.26	1182.07	2462.20	1280.13
W Fork	27814	51.46	51.38	-0.08	51.46	51.45	-0.01	1181.87	1153.89	-27.98	1181.87	2405.31	1223.44
W Fork	27717	51.39	51.31	-0.08	51.39	50.79	-0.60	1181.87	1153.85	-28.02	1181.87	2404.94	1223.07
W Fork	27700	51.38	51.30	-0.08	51.38	50.78	-0.60	1182.16	1154.10	-28.06	1182.16	2451.93	1269.77
W Fork	27474	51.20	51.12	-0.08	51.20	50.65	-0.55	1182.04	1159.86	-22.18	1182.04	2353.45	1171.41
W Fork	27110	51.04	50.96	-0.08	51.04	50.61	-0.43	936.55	918.62	-17.93	936.55	1740.96	804.41
W Fork	27070	51.00	50.92	-0.08	51.00	50.60	-0.40	908.58	892.13	-16.45	908.58	1644.12	735.54
W Fork	27053	50.95	50.87	-0.08	50.95	49.91	-1.04	908.56	892.08	-16.48	908.56	1644.00	735.44
W Fork	27004	50.92	50.85	-0.07	50.92	49.89	-1.03	949.19	934.34	-14.85	949.19	1623.63	674.44
W Fork	26409	50.66	50.58	-0.08	50.66	49.79	-0.87	1018.03	1002.25	-15.78	1018.03	1293.97	275.94
W Fork	25744	50.49	50.41	-0.08	50.49	49.71	-0.78	837.03	828.01	-9.02	837.03	1106.02	268.99
W Fork	24706	50.26	50.18	-0.08	50.26	49.59	-0.67	969.38	948.14	-21.24	969.38	1202.06	232.68
W Fork	24589	50.20	50.12	-0.08	50.20	49.58	-0.62	963.76	943.19	-20.57	963.76	1269.41	305.65
W Fork	24122	50.01	49.93	-0.08	50.01	49.50	-0.51	1050.04	1024.41	-25.63	1050.04	1759.15	709.11
W Fork	23947	49.91	49.84	-0.07	49.91	49.45	-0.46	1067.60	1038.96	-28.64	1067.60	2153.17	1085.57
W Fork	23604	49.77	49.69	-0.08	49.77	49.27	-0.50	1214.79	1178.04	-36.75	1214.79	2509.38	1294.59
W Fork	23518	49.71	49.63	-0.08	49.71	49.21	-0.50	1371.64	1347.68	-23.96	1371.64	2626.19	1254.55
W Fork	23373	49.61	49.54	-0.07	49.61	48.68	-0.93	1371.17	1347.09	-24.08	1371.17	2622.99	1251.82
W Fork	23306	49.57	49.50	-0.07	49.57	48.61	-0.96	1336.72	1312.46	-24.26	1336.72	2667.17	1330.45
W Fork	22672	48.97	48.90	-0.07	48.97	47.99	-0.98	1313.04	1288.24	-24.80	1313.04	3249.68	1936.64
W Fork	22162	48.63	48.56	-0.07	48.63	47.81	-0.82	1539.24	1520.55	-18.69	1539.24	3446.70	1907.46
W Fork	21791	48.45	48.37	-0.08	48.45	47.69	-0.76	1315.56	1301.50	-14.06	1315.56	3478.09	2162.53
W Fork	21283	48.29	48.21	-0.08	48.29	47.53	-0.76	1110.52	1098.95	-11.57	1110.52	3381.76	2271.24
W Fork	20513	47.84	47.76	-0.08	47.84	47.28	-0.56	1544.29	1528.15	-16.14	1544.29	3437.95	1893.66
W Fork	19920	47.48	47.40	-0.08	47.48	47.10	-0.38	1409.74	1387.62	-22.12	1409.74	3669.86	2260.12
W Fork	19519	47.34	47.26	-0.08	47.34	46.97	-0.37	1316.43	1303.14	-13.29	1316.43	3598.65	2282.22
W Fork	19452	47.37	47.28	-0.09	47.37	46.98	-0.39	1155.81	1138.47	-17.34	1155.81	3576.92	2421.11
W Fork	19439	47.36	47.27	-0.09	47.36	46.97	-0.39	1083.04	1064.91	-18.13	1083.04	3557.76	2474.72
W Fork	19366	47.32	47.24	-0.08	47.32	46.95	-0.37	1085.97	1067.74	-18.23	1085.97	3531.43	2445.46
W Fork	18605	46.94	46.85	-0.09	46.94	46.75	-0.19	1086.42	1074.37	-12.05	1086.42	3249.63	2163.21
W Fork	17779	46.52	46.41	-0.11	46.52	46.63	0.11	1198.57	1204.74	6.17	1198.57	2623.68	1425.11
W Fork	17721	46.48	46.37	-0.11	46.48	46.65	0.17	1205.65	1222.76	17.11	1205.65	2313.69	1108.04
W Fork	17656	46.30	46.18	-0.12	46.30	45.75	-0.55	1203.43	1220.46	17.03	1203.43	2265.29	1061.86
W Fork	17575	46.27	46.14	-0.13	46.27	45.72	-0.55	1246.12	1267.36	21.24	1246.12	2555.23	1309.11
W Fork	16646	45.93	45.77	-0.16	45.93	45.51	-0.42	1445.34	1480.69	35.35	1445.34	2952.08	1506.74
W Fork	15846	45.62	45.58	-0.04	45.62	45.42	-0.20	1340.85	985.58	-355.27	1340.85	2467.53	1126.68

W Fork	15394	45.41	45.42	0.01	45.41	45.38	-0.03	1370.63	1174.84	-195.79	1370.63	2373.33	1002.70
W Fork	14911	45.27	45.30	0.03	45.27	45.35	0.08	1182.86	1081.27	-101.59	1182.86	1910.14	727.28
W Fork	14440	45.12	45.18	0.06	45.12	45.30	0.18	1272.59	1156.96	-115.63	1272.59	1655.59	383.00
W Fork	13933	44.92	44.86	-0.06	44.92	45.19	0.27	1492.81	1814.32	321.51	1492.81	1755.39	262.58
W Fork	13771	44.86	44.77	-0.09	44.86	45.17	0.31	1492.44	1795.49	303.05	1492.44	1670.40	177.96
W Fork	13736	44.84	44.74	-0.10	44.84	45.16	0.32	1494.61	1783.25	288.64	1494.61	1663.53	168.92
W Fork	13713	44.78	44.65	-0.13	44.78	45.09	0.31	1494.23	1782.46	288.23	1494.23	1663.21	168.98
W Fork	13680	44.78	44.66	-0.12	44.78	45.09	0.31	1538.16	1789.84	251.68	1538.16	1704.82	166.66
W Fork	13220	44.49	44.37	-0.12	44.49	44.93	0.44	1963.54	1950.11	-13.43	1963.54	2368.47	404.93
W Fork	12944	44.35	44.25	-0.10	44.35	44.81	0.46	1997.70	1891.98	-105.72	1997.70	2306.36	308.66
W Fork	12854	44.31	44.20	-0.11	44.31	44.81	0.50	1845.99	1807.55	-38.44	1845.99	2052.39	206.40
W Fork	12769	43.96	43.85	-0.11	43.96	44.42	0.46	1845.16	1806.66	-38.50	1845.16	2051.91	206.75
W Fork	12703	43.81	43.71	-0.10	43.81	44.24	0.43	1866.74	1797.65	-69.09	1866.74	2100.48	233.74
W Fork	12244	43.57	43.48	-0.09	43.57	44.01	0.44	1429.64	1362.80	-66.84	1429.64	1489.39	59.75
W Fork	11115	42.70	42.63	-0.07	42.70	43.01	0.31	1557.52	1535.58	-21.94	1557.52	1635.92	78.40
W Fork	11040	42.70	42.62	-0.08	42.70	42.99	0.29	1693.13	1669.67	-23.46	1693.13	1816.88	123.75
W Fork	10968	42.67	42.60	-0.07	42.67	42.97	0.30	1790.40	1775.70	-14.70	1790.40	1924.79	134.39
W Fork	10945	42.65	42.57	-0.08	42.65	42.95	0.30	1797.16	1784.51	-12.65	1797.16	1936.61	139.45
W Fork	9364	41.94	41.86	-0.08	41.94	42.23	0.29	1312.00	1304.15	-7.85	1312.00	1451.45	139.45
W Fork	8384	41.37	41.26	-0.11	41.37	41.71	0.34	1639.46	1647.51	8.05	1639.46	1776.45	136.99
W Fork	8352	41.37	41.27	-0.10	41.37	41.74	0.37	1600.42	1541.96	-58.46	1600.42	1647.72	47.30
W Fork	8320	41.20	41.09	-0.11	41.20	41.53	0.33	943.73	1540.76	597.03	943.73	1559.66	615.93
W Fork	8282	41.14	41.07	-0.07	41.14	41.47	0.33	1693.65	1612.75	-80.90	1693.65	1865.61	171.96
W Fork	7427	40.67	40.60	-0.07	40.67	40.97	0.30	1329.44	1303.28	-26.16	1329.44	1491.15	161.71
W Fork	6777	40.33	40.27	-0.06	40.33	40.63	0.30	1426.30	1399.35	-26.95	1426.30	1523.68	97.38
W Fork	6131	39.97	39.91	-0.06	39.97	40.32	0.35	1591.60	1569.34	-22.26	1591.60	1585.57	-6.03
W Fork	5494	39.60	39.54	-0.06	39.60	39.93	0.33	1671.10	1644.68	-26.42	1671.10	1825.36	154.26
W Fork	5087	39.36	39.30	-0.06	39.36	39.65	0.29	1597.07	1574.63	-22.44	1597.07	1863.99	266.92
W Fork	4024	38.85	38.78	-0.07	38.85	39.13	0.28	1326.84	1312.61	-14.23	1326.84	1435.55	108.71
W Fork	2968	38.20	38.14	-0.06	38.20	38.46	0.26	1572.50	1549.88	-22.62	1572.50	1681.47	108.97
W Fork	2449	37.89	37.84	-0.05	37.89	38.15	0.26	1661.08	1636.56	-24.52	1661.08	1781.52	120.44
W Fork	1392	37.56	37.50	-0.06	37.56	37.80	0.24	1328.63	1322.07	-6.56	1328.63	1385.17	56.54
W Fork	165	37.33	37.28	-0.05	37.33	37.58	0.25	1092.67	1080.27	-12.40	1092.67	1148.96	56.29
S Hayes	37203	53.75	53.75	0.00	53.75	53.74	-0.01	118.43	118.43	0.00	118.43	118.47	0.04
S Hayes	36329	53.54	53.54	0.00	53.54	53.53	-0.01	205.19	205.35	0.16	205.19	201.97	-3.22
S Hayes	34868	52.95	52.95	0.00	52.95	52.81	-0.14	318.36	318.45	0.09	318.36	345.35	26.99
S Hayes	34779	52.93	52.93	0.00	52.93	52.77	-0.16	330.81	330.79	-0.02	330.81	355.32	24.51
S Hayes	34618	52.73	52.73	0.00	52.73	52.56	-0.17	328.89	328.94	0.05	328.89	354.52	25.63
S Hayes	34512	52.66	52.66	0.00	52.66	52.46	-0.20	300.76	300.70	-0.06	300.76	353.48	52.72
S Hayes	34331	52.53	52.53	0.00	52.53	52.34	-0.19	327.93	327.94	0.01	327.93	350.11	22.18
S Hayes	33541	52.13	52.13	0.00	52.13	51.91	-0.22	310.51	310.55	0.04	310.51	311.41	0.90

S Hayes	32687	51.77	51.77	0.00	51.77	51.58	-0.19	329.24	329.27	0.03	329.24	350.98	21.74
S Hayes	32190	51.66	51.66	0.00	51.66	51.46	-0.20	250.71	250.77	0.06	250.71	366.88	116.17
S Hayes	32114	51.65	51.65	0.00	51.65	51.45	-0.20	259.58	259.69	0.11	259.58	335.29	75.71
S Hayes	31903	51.45	51.45	0.00	51.45	51.17	-0.28	259.26	259.31	0.05	259.26	334.82	75.56
S Hayes	31806	51.42	51.42	0.00	51.42	51.14	-0.28	279.45	279.54	0.09	279.45	415.37	135.92
S Hayes	31054	51.26	51.26	0.00	51.26	50.97	-0.29	302.56	302.60	0.04	302.56	373.99	71.43
S Hayes	30342	51.09	51.09	0.00	51.09	50.77	-0.32	361.76	361.78	0.02	361.76	456.06	94.30
S Hayes	30248	51.09	51.09	0.00	51.09	50.76	-0.33	347.81	347.80	-0.01	347.81	385.57	37.76
S Hayes	30101	50.82	50.82	0.00	50.82	50.51	-0.31	344.61	344.62	0.01	344.61	385.24	40.63
S Hayes	30007	50.79	50.79	0.00	50.79	50.47	-0.32	358.71	358.70	-0.01	358.71	485.71	127.00
S Hayes	29429	50.64	50.64	0.00	50.64	50.32	-0.32	398.58	398.58	0.00	398.58	467.99	69.41
S Hayes	29291	50.59	50.59	0.00	50.59	50.30	-0.29	416.86	416.82	-0.04	416.86	391.97	-24.89
S Hayes	29262	50.59	50.59	0.00	50.59	50.30	-0.29	419.66	419.50	-0.16	419.66	367.63	-52.03
S Hayes	29140	50.33	50.33	0.00	50.33	50.08	-0.25	398.81	399.09	0.28	398.81	365.98	-32.83
S Hayes	29063	50.32	50.32	0.00	50.32	50.05	-0.27	386.66	386.75	0.09	386.66	393.30	6.64
S Hayes	28680	50.22	50.22	0.00	50.22	49.92	-0.30	351.38	351.53	0.15	351.38	440.96	89.58
S Hayes	28085	50.14	50.14	0.00	50.14	49.73	-0.41	274.85	275.08	0.23	274.85	442.16	167.31
S Hayes	27494	50.09	50.09	0.00	50.09	49.63	-0.46	283.89	284.16	0.27	283.89	392.53	108.64
S Hayes	27067	49.98	49.98	0.00	49.98	49.49	-0.49	509.55	509.55	0.00	509.55	628.76	119.21
S Hayes	26377	49.80	49.80	0.00	49.80	49.31	-0.49	466.54	466.45	-0.09	466.54	496.23	29.69
S Hayes	25799	49.72	49.72	0.00	49.72	49.17	-0.55	286.96	287.02	0.06	286.96	553.61	266.65
S Hayes	24663	49.30	49.30	0.00	49.30	48.83	-0.47	687.82	688.17	0.35	687.82	658.61	-29.21
S Hayes	24358	48.72	48.72	0.00	48.72	48.16	-0.56	1128.43	1128.77	0.34	1128.43	1260.77	132.34
S Hayes	24279	48.64	48.64	0.00	48.64	47.88	-0.76	1143.35	1143.58	0.23	1143.35	1495.30	351.95
S Hayes	23735	48.44	48.44	0.00	48.44	47.59	-0.85	1143.23	1143.43	0.20	1143.23	1495.05	351.82
S Hayes	23636	48.24	48.24	0.00	48.24	47.47	-0.77	1194.82	1195.05	0.23	1194.82	1681.12	486.30
S Hayes	23016	47.86	47.85	-0.01	47.86	47.09	-0.77	745.54	746.38	0.84	745.54	1543.69	798.15
S Hayes	22457	47.58	47.57	-0.01	47.58	46.73	-0.85	678.00	679.19	1.19	678.00	1575.12	897.12
S Hayes	22221	47.47	47.46	-0.01	47.47	46.61	-0.86	698.64	700.10	1.46	698.64	1569.56	870.92
S Hayes	21326	47.09	47.09	0.00	47.09	46.17	-0.92	634.68	637.94	3.26	634.68	1586.78	952.10
S Hayes	20923	46.77	46.75	-0.02	46.77	45.98	-0.79	799.08	806.34	7.26	799.08	1582.24	783.16
S Hayes	20417	46.35	46.32	-0.03	46.35	45.66	-0.69	837.06	845.08	8.02	837.06	1586.95	749.89
S Hayes	19676	45.75	45.67	-0.08	45.75	45.14	-0.61	808.42	823.20	14.78	808.42	1457.19	648.77
S Hayes	19089	45.42	45.29	-0.13	45.42	44.66	-0.76	769.27	794.83	25.56	769.27	1450.31	681.04
S Hayes	18667	45.23	45.06	-0.17	45.23	44.39	-0.84	704.23	733.88	29.65	704.23	1385.78	681.55
S Hayes	18131	44.93	44.69	-0.24	44.93	43.99	-0.94	722.77	778.83	56.06	722.77	1392.82	670.05
S Hayes	18011	44.90	44.61	-0.29	44.90	43.95	-0.95	685.70	813.63	127.93	685.70	1261.77	576.07
S Hayes	17882	44.70	44.32	-0.38	44.70	43.38	-1.32	680.77	811.82	131.05	680.77	1261.75	580.98
S Hayes	17819	44.57	44.17	-0.40	44.57	43.17	-1.40	1009.55	1121.00	111.45	1009.55	1609.65	600.10
S Hayes	17625	44.37	44.10	-0.27	44.37	43.02	-1.35	1001.76	746.34	-255.42	1001.76	1544.93	543.17
S Hayes	16929	43.85	43.92	0.07	43.85	42.67	-1.18	829.52	372.04	-457.48	829.52	1256.46	426.94

S Hayes	16252	43.39	43.72	0.33	43.39	42.56	-0.83	742.89	549.75	-193.14	742.89	777.29	34.40
S Hayes	15710	43.03	43.46	0.43	43.03	42.53	-0.50	717.70	702.35	-15.35	717.70	577.86	-139.84
S Hayes	15029	42.70	42.98	0.28	42.70	42.50	-0.20	659.28	919.37	260.09	659.28	558.90	-100.38
S Hayes	14384	42.42	42.54	0.12	42.42	42.46	0.04	652.62	837.79	185.17	652.62	607.80	-44.82
S Hayes	14005	42.24	42.30	0.06	42.24	42.33	0.09	636.56	760.41	123.85	636.56	683.00	46.44
S Hayes	13292	41.85	41.85	0.00	41.85	41.94	0.09	648.53	684.76	36.23	648.53	697.44	48.91
S Hayes	12382	41.40	41.37	-0.03	41.40	41.53	0.13	636.35	644.36	8.01	636.35	642.64	6.29
S Hayes	11488	40.87	40.83	-0.04	40.87	41.04	0.17	598.23	604.30	6.07	598.23	604.32	6.09
S Hayes	10519	39.95	39.90	-0.05	39.95	40.04	0.09	630.78	623.69	-7.09	630.78	619.83	-10.95
S Hayes	10267	39.73	39.67	-0.06	39.73	39.81	0.08	630.60	623.31	-7.29	630.60	619.43	-11.17
S Hayes	9653	39.34	39.28	-0.06	39.34	39.41	0.07	644.05	635.11	-8.94	644.05	650.80	6.75
S Hayes	9246	39.07	39.01	-0.06	39.07	39.14	0.07	642.43	632.72	-9.71	642.43	648.81	6.38
S Hayes	8443	38.57	38.51	-0.06	38.57	38.66	0.09	597.82	588.82	-9.00	597.82	595.39	-2.43
S Hayes	7748	38.30	38.23	-0.07	38.30	38.40	0.10	438.64	452.59	13.95	438.64	415.53	-23.11
S Hayes	6801	37.43	37.33	-0.10	37.43	37.62	0.19	541.96	529.49	-12.47	541.96	525.43	-16.53
S Hayes	6039	36.68	36.55	-0.13	36.68	36.98	0.30	546.86	533.47	-13.39	546.86	524.95	-21.91
S Hayes	5587	36.25	36.12	-0.13	36.25	36.56	0.31	630.06	611.89	-18.17	630.06	599.08	-30.98
S Hayes	4889	35.46	35.30	-0.16	35.46	35.65	0.19	627.07	613.03	-14.04	627.07	579.13	-47.94
S Hayes	4426	35.00	34.84	-0.16	35.00	35.13	0.13	684.29	657.56	-26.73	684.29	676.34	-7.95
S Hayes	3865	34.55	34.41	-0.14	34.55	34.69	0.14	732.11	700.80	-31.31	732.11	743.82	11.71
S Hayes	3683	34.51	34.36	-0.15	34.51	34.64	0.13	724.49	686.54	-37.95	724.49	744.86	20.37
S Hayes	3538	34.37	34.24	-0.13	34.37	34.49	0.12	724.37	686.42	-37.95	724.37	744.43	20.06
S Hayes	3380	34.26	34.13	-0.13	34.26	34.38	0.12	722.37	685.40	-36.97	722.37	736.84	14.47
S Hayes	2974	33.93	33.80	-0.13	33.93	34.02	0.09	624.23	605.13	-19.10	624.23	621.46	-2.77
S Hayes	2913	33.91	33.77	-0.14	33.91	34.01	0.10	609.77	595.69	-14.08	609.77	603.53	-6.24
S Hayes	2835	33.55	33.43	-0.12	33.55	33.66	0.11	609.00	594.53	-14.47	609.00	601.03	-7.97
S Hayes	2769	33.49	33.38	-0.11	33.49	33.60	0.11	608.84	594.30	-14.54	608.84	600.54	-8.30
S Hayes	2619	33.37	33.24	-0.13	33.37	33.48	0.11	601.33	590.00	-11.33	601.33	589.31	-12.02
S Hayes	2137	33.00	32.85	-0.15	33.00	33.15	0.15	530.35	531.55	1.20	530.35	513.94	-16.41
S Hayes	1905	32.90	32.75	-0.15	32.90	33.06	0.16	536.59	526.26	-10.33	536.59	531.89	-4.70
S Hayes	1622	32.81	32.65	-0.16	32.81	32.97	0.16	532.57	520.42	-12.15	532.57	527.17	-5.40
S Hayes	1185	32.70	32.55	-0.15	32.70	32.88	0.18	525.26	508.88	-16.38	525.26	512.26	-13.00
S Hayes	707	32.67	32.51	-0.16	32.67	32.86	0.19	337.66	344.32	6.66	337.66	302.61	-35.05
S Hayes	284	32.64	32.48	-0.16	32.64	32.83	0.19	343.06	330.75	-12.31	343.06	357.65	14.59
N Hayes	30961	50.40	50.40	0.00	50.40	50.37	-0.03	187.23	187.29	0.06	187.23	181.24	-5.99
N Hayes	30742	50.30	50.30	0.00	50.30	50.28	-0.02	174.76	174.72	-0.04	174.76	168.42	-6.34
N Hayes	30356	50.16	50.16	0.00	50.16	50.13	-0.03	230.94	231.00	0.06	230.94	234.77	3.83
N Hayes	30123	50.10	50.10	0.00	50.10	50.06	-0.04	182.37	182.47	0.10	182.37	189.85	7.48
N Hayes	29703	50.00	50.00	0.00	50.00	49.94	-0.06	182.31	182.45	0.14	182.31	199.75	17.44
N Hayes	29123	49.85	49.85	0.00	49.85	49.73	-0.12	233.88	234.04	0.16	233.88	276.53	42.65
N Hayes	28748	49.77	49.77	0.00	49.77	49.59	-0.18	238.97	239.28	0.31	238.97	296.21	57.24

N Hayes	28652	49.75	49.75	0.00	49.75	49.56	-0.19	235.52	235.90	0.38	235.52	295.15	59.63
N Hayes	28558	49.68	49.68	0.00	49.68	49.42	-0.26	235.01	235.37	0.36	235.01	295.00	59.99
N Hayes	28513	49.67	49.67	0.00	49.67	49.39	-0.28	242.67	243.05	0.38	242.67	311.65	68.98
N Hayes	28169	49.58	49.58	0.00	49.58	49.20	-0.38	294.28	294.84	0.56	294.28	396.04	101.76
N Hayes	27721	49.44	49.44	0.00	49.44	48.68	-0.76	318.08	318.68	0.60	318.08	509.00	190.92
N Hayes	27362	49.30	49.30	0.00	49.30	48.11	-1.19	423.56	424.15	0.59	423.56	614.04	190.48
N Hayes	27197	49.24	49.23	-0.01	49.24	47.83	-1.41	572.20	573.07	0.87	572.20	724.44	152.24
N Hayes	26405	49.18	49.18	0.00	49.18	47.81	-1.37	572.20	573.05	0.85	572.20	724.31	152.11
N Hayes	26348	49.12	49.12	0.00	49.12	47.81	-1.31	510.73	511.68	0.95	510.73	688.62	177.89
N Hayes	25970	48.79	48.78	-0.01	48.79	47.65	-1.14	480.37	482.15	1.78	480.37	708.32	227.95
N Hayes	25468	48.50	48.49	-0.01	48.50	47.44	-1.06	412.24	415.49	3.25	412.24	716.85	304.61
N Hayes	25135	48.35	48.33	-0.02	48.35	47.32	-1.03	397.44	401.14	3.70	397.44	734.91	337.47
N Hayes	24504	47.99	47.96	-0.03	47.99	47.07	-0.92	423.69	430.28	6.59	423.69	772.65	348.96
N Hayes	23880	47.54	47.44	-0.10	47.54	46.81	-0.73	368.72	381.96	13.24	368.72	788.75	420.03
N Hayes	23475	47.24	47.11	-0.13	47.24	46.67	-0.57	382.74	388.20	5.46	382.74	781.10	398.36
N Hayes	23175	47.01	46.85	-0.16	47.01	46.56	-0.45	408.45	406.79	-1.66	408.45	778.56	370.11
N Hayes	22938	46.85	46.65	-0.20	46.85	46.49	-0.36	375.13	385.74	10.61	375.13	774.41	399.28
N Hayes	22883	46.84	46.63	-0.21	46.84	46.48	-0.36	372.69	387.70	15.01	372.69	729.46	356.77
N Hayes	22839	46.84	46.62	-0.22	46.84	46.48	-0.36	342.63	389.54	46.91	342.63	685.60	342.97
N Hayes	22732	46.57	46.26	-0.31	46.57	45.54	-1.03	342.15	379.84	37.69	342.15	685.56	343.41
N Hayes	22663	46.54	46.21	-0.33	46.54	45.50	-1.04	347.44	379.86	32.42	347.44	736.72	389.28
N Hayes	22356	46.41	46.04	-0.37	46.41	45.34	-1.07	375.49	385.76	10.27	375.49	776.58	401.09
N Hayes	21810	46.13	45.94	-0.19	46.13	45.08	-1.05	405.56	155.88	-249.68	405.56	822.53	416.97
N Hayes	21491	45.99	45.92	-0.07	45.99	44.93	-1.06	420.15	159.97	-260.18	420.15	824.35	404.20
N Hayes	20586	45.63	45.74	0.11	45.63	44.67	-0.96	430.30	369.67	-60.63	430.30	761.39	331.09
N Hayes	20278	45.53	45.54	0.01	45.53	44.60	-0.93	403.76	568.69	164.93	403.76	765.31	361.55
N Hayes	20159	45.52	45.54	0.02	45.52	44.58	-0.94	407.11	500.99	93.88	407.11	770.50	363.39
N Hayes	19934	45.43	45.41	-0.02	45.43	44.32	-1.11	404.90	496.42	91.52	404.90	768.77	363.87
N Hayes	19841	45.40	45.37	-0.03	45.40	44.29	-1.11	452.04	496.72	44.68	452.04	805.86	353.82
N Hayes	19659	45.36	45.33	-0.03	45.36	44.24	-1.12	448.08	472.40	24.32	448.08	814.61	366.53
N Hayes	19505	45.31	45.28	-0.03	45.31	44.20	-1.11	477.96	495.02	17.06	477.96	871.21	393.25
N Hayes	19394	45.30	45.26	-0.04	45.30	44.19	-1.11	479.85	490.55	10.70	479.85	802.01	322.16
N Hayes	19263	45.11	45.06	-0.05	45.11	43.87	-1.24	479.49	489.86	10.37	479.49	801.70	322.21
N Hayes	19172	45.05	45.01	-0.04	45.05	43.84	-1.21	532.18	537.68	5.50	532.18	803.97	271.79
N Hayes	18658	44.78	44.72	-0.06	44.78	43.70	-1.08	539.23	536.98	-2.25	539.23	816.04	276.81
N Hayes	18218	44.46	44.41	-0.05	44.46	43.61	-0.85	544.23	544.57	0.34	544.23	794.62	250.39
N Hayes	17823	44.24	44.18	-0.06	44.24	43.53	-0.71	524.09	529.91	5.82	524.09	763.53	239.44
N Hayes	17784	44.16	44.09	-0.07	44.16	43.52	-0.64	527.84	533.77	5.93	527.84	757.01	229.17
N Hayes	17725	44.17	44.10	-0.07	44.17	43.29	-0.88	527.87	533.77	5.90	527.87	756.76	228.89
N Hayes	17684	44.14	44.07	-0.07	44.14	43.27	-0.87	537.79	543.63	5.84	537.79	765.07	227.28
N Hayes	16695	43.64	43.55	-0.09	43.64	43.00	-0.64	540.53	529.47	-11.06	540.53	800.56	260.03

N Hayes	16144	43.30	43.21	-0.09	43.30	42.87	-0.43	514.70	489.90	-24.80	514.70	665.03	150.33
N Hayes	15295	42.91	42.81	-0.10	42.91	42.77	-0.14	381.89	390.48	8.59	381.89	448.61	66.72
N Hayes	14581	42.67	42.56	-0.11	42.67	42.73	0.06	434.36	431.44	-2.92	434.36	414.64	-19.72
N Hayes	14073	42.46	42.32	-0.14	42.46	42.59	0.13	482.37	474.65	-7.72	482.37	459.06	-23.31
N Hayes	13846	42.34	42.18	-0.16	42.34	42.48	0.14	508.77	527.54	18.77	508.77	504.45	-4.32
N Hayes	13776	42.29	42.12	-0.17	42.29	42.45	0.16	511.99	528.51	16.52	511.99	496.75	-15.24
N Hayes	13476	42.07	41.89	-0.18	42.07	42.25	0.18	511.97	528.45	16.48	511.97	495.24	-16.73
N Hayes	12804	41.75	41.55	-0.20	41.75	41.94	0.19	626.11	599.47	-26.64	626.11	639.58	13.47
N Hayes	12148	41.49	41.27	-0.22	41.49	41.69	0.20	598.97	578.60	-20.37	598.97	613.31	14.34
N Hayes	11610	41.24	41.01	-0.23	41.24	41.45	0.21	654.54	623.84	-30.70	654.54	691.27	36.73
N Hayes	11065	40.84	40.58	-0.26	40.84	41.06	0.22	703.38	672.92	-30.46	703.38	750.36	46.98
N Hayes	10229	40.29	40.01	-0.28	40.29	40.54	0.25	749.22	727.38	-21.84	749.22	804.19	54.97
N Hayes	9624	39.86	39.57	-0.29	39.86	40.16	0.30	948.74	891.66	-57.08	948.74	936.54	-12.20
N Hayes	9030	39.46	39.19	-0.27	39.46	39.76	0.30	954.84	891.48	-63.36	954.84	1009.62	54.78
N Hayes	8148	38.80	38.53	-0.27	38.80	39.08	0.28	1001.58	941.69	-59.89	1001.58	1089.92	88.34
N Hayes	7969	38.62	38.36	-0.26	38.62	38.89	0.27	1048.96	982.96	-66.00	1048.96	1153.34	104.38
N Hayes	7937	38.66	38.40	-0.26	38.66	38.93	0.27	1007.05	937.15	-69.90	1007.05	1112.84	105.79
N Hayes	7824	38.59	38.33	-0.26	38.59	38.86	0.27	1006.91	936.98	-69.93	1006.91	1111.77	104.86
N Hayes	7749	38.56	38.29	-0.27	38.56	38.83	0.27	981.62	924.05	-57.57	981.62	1077.58	95.96
N Hayes	7678	38.44	38.17	-0.27	38.44	38.70	0.26	988.26	933.48	-54.78	988.26	1083.85	95.59
N Hayes	7607	38.36	38.10	-0.26	38.36	38.63	0.27	998.76	941.89	-56.87	998.76	1096.53	97.77
N Hayes	7510	38.29	38.02	-0.27	38.29	38.56	0.27	1003.22	945.73	-57.49	1003.22	1096.91	93.69
N Hayes	7159	38.06	37.77	-0.29	38.06	38.33	0.27	944.71	904.97	-39.74	944.71	1016.08	71.37
N Hayes	6711	37.79	37.49	-0.30	37.79	38.06	0.27	842.40	816.06	-26.34	842.40	895.29	52.89
N Hayes	6045	37.50	37.16	-0.34	37.50	37.77	0.27	794.49	777.13	-17.36	794.49	826.36	31.87
N Hayes	5377	37.10	36.77	-0.33	37.10	37.38	0.28	1009.02	941.84	-67.18	1009.02	1095.31	86.29
N Hayes	4771	36.88	36.57	-0.31	36.88	37.16	0.28	1153.92	1040.07	-113.85	1153.92	1276.84	122.92
N Hayes	3997	36.63	36.33	-0.30	36.63	36.89	0.26	1280.35	1154.34	-126.01	1280.35	1386.71	106.36
N Hayes	3899	36.63	36.33	-0.30	36.63	36.89	0.26	1322.72	1192.83	-129.89	1322.72	1433.53	110.81
N Hayes	3798	36.53	36.23	-0.30	36.53	36.79	0.26	1322.64	1192.69	-129.95	1322.64	1433.33	110.69
N Hayes	3689	36.40	36.11	-0.29	36.40	36.66	0.26	1364.26	1231.48	-132.78	1364.26	1469.24	104.98
N Hayes	3370	36.16	35.87	-0.29	36.16	36.39	0.23	1365.63	1232.04	-133.59	1365.63	1451.51	85.88
N Hayes	2774	35.74	35.46	-0.28	35.74	35.95	0.21	1209.20	1100.10	-109.10	1209.20	1275.07	65.87
N Hayes	2090	35.17	34.91	-0.26	35.17	35.36	0.19	1254.21	1142.88	-111.33	1254.21	1346.32	92.11
N Hayes	1311	34.55	34.26	-0.29	34.55	34.75	0.20	1109.30	1071.09	-38.21	1109.30	1154.90	45.60
N Hayes	706	33.92	33.62	-0.30	33.92	34.13	0.21	1163.26	1100.38	-62.88	1163.26	1211.49	48.23
N Hayes	349	33.56	33.27	-0.29	33.56	33.77	0.21	1259.59	1165.53	-94.06	1259.59	1330.67	71.08

Table B-5. 1D Resulting WSEL for Existing versus Capital Improvements Plan and Alternative (500-Year Storm)

River	River Station	Existing W.S. Elevation	CIP W.S. Elevation	Difference	Existing W.S. Elevation	ALT W.S. Elevation	Difference	Existing Q Total	CIP Q Total	Difference	Existing Q Total	Alt Q Total	Difference
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
W Fork	51004	58.46	58.45	-0.01	58.46	58.50	0.04	113.37	114.10	0.73	113.37	126.84	13.47
W Fork	50013	58.33	58.31	-0.02	58.33	58.32	-0.01	288.67	292.01	3.34	288.67	338.08	49.41
W Fork	49293	58.24	58.22	-0.02	58.24	58.19	-0.05	343.46	348.96	5.50	343.46	420.86	77.40
W Fork	48383	58.13	58.10	-0.03	58.13	58.02	-0.11	377.50	384.64	7.14	377.50	467.42	89.92
W Fork	46928	58.02	57.99	-0.03	58.02	57.83	-0.19	214.56	227.08	12.52	214.56	347.52	132.96
W Fork	46759	58.02	57.98	-0.04	58.02	57.82	-0.20	190.49	206.89	16.40	190.49	341.00	150.51
W Fork	46225	58.02	57.98	-0.04	58.02	57.79	-0.23	38.60	64.54	25.94	38.60	249.89	211.29
W Fork	45659	58.02	57.98	-0.04	58.02	57.78	-0.24	-108.90	-76.43	32.47	-108.90	170.28	279.18
W Fork	45050	58.02	57.98	-0.04	58.02	57.78	-0.24	-234.86	-204.45	30.41	-234.86	104.42	339.28
W Fork	44689	58.03	57.99	-0.04	58.03	57.78	-0.25	-401.81	-375.10	26.71	-401.81	-25.65	376.16
W Fork	44447	58.02	57.98	-0.04	58.02	57.77	-0.25	-621.07	-607.60	13.47	-621.07	-220.23	400.84
W Fork	44363	58.02	57.98	-0.04	58.02	57.77	-0.25	-700.08	-688.85	11.23	-700.08	-263.94	436.14
W Fork	44263	58.24	58.19	-0.05	58.24	57.80	-0.44	-758.54	-754.77	3.77	-758.54	-292.42	466.12
W Fork	44147	58.21	58.16	-0.05	58.21	57.80	-0.41	-1050.78	-1041.88	8.90	-1050.78	-485.35	565.43
W Fork	43626	57.72	57.59	-0.13	57.72	57.36	-0.36	1695.24	1736.37	41.13	1695.24	2549.09	853.85
W Fork	43089	57.34	57.11	-0.23	57.34	56.98	-0.36	1250.06	1349.44	99.38	1250.06	2381.21	1131.15
W Fork	42405	57.03	56.72	-0.31	57.03	56.65	-0.38	998.24	1011.83	13.59	998.24	1768.97	770.73
W Fork	41481	56.75	56.59	-0.16	56.75	56.47	-0.28	815.29	309.20	-506.09	815.29	925.06	109.77
W Fork	40328	56.51	56.45	-0.06	56.51	56.37	-0.14	811.52	696.61	-114.91	811.52	887.53	76.01
W Fork	39472	56.47	56.40	-0.07	56.47	56.31	-0.16	269.75	364.09	94.34	269.75	907.81	638.06
W Fork	38398	56.29	56.23	-0.06	56.29	56.23	-0.06	739.14	697.35	-41.79	739.14	1207.79	468.65
W Fork	38222	56.28	56.22	-0.06	56.28	56.22	-0.06	624.88	587.42	-37.46	624.88	1106.37	481.49
W Fork	38170	56.26	56.20	-0.06	56.26	56.21	-0.05	583.14	548.84	-34.30	583.14	960.70	377.56
W Fork	38079	56.19	56.14	-0.05	56.19	55.98	-0.21	581.39	542.77	-38.62	581.39	948.54	367.15
W Fork	38058	56.18	56.13	-0.05	56.18	55.98	-0.20	585.78	545.47	-40.31	585.78	993.25	407.47
W Fork	37923	56.17	56.12	-0.05	56.17	55.97	-0.20	592.27	559.63	-32.64	592.27	1118.98	526.71
W Fork	37297	56.09	56.04	-0.05	56.09	55.90	-0.19	601.40	592.24	-9.16	601.40	1438.95	837.55
W Fork	36707	56.02	55.97	-0.05	56.02	55.84	-0.18	553.28	540.87	-12.41	553.28	1484.06	930.78
W Fork	36123	55.95	55.90	-0.05	55.95	55.78	-0.17	560.46	560.27	-0.19	560.46	1561.68	1001.22
W Fork	35439	55.84	55.79	-0.05	55.84	55.69	-0.15	654.99	663.60	8.61	654.99	1677.71	1022.72
W Fork	33855	55.76	55.70	-0.06	55.76	55.55	-0.21	134.42	180.44	46.02	134.42	1439.35	1304.93
W Fork	33191	55.43	55.38	-0.05	55.43	55.34	-0.09	1775.23	1754.28	-20.95	1775.23	3361.89	1586.66
W Fork	32646	55.08	55.02	-0.06	55.08	55.18	0.10	2005.33	1985.45	-19.88	2005.33	3459.84	1454.51
W Fork	32138	54.70	54.63	-0.07	54.70	54.88	0.18	2892.04	2872.01	-20.03	2892.04	3968.95	1076.91
W Fork	32096	54.69	54.63	-0.06	54.69	54.87	0.18	2931.41	2910.32	-21.09	2931.41	3990.48	1059.07
W Fork	31777	54.08	54.03	-0.05	54.08	53.74	-0.34	2928.55	2905.85	-22.70	2928.55	3981.79	1053.24

W Fork	31726	54.05	54.00	-0.05	54.05	53.74	-0.31	2948.86	2923.72	-25.14	2948.86	4100.86	1152.00
W Fork	31011	53.64	53.59	-0.05	53.64	53.37	-0.27	1838.67	1815.40	-23.27	1838.67	3402.30	1563.63
W Fork	30397	53.28	53.23	-0.05	53.28	52.96	-0.32	1202.54	1184.63	-17.91	1202.54	3415.29	2212.75
W Fork	29875	53.03	52.98	-0.05	53.03	52.69	-0.34	1201.02	1185.51	-15.51	1201.02	3291.58	2090.56
W Fork	29493	52.97	52.92	-0.05	52.97	52.55	-0.42	903.88	890.35	-13.53	903.88	3289.84	2385.96
W Fork	27829	52.05	52.01	-0.04	52.05	52.17	0.12	1361.14	1346.59	-14.55	1361.14	2971.25	1610.11
W Fork	27814	52.04	51.99	-0.05	52.04	52.16	0.12	1359.76	1345.25	-14.51	1359.76	2890.24	1530.48
W Fork	27717	51.96	51.92	-0.04	51.96	51.37	-0.59	1359.76	1345.24	-14.52	1359.76	2890.16	1530.40
W Fork	27700	51.96	51.91	-0.05	51.96	51.36	-0.60	1360.37	1345.77	-14.60	1360.37	2962.64	1602.27
W Fork	27474	51.75	51.70	-0.05	51.75	51.21	-0.54	1378.66	1375.57	-3.09	1378.66	2909.72	1531.06
W Fork	27110	51.57	51.53	-0.04	51.57	51.18	-0.39	1070.85	1063.07	-7.78	1070.85	1978.06	907.21
W Fork	27070	51.52	51.48	-0.04	51.52	51.18	-0.34	1040.72	1034.64	-6.08	1040.72	1839.49	798.77
W Fork	27053	51.48	51.43	-0.05	51.48	50.54	-0.94	1040.68	1034.63	-6.05	1040.68	1836.61	795.93
W Fork	27004	51.45	51.40	-0.05	51.45	50.52	-0.93	1086.50	1082.65	-3.85	1086.50	1825.98	739.48
W Fork	26409	51.18	51.13	-0.05	51.18	50.44	-0.74	1163.33	1153.21	-10.12	1163.33	1490.19	326.86
W Fork	25744	51.02	50.97	-0.05	51.02	50.38	-0.64	904.04	892.70	-11.34	904.04	1256.72	352.68
W Fork	24706	50.79	50.74	-0.05	50.79	50.27	-0.52	1093.38	1085.01	-8.37	1093.38	1499.57	406.19
W Fork	24589	50.73	50.68	-0.05	50.73	50.26	-0.47	1085.09	1078.47	-6.62	1085.09	1602.42	517.33
W Fork	24122	50.53	50.48	-0.05	50.53	50.18	-0.35	1182.49	1176.79	-5.70	1182.49	2122.27	939.78
W Fork	23947	50.44	50.38	-0.06	50.44	50.13	-0.31	1197.29	1189.22	-8.07	1197.29	2525.59	1328.30
W Fork	23604	50.33	50.27	-0.06	50.33	49.98	-0.35	1169.27	1165.11	-4.16	1169.27	2840.37	1671.10
W Fork	23518	50.25	50.19	-0.06	50.25	49.92	-0.33	1552.40	1531.53	-20.87	1552.40	3123.14	1570.74
W Fork	23373	50.13	50.08	-0.05	50.13	49.38	-0.75	1545.69	1525.06	-20.63	1545.69	3105.60	1559.91
W Fork	23306	50.09	50.04	-0.05	50.09	49.31	-0.78	1505.36	1484.06	-21.30	1505.36	3179.18	1673.82
W Fork	22672	49.52	49.46	-0.06	49.52	48.77	-0.75	1421.77	1412.62	-9.15	1421.77	3895.68	2473.91
W Fork	22162	49.21	49.15	-0.06	49.21	48.62	-0.59	1658.28	1664.19	5.91	1658.28	4064.04	2405.76
W Fork	21791	49.05	48.98	-0.07	49.05	48.50	-0.55	1428.88	1432.36	3.48	1428.88	4061.26	2632.38
W Fork	21283	48.90	48.83	-0.07	48.90	48.35	-0.55	1231.32	1222.07	-9.25	1231.32	4081.31	2849.99
W Fork	20513	48.49	48.40	-0.09	48.49	48.10	-0.39	1653.48	1671.55	18.07	1653.48	4223.43	2569.95
W Fork	19920	48.14	48.03	-0.11	48.14	47.93	-0.21	1603.19	1616.87	13.68	1603.19	4462.34	2859.15
W Fork	19519	48.02	47.89	-0.13	48.02	47.80	-0.22	1470.63	1485.74	15.11	1470.63	4425.92	2955.29
W Fork	19452	48.04	47.92	-0.12	48.04	47.81	-0.23	1340.98	1338.79	-2.19	1340.98	4406.45	3065.47
W Fork	19439	48.03	47.91	-0.12	48.03	47.80	-0.23	1277.99	1267.92	-10.07	1277.99	4385.14	3107.15
W Fork	19366	47.99	47.86	-0.13	47.99	47.78	-0.21	1278.45	1270.35	-8.10	1278.45	4358.37	3079.92
W Fork	18605	47.63	47.47	-0.16	47.63	47.59	-0.04	1192.89	1215.85	22.96	1192.89	3983.31	2790.42
W Fork	17779	47.30	47.05	-0.25	47.30	47.51	0.21	1259.38	1344.59	85.21	1259.38	2712.98	1453.60
W Fork	17721	47.27	47.02	-0.25	47.27	47.52	0.25	1232.45	1336.32	103.87	1232.45	2277.64	1045.19
W Fork	17656	47.10	46.81	-0.29	47.10	46.52	-0.58	1232.35	1335.70	103.35	1232.35	2270.08	1037.73
W Fork	17575	47.07	46.77	-0.30	47.07	46.49	-0.58	1304.93	1410.10	105.17	1304.93	2663.03	1358.10
W Fork	16646	46.76	46.34	-0.42	46.76	46.28	-0.48	1633.55	1791.49	157.94	1633.55	3591.16	1957.61
W Fork	15846	46.46	46.19	-0.27	46.46	46.18	-0.28	1593.45	994.17	-599.28	1593.45	3118.78	1525.33

W Fork	15394	46.25	46.03	-0.22	46.25	46.13	-0.12	1645.37	1306.72	-338.65	1645.37	3025.01	1379.64
W Fork	14911	46.12	45.93	-0.19	46.12	46.11	-0.01	1420.94	1188.07	-232.87	1420.94	2394.87	973.93
W Fork	14440	45.97	45.82	-0.15	45.97	46.05	0.08	1503.58	1245.23	-258.35	1503.58	2046.01	542.43
W Fork	13933	45.73	45.57	-0.16	45.73	45.93	0.20	1937.35	1872.90	-64.45	1937.35	2301.66	364.31
W Fork	13771	45.65	45.49	-0.16	45.65	45.90	0.25	1950.28	1905.56	-44.72	1950.28	2186.39	236.11
W Fork	13736	45.62	45.46	-0.16	45.62	45.90	0.28	1955.51	1907.67	-47.84	1955.51	2170.39	214.88
W Fork	13713	45.57	45.40	-0.17	45.57	45.81	0.24	1955.32	1906.97	-48.35	1955.32	2169.60	214.28
W Fork	13680	45.56	45.40	-0.16	45.56	45.81	0.25	2003.91	1921.14	-82.77	2003.91	2216.07	212.16
W Fork	13220	45.25	45.15	-0.10	45.25	45.65	0.40	2388.65	2146.13	-242.52	2388.65	2808.13	419.48
W Fork	12944	45.12	45.05	-0.07	45.12	45.54	0.42	2346.44	2079.55	-266.89	2346.44	2635.75	289.31
W Fork	12854	45.08	45.00	-0.08	45.08	45.54	0.46	2171.34	1980.59	-190.75	2171.34	2351.76	180.42
W Fork	12769	44.79	44.75	-0.04	44.79	45.18	0.39	2170.15	1979.33	-190.82	2170.15	2351.26	181.11
W Fork	12703	44.63	44.62	-0.01	44.63	44.99	0.36	2207.54	2007.69	-199.85	2207.54	2433.28	225.74
W Fork	12244	44.42	44.39	-0.03	44.42	44.80	0.38	1631.35	1617.68	-13.67	1631.35	1715.64	84.29
W Fork	11115	43.45	43.42	-0.03	43.45	43.73	0.28	1825.62	1824.45	-1.17	1825.62	1960.78	135.16
W Fork	11040	43.44	43.41	-0.03	43.44	43.71	0.27	1997.78	1996.42	-1.36	1997.78	2181.45	183.67
W Fork	10968	43.42	43.38	-0.04	43.42	43.69	0.27	2132.25	2143.33	11.08	2132.25	2310.58	178.33
W Fork	10945	43.39	43.35	-0.04	43.39	43.66	0.27	2151.70	2165.79	14.09	2151.70	2332.04	180.34
W Fork	9364	42.69	42.63	-0.06	42.69	42.93	0.24	1507.94	1506.57	-1.37	1507.94	1716.63	208.69
W Fork	8384	42.12	42.03	-0.09	42.12	42.42	0.30	1880.60	1907.39	26.79	1880.60	1999.21	118.61
W Fork	8352	42.13	42.06	-0.07	42.13	42.47	0.34	1760.69	1686.99	-73.70	1760.69	1743.62	-17.07
W Fork	8320	41.92	41.85	-0.07	41.92	42.28	0.36	850.16	1670.73	820.57	850.16	1237.60	387.44
W Fork	8282	41.82	41.78	-0.04	41.82	42.12	0.30	2066.79	1967.68	-99.11	2066.79	2234.63	167.84
W Fork	7427	41.33	41.29	-0.04	41.33	41.60	0.27	1626.99	1611.50	-15.49	1626.99	1800.42	173.43
W Fork	6777	40.97	40.93	-0.04	40.97	41.24	0.27	1725.32	1707.12	-18.20	1725.32	1824.15	98.83
W Fork	6131	40.61	40.57	-0.04	40.61	40.93	0.32	1838.80	1823.08	-15.72	1838.80	1817.37	-21.43
W Fork	5494	40.21	40.17	-0.04	40.21	40.52	0.31	1961.75	1943.21	-18.54	1961.75	2099.14	137.39
W Fork	5087	39.98	39.94	-0.04	39.98	40.23	0.25	1836.25	1819.28	-16.97	1836.25	2121.72	285.47
W Fork	4024	39.44	39.41	-0.03	39.44	39.68	0.24	1533.94	1519.14	-14.80	1533.94	1654.65	120.71
W Fork	2968	38.78	38.74	-0.04	38.78	39.01	0.23	1793.15	1779.12	-14.03	1793.15	1885.53	92.38
W Fork	2449	38.46	38.42	-0.04	38.46	38.69	0.23	1875.84	1861.80	-14.04	1875.84	1966.78	90.94
W Fork	1392	38.14	38.10	-0.04	38.14	38.36	0.22	1362.15	1358.16	-3.99	1362.15	1425.67	63.52
W Fork	165	37.92	37.89	-0.03	37.92	38.14	0.22	1228.66	1220.11	-8.55	1228.66	1280.95	52.29
S Hayes	37203	54.46	54.46	0.00	54.46	54.45	-0.01	155.29	155.27	-0.02	155.29	155.17	-0.12
S Hayes	36329	54.18	54.18	0.00	54.18	54.18	0.00	305.27	305.27	0.00	305.27	302.12	-3.15
S Hayes	34868	53.52	53.52	0.00	53.52	53.42	-0.10	390.84	390.84	0.00	390.84	418.22	27.38
S Hayes	34779	53.50	53.50	0.00	53.50	53.40	-0.10	399.09	399.10	0.01	399.09	428.52	29.43
S Hayes	34618	53.21	53.21	0.00	53.21	53.07	-0.14	398.86	398.86	0.00	398.86	426.64	27.78
S Hayes	34512	53.14	53.14	0.00	53.14	52.97	-0.17	359.75	359.75	0.00	359.75	441.13	81.38
S Hayes	34331	53.00	53.00	0.00	53.00	52.84	-0.16	400.58	400.59	0.01	400.58	457.51	56.93
S Hayes	33541	52.61	52.61	0.00	52.61	52.42	-0.19	349.89	349.89	0.00	349.89	398.29	48.40

S Hayes	32687	52.21	52.21	0.00	52.21	52.08	-0.13	405.57	405.48	-0.09	405.57	444.57	39.00
S Hayes	32190	52.06	52.06	0.00	52.06	51.97	-0.09	332.31	332.45	0.14	332.31	429.37	97.06
S Hayes	32114	52.05	52.05	0.00	52.05	51.96	-0.09	346.65	346.80	0.15	346.65	380.70	34.05
S Hayes	31903	51.87	51.87	0.00	51.87	51.67	-0.20	346.45	346.61	0.16	346.45	379.83	33.38
S Hayes	31806	51.82	51.82	0.00	51.82	51.64	-0.18	375.27	375.40	0.13	375.27	476.68	101.41
S Hayes	31054	51.63	51.63	0.00	51.63	51.47	-0.16	354.88	355.05	0.17	354.88	440.23	85.35
S Hayes	30342	51.47	51.47	0.00	51.47	51.29	-0.18	406.00	406.01	0.01	406.00	497.29	91.29
S Hayes	30248	51.47	51.47	0.00	51.47	51.29	-0.18	369.57	369.55	-0.02	369.57	404.49	34.92
S Hayes	30101	51.33	51.33	0.00	51.33	51.05	-0.28	369.14	369.15	0.01	369.14	399.26	30.12
S Hayes	30007	51.30	51.30	0.00	51.30	51.02	-0.28	384.91	384.94	0.03	384.91	491.84	106.93
S Hayes	29429	51.21	51.21	0.00	51.21	50.94	-0.27	364.14	364.24	0.10	364.14	394.84	30.70
S Hayes	29291	51.19	51.19	0.00	51.19	50.92	-0.27	347.41	347.39	-0.02	347.41	305.52	-41.89
S Hayes	29262	51.19	51.19	0.00	51.19	50.92	-0.27	338.42	338.52	0.10	338.42	282.16	-56.26
S Hayes	29140	51.05	51.05	0.00	51.05	50.80	-0.25	327.58	327.33	-0.25	327.58	279.04	-48.54
S Hayes	29063	51.05	51.05	0.00	51.05	50.79	-0.26	301.21	301.04	-0.17	301.21	300.27	-0.94
S Hayes	28680	51.02	51.02	0.00	51.02	50.73	-0.29	229.87	229.93	0.06	229.87	353.64	123.77
S Hayes	28085	51.00	51.00	0.00	51.00	50.67	-0.33	76.75	76.78	0.03	76.75	292.80	216.05
S Hayes	27494	51.00	51.00	0.00	51.00	50.63	-0.37	118.10	118.09	-0.01	118.10	303.52	185.42
S Hayes	27067	50.82	50.82	0.00	50.82	50.52	-0.30	762.27	761.99	-0.28	762.27	816.98	54.71
S Hayes	26377	50.59	50.59	0.00	50.59	50.37	-0.22	598.82	598.93	0.11	598.82	622.07	23.25
S Hayes	25799	50.49	50.49	0.00	50.49	50.26	-0.23	433.78	433.77	-0.01	433.78	722.84	289.06
S Hayes	24663	50.20	50.20	0.00	50.20	50.04	-0.16	725.23	725.60	0.37	725.23	846.09	120.86
S Hayes	24358	49.71	49.71	0.00	49.71	49.64	-0.07	1280.61	1281.39	0.78	1280.61	1559.13	278.52
S Hayes	24279	49.62	49.62	0.00	49.62	49.42	-0.20	1350.17	1350.84	0.67	1350.17	1997.28	647.11
S Hayes	23735	49.20	49.20	0.00	49.20	48.47	-0.73	1349.65	1349.96	0.31	1349.65	1996.18	646.53
S Hayes	23636	48.89	48.89	0.00	48.89	48.30	-0.59	1563.29	1563.30	0.01	1563.29	2445.40	882.11
S Hayes	23016	48.50	48.49	-0.01	48.50	47.94	-0.56	909.11	909.66	0.55	909.11	2095.19	1186.08
S Hayes	22457	48.21	48.21	0.00	48.21	47.57	-0.64	807.77	808.98	1.21	807.77	2126.11	1318.34
S Hayes	22221	48.08	48.08	0.00	48.08	47.44	-0.64	849.66	851.12	1.46	849.66	2159.91	1310.25
S Hayes	21326	47.70	47.69	-0.01	47.70	46.97	-0.73	737.68	738.87	1.19	737.68	2208.41	1470.73
S Hayes	20923	47.37	47.36	-0.01	47.37	46.78	-0.59	913.55	917.29	3.74	913.55	2130.05	1216.50
S Hayes	20417	46.96	46.94	-0.02	46.96	46.46	-0.50	957.66	961.76	4.10	957.66	2072.75	1115.09
S Hayes	19676	46.45	46.42	-0.03	46.45	45.95	-0.50	916.11	920.10	3.99	916.11	1911.11	995.00
S Hayes	19089	46.17	46.13	-0.04	46.17	45.52	-0.65	925.47	924.97	-0.50	925.47	1963.30	1037.83
S Hayes	18667	45.98	45.94	-0.04	45.98	45.25	-0.73	847.15	837.91	-9.24	847.15	1894.34	1047.19
S Hayes	18131	45.76	45.61	-0.15	45.76	44.85	-0.91	744.07	906.76	162.69	744.07	1918.72	1174.65
S Hayes	18011	45.76	45.53	-0.23	45.76	44.85	-0.91	643.45	958.39	314.94	643.45	1608.52	965.07
S Hayes	17882	45.60	45.16	-0.44	45.60	44.11	-1.49	621.03	912.53	291.50	621.03	1536.47	915.44
S Hayes	17819	45.30	44.68	-0.62	45.30	43.73	-1.57	1438.82	1710.74	271.92	1438.82	2345.35	906.53
S Hayes	17625	45.03	44.56	-0.47	45.03	43.55	-1.48	1377.18	1226.70	-150.48	1377.18	2169.95	792.77
S Hayes	16929	44.43	44.29	-0.14	44.43	43.21	-1.22	983.69	381.58	-602.11	983.69	1417.91	434.22

S Hayes	16252	43.98	44.22	0.24	43.98	43.13	-0.85	842.24	357.33	-484.91	842.24	834.37	-7.87
S Hayes	15710	43.66	44.05	0.39	43.66	43.11	-0.55	794.78	669.05	-125.73	794.78	659.09	-135.69
S Hayes	15029	43.33	43.50	0.17	43.33	43.08	-0.25	794.11	1123.29	329.18	794.11	682.35	-111.76
S Hayes	14384	43.03	43.07	0.04	43.03	43.03	0.00	776.60	919.33	142.73	776.60	740.41	-36.19
S Hayes	14005	42.84	42.87	0.03	42.84	42.92	0.08	737.85	791.70	53.85	737.85	833.77	95.92
S Hayes	13292	42.41	42.40	-0.01	42.41	42.53	0.12	766.36	785.31	18.95	766.36	842.03	75.67
S Hayes	12382	41.92	41.91	-0.01	41.92	42.02	0.10	747.70	744.65	-3.05	747.70	773.28	25.58
S Hayes	11488	41.39	41.38	-0.01	41.39	41.51	0.12	673.71	666.72	-6.99	673.71	677.08	3.37
S Hayes	10519	40.42	40.40	-0.02	40.42	40.49	0.07	725.14	727.93	2.79	725.14	704.19	-20.95
S Hayes	10267	40.18	40.16	-0.02	40.18	40.24	0.06	724.62	727.12	2.50	724.62	703.90	-20.72
S Hayes	9653	39.76	39.74	-0.02	39.76	39.82	0.06	743.22	740.43	-2.79	743.22	744.53	1.31
S Hayes	9246	39.45	39.43	-0.02	39.45	39.52	0.07	740.04	736.12	-3.92	740.04	743.50	3.46
S Hayes	8443	38.91	38.88	-0.03	38.91	38.98	0.07	662.65	660.36	-2.29	662.65	662.60	-0.05
S Hayes	7748	38.70	38.66	-0.04	38.70	38.77	0.07	395.80	404.17	8.37	395.80	382.89	-12.91
S Hayes	6801	38.04	37.99	-0.05	38.04	38.16	0.12	587.92	584.67	-3.25	587.92	569.50	-18.42
S Hayes	6039	37.40	37.33	-0.07	37.40	37.59	0.19	655.41	647.85	-7.56	655.41	632.63	-22.78
S Hayes	5587	36.96	36.90	-0.06	36.96	37.16	0.20	746.97	738.35	-8.62	746.97	707.97	-39.00
S Hayes	4889	36.28	36.20	-0.08	36.28	36.40	0.12	703.48	695.10	-8.38	703.48	643.37	-60.11
S Hayes	4426	35.85	35.77	-0.08	35.85	35.92	0.07	829.54	812.48	-17.06	829.54	811.30	-18.24
S Hayes	3865	35.39	35.30	-0.09	35.39	35.46	0.07	891.79	879.00	-12.79	891.79	900.83	9.04
S Hayes	3683	35.33	35.24	-0.09	35.33	35.41	0.08	926.92	916.02	-10.90	926.92	930.30	3.38
S Hayes	3538	35.11	35.03	-0.08	35.11	35.19	0.08	925.60	914.11	-11.49	925.60	928.67	3.07
S Hayes	3380	34.98	34.90	-0.08	34.98	35.06	0.08	911.77	901.16	-10.61	911.77	909.24	-2.53
S Hayes	2974	34.72	34.62	-0.10	34.72	34.80	0.08	716.77	716.01	-0.76	716.77	696.19	-20.58
S Hayes	2913	34.72	34.61	-0.11	34.72	34.80	0.08	672.24	674.22	1.98	672.24	653.33	-18.91
S Hayes	2835	34.28	34.18	-0.10	34.28	34.39	0.11	668.41	667.10	-1.31	668.41	649.97	-18.44
S Hayes	2769	34.23	34.13	-0.10	34.23	34.34	0.11	664.68	664.35	-0.33	664.68	645.19	-19.49
S Hayes	2619	34.15	34.03	-0.12	34.15	34.26	0.11	651.24	650.43	-0.81	651.24	633.20	-18.04
S Hayes	2137	33.91	33.78	-0.13	33.91	34.04	0.13	555.27	554.46	-0.81	555.27	548.85	-6.42
S Hayes	1905	33.82	33.69	-0.13	33.82	33.96	0.14	626.06	609.50	-16.56	626.06	638.65	12.59
S Hayes	1622	33.73	33.59	-0.14	33.73	33.87	0.14	644.67	626.97	-17.70	644.67	657.21	12.54
S Hayes	1185	33.62	33.48	-0.14	33.62	33.77	0.15	640.50	627.57	-12.93	640.50	642.11	1.61
S Hayes	707	33.60	33.46	-0.14	33.60	33.75	0.15	404.57	394.52	-10.05	404.57	397.81	-6.76
S Hayes	284	33.57	33.43	-0.14	33.57	33.72	0.15	417.51	405.82	-11.69	417.51	430.13	12.62
N Hayes	30961	51.15	51.15	0.00	51.15	51.03	-0.12	367.18	367.15	-0.03	367.18	369.03	1.85
N Hayes	30742	51.02	51.02	0.00	51.02	50.87	-0.15	284.48	284.59	0.11	284.48	299.27	14.79
N Hayes	30356	50.92	50.92	0.00	50.92	50.70	-0.22	256.49	256.64	0.15	256.49	324.15	67.66
N Hayes	30123	50.88	50.88	0.00	50.88	50.62	-0.26	220.68	220.75	0.07	220.68	263.41	42.73
N Hayes	29703	50.81	50.81	0.00	50.81	50.50	-0.31	213.88	213.95	0.07	213.88	246.24	32.36
N Hayes	29123	50.73	50.73	0.00	50.73	50.32	-0.41	234.45	234.53	0.08	234.45	288.55	54.10
N Hayes	28748	50.68	50.68	0.00	50.68	50.22	-0.46	259.46	259.61	0.15	259.46	327.51	68.05

N Hayes	28652	50.67	50.67	0.00	50.67	50.19	-0.48	258.40	258.53	0.13	258.40	323.34	64.94
N Hayes	28558	50.64	50.64	0.00	50.64	50.12	-0.52	258.38	258.51	0.13	258.38	322.43	64.05
N Hayes	28513	50.63	50.63	0.00	50.63	50.10	-0.53	264.23	264.38	0.15	264.23	336.75	72.52
N Hayes	28169	50.58	50.58	0.00	50.58	49.95	-0.63	302.93	303.12	0.19	302.93	424.01	121.08
N Hayes	27721	50.48	50.48	0.00	50.48	49.55	-0.93	373.02	373.21	0.19	373.02	577.85	204.83
N Hayes	27362	50.32	50.32	0.00	50.32	48.94	-1.38	619.42	619.60	0.18	619.42	806.82	187.40
N Hayes	27197	50.24	50.23	-0.01	50.24	48.61	-1.63	907.16	907.37	0.21	907.16	1051.27	144.11
N Hayes	26405	50.07	50.07	0.00	50.07	48.50	-1.57	907.15	907.38	0.23	907.15	1047.17	140.02
N Hayes	26348	49.97	49.97	0.00	49.97	48.51	-1.46	838.57	838.88	0.31	838.57	995.39	156.82
N Hayes	25970	49.48	49.48	0.00	49.48	48.35	-1.13	719.69	720.60	0.91	719.69	1011.54	291.85
N Hayes	25468	49.11	49.10	-0.01	49.11	48.13	-0.98	524.94	526.77	1.83	524.94	976.18	451.24
N Hayes	25135	48.93	48.93	0.00	48.93	48.00	-0.93	493.69	495.69	2.00	493.69	965.61	471.92
N Hayes	24504	48.56	48.54	-0.02	48.56	47.78	-0.78	506.90	511.45	4.55	506.90	989.69	482.79
N Hayes	23880	48.14	48.11	-0.03	48.14	47.56	-0.58	413.28	420.89	7.61	413.28	1005.66	592.38
N Hayes	23475	47.89	47.84	-0.05	47.89	47.45	-0.44	416.27	425.16	8.89	416.27	1019.47	603.20
N Hayes	23175	47.72	47.65	-0.07	47.72	47.38	-0.34	423.96	432.83	8.87	423.96	985.61	561.65
N Hayes	22938	47.59	47.50	-0.09	47.59	47.34	-0.25	405.64	430.07	24.43	405.64	887.04	481.40
N Hayes	22883	47.58	47.49	-0.09	47.58	47.35	-0.23	401.42	433.25	31.83	401.42	776.53	375.11
N Hayes	22839	47.59	47.49	-0.10	47.59	47.35	-0.24	375.87	424.19	48.32	375.87	672.58	296.71
N Hayes	22732	47.30	47.11	-0.19	47.30	46.53	-0.77	375.42	423.45	48.03	375.42	661.91	286.49
N Hayes	22663	47.26	47.06	-0.20	47.26	46.49	-0.77	406.02	449.17	43.15	406.02	862.56	456.54
N Hayes	22356	47.14	46.90	-0.24	47.14	46.39	-0.75	466.48	491.20	24.72	466.48	996.42	529.94
N Hayes	21810	46.91	46.78	-0.13	46.91	46.27	-0.64	527.62	246.81	-280.81	527.62	892.85	365.23
N Hayes	21491	46.77	46.77	0.00	46.77	46.24	-0.53	572.42	170.32	-402.10	572.42	761.88	189.46
N Hayes	20586	46.46	46.66	0.20	46.46	46.15	-0.31	546.93	417.54	-129.39	546.93	844.42	297.49
N Hayes	20278	46.37	46.45	0.08	46.37	46.12	-0.25	507.85	765.26	257.41	507.85	870.23	362.38
N Hayes	20159	46.37	46.46	0.09	46.37	46.12	-0.25	492.57	632.64	140.07	492.57	732.12	239.55
N Hayes	19934	46.24	46.26	0.02	46.24	45.88	-0.36	492.51	632.02	139.51	492.51	730.74	238.23
N Hayes	19841	46.20	46.21	0.01	46.20	45.87	-0.33	605.12	687.29	82.17	605.12	932.52	327.40
N Hayes	19659	46.16	46.17	0.01	46.16	45.85	-0.31	625.83	672.45	46.62	625.83	998.75	372.92
N Hayes	19505	46.11	46.12	0.01	46.11	45.83	-0.28	616.53	648.69	32.16	616.53	1013.93	397.40
N Hayes	19394	46.11	46.12	0.01	46.11	45.84	-0.27	561.50	579.79	18.29	561.50	803.71	242.21
N Hayes	19263	45.85	45.84	-0.01	45.85	44.88	-0.97	561.07	579.03	17.96	561.07	803.70	242.63
N Hayes	19172	45.79	45.78	-0.01	45.79	44.85	-0.94	667.00	681.64	14.64	667.00	905.39	238.39
N Hayes	18658	45.45	45.44	-0.01	45.45	44.73	-0.72	744.32	749.89	5.57	744.32	1140.30	395.98
N Hayes	18218	45.16	45.13	-0.03	45.16	44.66	-0.50	666.34	674.27	7.93	666.34	1122.53	456.19
N Hayes	17823	44.98	44.95	-0.03	44.98	44.62	-0.36	601.58	610.83	9.25	601.58	866.87	265.29
N Hayes	17784	44.93	44.88	-0.05	44.93	44.62	-0.31	599.52	608.79	9.27	599.52	805.31	205.79
N Hayes	17725	44.87	44.83	-0.04	44.87	44.07	-0.80	599.29	608.32	9.03	599.29	805.30	206.01
N Hayes	17684	44.84	44.79	-0.05	44.84	44.06	-0.78	622.08	631.36	9.28	622.08	850.00	227.92
N Hayes	16695	44.37	44.30	-0.07	44.37	43.70	-0.67	614.28	623.18	8.90	614.28	1153.66	539.38

N Hayes	16144	44.10	44.03	-0.07	44.10	43.58	-0.52	605.82	590.05	-15.77	605.82	859.81	253.99
N Hayes	15295	43.82	43.78	-0.04	43.82	43.50	-0.32	456.28	385.86	-70.42	456.28	507.59	51.31
N Hayes	14581	43.63	43.63	0.00	43.63	43.47	-0.16	517.09	465.38	-51.71	517.09	440.10	-76.99
N Hayes	14073	43.45	43.47	0.02	43.45	43.36	-0.09	612.28	588.22	-24.06	612.28	538.11	-74.17
N Hayes	13846	43.34	43.32	-0.02	43.34	43.27	-0.07	646.84	700.59	53.75	646.84	600.07	-46.77
N Hayes	13776	43.29	43.27	-0.02	43.29	43.25	-0.04	645.03	693.50	48.47	645.03	581.09	-63.94
N Hayes	13476	42.99	42.92	-0.07	42.99	42.99	0.00	644.98	693.45	48.47	644.98	580.02	-64.96
N Hayes	12804	42.64	42.56	-0.08	42.64	42.68	0.04	783.40	780.31	-3.09	783.40	747.83	-35.57
N Hayes	12148	42.39	42.30	-0.09	42.39	42.45	0.06	737.70	722.14	-15.56	737.70	720.38	-17.32
N Hayes	11610	42.12	42.04	-0.08	42.12	42.19	0.07	886.89	864.25	-22.64	886.89	890.47	3.58
N Hayes	11065	41.74	41.66	-0.08	41.74	41.81	0.07	948.30	924.10	-24.20	948.30	967.98	19.68
N Hayes	10229	41.29	41.21	-0.08	41.29	41.35	0.06	919.11	898.52	-20.59	919.11	985.84	66.73
N Hayes	9624	40.85	40.77	-0.08	40.85	40.97	0.12	1203.67	1178.28	-25.39	1203.67	1135.79	-67.88
N Hayes	9030	40.45	40.37	-0.08	40.45	40.59	0.14	1194.32	1170.08	-24.24	1194.32	1203.66	9.34
N Hayes	8148	39.77	39.69	-0.08	39.77	39.91	0.14	1273.28	1247.10	-26.18	1273.28	1313.84	40.56
N Hayes	7969	39.58	39.50	-0.08	39.58	39.71	0.13	1363.96	1334.04	-29.92	1363.96	1409.98	46.02
N Hayes	7937	39.62	39.55	-0.07	39.62	39.76	0.14	1324.21	1295.38	-28.83	1324.21	1366.49	42.28
N Hayes	7824	39.51	39.43	-0.08	39.51	39.64	0.13	1323.86	1294.50	-29.36	1323.86	1366.35	42.49
N Hayes	7749	39.48	39.41	-0.07	39.48	39.61	0.13	1282.26	1253.67	-28.59	1282.26	1325.22	42.96
N Hayes	7678	39.35	39.28	-0.07	39.35	39.48	0.13	1294.51	1264.41	-30.10	1294.51	1341.80	47.29
N Hayes	7607	39.30	39.23	-0.07	39.30	39.43	0.13	1302.68	1272.26	-30.42	1302.68	1351.89	49.21
N Hayes	7510	39.25	39.18	-0.07	39.25	39.39	0.14	1290.54	1260.32	-30.22	1290.54	1340.54	50.00
N Hayes	7159	39.05	38.98	-0.07	39.05	39.19	0.14	1189.61	1163.06	-26.55	1189.61	1232.78	43.17
N Hayes	6711	38.82	38.75	-0.07	38.82	38.95	0.13	1048.70	1024.46	-24.24	1048.70	1086.41	37.71
N Hayes	6045	38.58	38.51	-0.07	38.58	38.71	0.13	944.22	935.76	-8.46	944.22	969.48	25.26
N Hayes	5377	38.18	38.11	-0.07	38.18	38.31	0.13	1373.22	1343.43	-29.79	1373.22	1415.84	42.62
N Hayes	4771	37.93	37.87	-0.06	37.93	38.06	0.13	1661.29	1622.93	-38.36	1661.29	1723.22	61.93
N Hayes	3997	37.61	37.54	-0.07	37.61	37.73	0.12	1759.16	1726.54	-32.62	1759.16	1808.42	49.26
N Hayes	3899	37.62	37.55	-0.07	37.62	37.74	0.12	1818.50	1784.44	-34.06	1818.50	1869.51	51.01
N Hayes	3798	37.50	37.43	-0.07	37.50	37.62	0.12	1818.28	1784.08	-34.20	1818.28	1869.33	51.05
N Hayes	3689	37.34	37.28	-0.06	37.34	37.47	0.13	1870.17	1835.33	-34.84	1870.17	1912.64	42.47
N Hayes	3370	37.07	37.01	-0.06	37.07	37.18	0.11	1866.77	1832.90	-33.87	1866.77	1887.23	20.46
N Hayes	2774	36.62	36.56	-0.06	36.62	36.72	0.10	1592.71	1564.87	-27.84	1592.71	1611.74	19.03
N Hayes	2090	36.00	35.94	-0.06	36.00	36.09	0.09	1660.79	1634.92	-25.87	1660.79	1700.07	39.28
N Hayes	1311	35.47	35.40	-0.07	35.47	35.55	0.08	1309.26	1295.62	-13.64	1309.26	1334.32	25.06
N Hayes	706	34.93	34.84	-0.09	34.93	35.00	0.07	1372.27	1369.89	-2.38	1372.27	1402.71	30.44
N Hayes	349	34.56	34.47	-0.09	34.56	34.63	0.07	1591.53	1581.63	-9.90	1591.53	1617.58	26.05

N

Feet

0 3,750 7,500

Legend

- Study Area Boundary
- HEC-RAS 2D Model Coverage

NLCD Land Cover Classification Legend

- 11 Open Water
- 12 Perennial Ice/ Snow
- 21 Developed, Open Space
- 22 Developed, Low Intensity
- 23 Developed, Medium Intensity
- 24 Developed, High Intensity
- 31 Barren Land (Rock/Sand/Clay)
- 41 Deciduous Forest
- 42 Evergreen Forest
- 43 Mixed Forest
- 51 Dwarf Scrub*
- 52 Shrub/Scrub
- 71 Grassland/Herbaceous
- 72 Sedge/Herbaceous*
- 73 Lichens*
- 74 Moss*
- 81 Pasture/Hay
- 82 Cultivated Crops
- 90 Woody Wetlands
- 95 Emergent Herbaceous Wetlands

ADICO

WGA

Texas Water Development Board

CITY OF IOWA COLONY

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MASTER DRAINAGE PLAN

LANDUSE FOR HEC-RAS 2D MANNING'S N-VALUES

EXHIBIT B-1

5/30/2023

Appendix C - Detailed Cost Estimate Calculations

C.1 Right-of-Way acquisition cost

The right-of-way (ROW) cost were calculated by taking the average price per acre of the properties in the immediate vicinity to the site. The average price per acre was then multiplied by the pond's area to find the estimated land cost. The values were multiplied by a factor of 3 to account for any out-of-date Appraisal District information, change in market values, and closing and transaction costs. This process was done to find both the channel and pond ROW acquisition costs. Results for both calculations are in **Tables C-1**, and **C-2**.

Table C-1. Capital Improvements Plan (CIP) ROW Cost Estimate

Name	Area (ac)	ROW Cost
West Fork Pond 1	130.67	$0.6M
West Fork Pond 3 &4	192.10	$0.6M
West Fork Pond 5	78.31	$4.0M
North Hayes Pond 1& 2	59.79	$0.9M
North Hayes Pond 3	48.92	$2.0M
South Hayes Pond 1 & 2	465.15	$0.8M
Pond ROW Multiplier (3x) *		$13.6M
Total=		$40.8M

* Multiplier is to increase price per sq. ft. accuracy.

Table C-2. Alternative (Alt) ROW Cost Estimate

Name	Area (ac)	ROW Cost
West Fork Pond 1	130.67	$0.6M
West Fork Pond 2	120.46	$0.6M
West Fork Pond 3&4	192.10	$4.0M
West Fork Pond 5	78.31	$0.9M
North Hayes Pond 1& 2	59.79	$2.0M
North Hayes Pond 3	48.92	$0.8M
South Hayes Pond 1 & 2	465.15	$4.6M
West Fork Channel	409	$3.1M
North Hayes Channel	282	$2.9M
South Hayes Channel	242	$1.5M
ROW Multiplier (3x) *		$21.0M
Total=		$63.0M

* Multiplier is to increase price per sq. ft. accuracy.

C.2 Pond excavation volume

Excavation costs were obtained using the information provided in the calculator seen in **Table C-3**. The pond cut volumes were estimated using the high bank, pond toe areas, and depth. The depth of the pond is determined based on the depth of the channel such that the invert of the outfall pipe is 1-ft above the channel flowline. A 30-foot maintenance berm surrounds the pond. Auto CAD Civil 3D was used to create preliminary surfaces of the ponds to determine the stage-storage relationship.

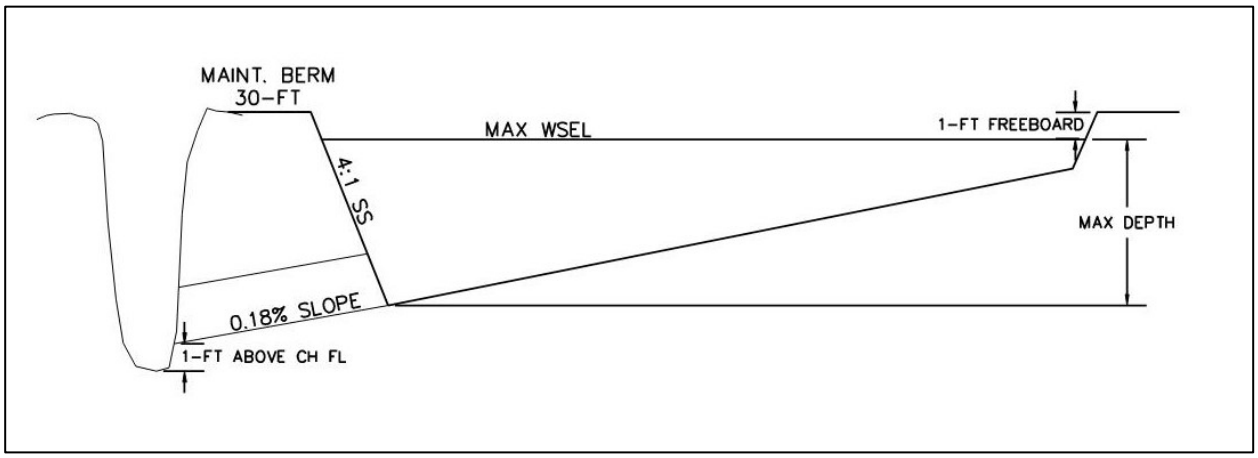

Figure C-1. Typical Pond Profile for Excavation Calculations

Table C-3. Pond Excavation Volume

Pond	Estimated Cut Volume		
	CF	AC-FT	CY
West Fork Pond1	22943045	527	849742
West Fork Pond 2	30134520	692	1116093
West Fork Pond 3	9484835	218	351290.1852
West Fork Pond 4	15830727	363	586323.2222
West Fork Pond 5	8681623	199	321541.5926
North Hayes Pond 1	4475549	103	165761.0741
North Hayes Pond 2	5404566	124	200169.1111
North Hayes Pond 3	6931965	159	256739.4444
South Hayes Pond 1	42143880	967	1560884.444
South Hayes Pond 2	44024395	1011	1630533.148

C.3 Channel excavation volume

Channel excavation considered the channel improvement length, existing width, the total desired width, and average depth. Using the HEC-RAS Channel Design/Modification Editor, the volume of channel that needs to be excavated was found by multiplying the length of the channel (ft) by the area of the cut (ft^2) for each section of channel with a specific width. These calculations can be seen in table C-5. Finally, all the volumes for the different channel sections were added up to find the total volume for each channel. These calculations are provided in table C-6.

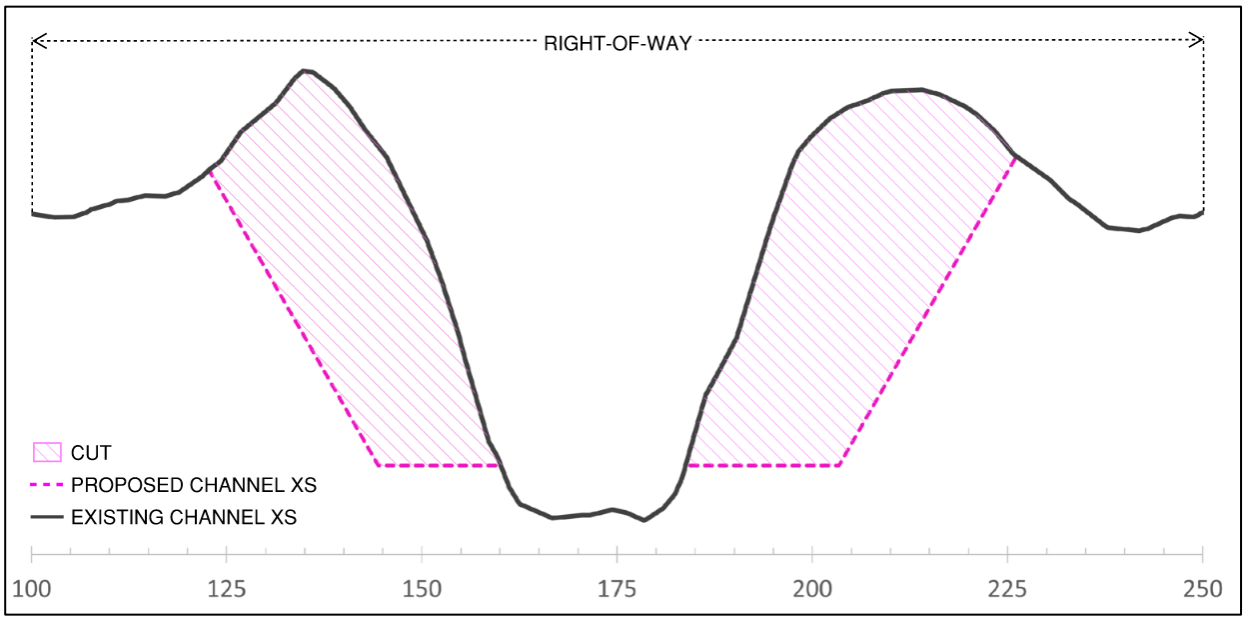

Figure C-2. Typical Channel Excavation

Table C-4. Example Channel Excavation Volume Calculation

Channel	Input		Calculations		
	Length (ft)	Cut Area (ft^2)	CF	AC-FT	CY
North Hayes (Section 1)	57.2	75.9	4341.48	0.09967	160.80

Table C-5. Channel Estimated Excavation Volume

Channel	Calculations		
	CF	AC-FT	CY
North Hayes	3089171.78	70.92	114413.77
South Hayes	2268338.45	52.07	84012.54
West Fork	8899781.52	204.31	329621.54

C.4 Excavation cost

To find the costs, the volumes are multiplied by the price per cubic yard to find the dig costs and are added with the prices of erosion control (10% of subtotal), mobilization (5% of subtotal), and utility adjustments (25% of subtotal where applicable).

Table C-6. Pond Excavation Cost Estimate

Pond	Cost	
	CIP	Alt
West Fork Pond 1	$4.9M	$4.9M
West Fork Pond 2	-	$6.4M
West Fork Pond 3	$2.5M	$2.5M
West Fork Pond 4	$4.2M	$4.2M
West Fork Pond 5	$2.3M	$2.3M
North Hayes Pond 1	$1.0M	$1.0M
North Hayes Pond 2	$1.2M	$1.2M

North Hayes Pond 3	$1.8M	$1.8M
South Hayes Pond 1	$11.2M	$11.2M
South Hayes Pond 2	$9.4M	$9.4M
TOTAL	**$17.9M**	**$24.3M**

*Includes excavation and haul-off and utility adjustments

Table C-7. Channel Excavation Cost

Channel	Length of Improvements (ft)	Excavation Volume (CY)	$/CY	Cost
West Fork of Chocolate Bayou	329621.54	114413.77	$12.00	$3,955,458.45
North Hayes Creek	114413.77	840012.54	$12.00	$1,372,965.24
South Hayes Creek	84012.54	329621.54	$12.00	$1,008,150.42
			Subtotal =	$6,336,574.11
			Erosion Control =	633,657.41
			Mobilization =	$316,828.71
			Utility Adjustment =	$1,584,143.53
			Miscellaneous =	$316,828.71
			Total =	$9,188,032.47

* Erosion control (10% of subtotal), mobilization (5% of subtotal), and utility adjustments (25% of subtotal)

C.5 Total cost estimates

Finally, the total ROW and excavation costs are added with a 25% contingency cost to consider any issues that may arise. Along with the other added cost, the contingency multiplier is added to the total cost for each alternative. The total costs of each alternative are below in **Tables C-9.**

Table C-8. Summary of Total Project Cost

Scenario	Pond ROW	Channel ROW	Pond Excavation	Channel Excavation	25% Contingency	Total Cost	Total Cost (including additional volume)
CIP	$39.1M	$0.0M	$38.4M	$0.0M	$19.4M	$96.9M	n/a
Alt	$40.8M	$22.5M	$44.9M	$9.1M	$29.3M	$146.6M	$221.4 M

Appendix D – Ultimate Channel R.O.W. Determination

The determination of the ultimate channel right-of-way needs was prepared using the Manning's Equation based on normal depth solution. The peak flows are based on existing development conditions assuming that all future development will provide sufficient storm water detention volume to mitigate for the anticipated increase in stormwater runoff associated with the development.

D.1 Peak flows

The peak flows used to determine the ultimate channel right-of-way needs is based on the HEC-HMS computer simulation of the existing conditions for the 1% ACE stormwater runoff. The stormwater runoff hydrographs from the sub-basins are combined at specific locations along each stream resulting in the peak flows for consideration. No routing of the hydrographs is performed for this exercise. This approach is assumed to provide conservative flows in consideration of determining the appropriate channel capacity needs.

D.2 Ultimate Channel drainage Right-of-Way widths

The ultimate width for the channels assumes that the lowest 1.0 foot of the channel would remain undisturbed. This approach is identified as being necessary to ensure that stream impacts would not result from a future channel project (with respect to jurisdictional Waters of the U.S.). The channels would remain grass lined with a roughness coefficient of 0.04.

The channel side slope is assumed to be 4(horizontal) to 1(vertical). The width of the bottom shelf varies based on the assumed channel depth and capacity required to be conveyed within the channel high bank. The calculation also includes the assumption that 1.0 foot of freeboard is provided, along with 30-foot-wide maintenance berms on both sides of the channel. The following tables provides a summary of the 1% ACE flows and ultimate right-of-way widths for the channels. The ultimate right-of-way widths are also provided on **Exhibit D-1**.

Table D1. 1% ACE Flow and Ultimate R.O.W. (West Fork Chocolate Bayou)

FROM	TO	FLOW (cfs)	DEPTH (ft)	BOTTOM WIDTH (ft)	RIGHT-OF-WAY WIDTH (ft)
Upstream	CR383	1,727	6.5	130	240
CR383	10101 trib	4,016	7.0	260	380
10101 trib	10103 trib	5,505	7.5	320	440
10103 trib	SH288	7,128	8.0	365	490
SH288	Mer Pkwy	8,105	8.5	370	500
Mer Pkwy	Mer Pkwy	8,907	9.0	370	500
Mer Pkwy	10105 trib	9,664	9.5	370	500
10105 trib	CR 63	12,940	10.0	435	580
CR 63	Out	13,524	10.0	455	590

Table D2. 1% ACE Flow and Ultimate R.O.W. (Channel 101-05-00)

FROM	TO	FLOW (cfs)	DEPTH (ft)	BOTTOM WIDTH (ft)	RIGHT-OF-WAY WIDTH (ft)
Upstream	SH288	1,383	7.0	75	190
SH288	Out	2,688	7.5	135	260

Table D3. 1% ACE Flow and Ultimate R.O.W. (North Hayes Creek)

FROM	TO	FLOW (cfs)	DEPTH (ft)	BOTTOM WIDTH (ft)	RIGHT-OF-WAY WIDTH (ft)
Upstream	CR 64	329	5.0	32	130
CR 64	SH288	992	6.0	75	180
SH288	CR65	1,367	7.0	75	190
CR65	trib	1,985	8.0	80	200
trib	Out	1,985	9.0	80	210

Table D4. 1% ACE Flow and Ultimate R.O.W. (South Hayes Creek)

FROM	TO	FLOW (cfs)	DEPTH (ft)	BOTTOM WIDTH (ft)	RIGHT-OF-WAY WIDTH (ft)
Upstream	Canal	455	6.0	32	140
Canal	CR 62	1,939	6.5	120	230
CR 62	trib	2,249	7.0	120	240
trib	SH288	2,684	7.5	120	240
SH288	CR65	2,893	8.5	120	250
CR65	Out	3,324	9.0	120	250

Appendix E – Notice of Public Meeting

P

NOTICE OF PUBLIC MEETING ON DEVELOPMENT OF IOWA COLONY MASTER DRAINAGE PLAN

The City of Iowa Colony, Texas will hold a public meeting at 6:00 p.m. on June 1, 2022, in the Council Chambers at the Iowa Colony City Hall, 12003 Iowa Colony Boulevard, Iowa Colony, Texas 77583 concerning the development of a master drainage plan for the City of Iowa Colony. The purpose of the meeting is to describe that project, to solicit input and comments from the affected public, to inform people of the project and how the study outcome will benefit the community, and to gather any additional project-related information that people have to share, including location of flood risk. A quorum of the City Council may be present and may participate in this meeting.

I, Kayleen Rosser, hereby certify that the above notice of meeting was posted pursuant to the Texas Open Meeting Act (Chapter 51 of the Texas Government Code) on May 25, 2022.

Kayleen Rosser
Kayleen Rosser, City Secretary

I hereby certify that the foregoing agenda remained posted at the entrance to the Iowa Colony City Hall where it was visible to the public at all times and on the City's website for at least 72 hours preceding the scheduled time of the meeting therein described.

CITY OF IOWA COLONY

Kayleen Rosser, City Secretary
Date signed: _____

NOTICE OF PUBLIC MEETING ON DEVELOPMENT OF IOWA COLONY MASTER DRAINAGE PLAN

The City of Iowa Colony, Texas will hold a public meeting at 6:00 p.m. on February 23, 2022, in the Council Chambers at the Iowa Colony City Hall, 12003 Iowa Colony Boulevard, Iowa Colony, Texas 77583 concerning the development of a master drainage plan for the City of Iowa Colony. The purpose of the meeting is to describe that project, to solicit input and comments from the affected public, to inform people of the project and how the study outcome will benefit the community, and to gather any additional project-related information that people have to share, including location of flood risk. A quorum of the City Counsel may be present and may participate in this meeting.

I, Kayleen Rosser, hereby certify that the above notice of meeting was posted pursuant to the Texas Open Meeting Act (Chapter 51 of the Texas Government Code) on February 18, 2022.

Kayleen Rosser
Kayleen Rosser, City Secretary

I hereby certify that the foregoing agenda remained posted at the entrance to the Iowa Colony City Hall where it was visible to the public at all times and on the City's website for at least 72 hours preceding the scheduled time of the meeting therein described.

_____
Kayleen Rosser, City Secretary
Date signed: _____

Appendix F – Texas Water Development Board Exhibit C & No Negative Impact Determination Tables

Table F1.1. Existing Flood Infrastructure Summary (Texas Water Development Board Exhibit C Table Flood Infrastructure Tab)

Existing Infrastructure ID	RFPG No.	RFPG Name	Counties	HUC8s	HUC12s	Watersheds	Feature Name	Infrastructure Type	Description	Natural or Constructed or Combination	Construction Date
North Hayes Creek - 28600	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Unnamed Bridge	Bridge	None	Constructed	Unknown
North Hayes Creek - 26820	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge @ Highway 288 and Valley Glen Rd	Bridge	None	Constructed	Unknown
North Hayes Creek - 22780	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Airline Rd No 2 E	Bridge	None	Constructed	Unknown
North Hayes Creek - 20050	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Airline Rd No 1 E	Bridge	None	Constructed	Unknown
North Hayes Creek - 19310	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Iowa Colony Blvd	Bridge	None	Constructed	Unknown
North Hayes Creek - 17750	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Unnamed Bridge	Bridge	None	Constructed	Unknown
North Hayes Creek - 13690	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Pursley Rd	Bridge	None	Constructed	Unknown
North Hayes Creek - 7900	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Unnamed Bridge	Bridge	None	Constructed	Unknown
North Hayes Creek - 3815	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Unnamed Bridge	Bridge	None	Constructed	Unknown
South Hayes Creek - 34700	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Culvert - Haye Creek Rd	Culvert	None	Constructed	Unknown
South Hayes Creek - 32000	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Airline Rd S	Bridge	None	Constructed	Unknown
South Hayes Creek - 30175	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Ailine Rd 1	Bridge	None	Constructed	Unknown
South Hayes Creek - 29175	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Unnamed Bridge	Bridge	None	Constructed	Unknown
South Hayes Creek - 24000	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Highway 288, Valley Glen Rd, Pleasant Valley Dr	Bridge	None	Constructed	Unknown
South Hayes Creek - 18000	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Iowa Colony Blvd	Bridge	None	Constructed	Unknown
South Hayes Creek - 3600	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Brister Road	Bridge	None	Constructed	Unknown
South Hayes Creek - 2875	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Live Oak Dr	Bridge	None	Constructed	Unknown
West Fork - 44336	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Karsten Rd	Bridge	None	Constructed	Unknown
West Fork - 38158	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Bullard Rd	Bridge	None	Constructed	Unknown
West Fork - 31872	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Highway 288	Bridge	None	Constructed	Unknown
West Fork -27770	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Iowa Colony Blvd	Bridge	None	Constructed	Unknown
West Fork - 27060	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Unnamed Bridge	Bridge	None	Constructed	Unknown
West Fork -23383	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Meridiana Pkwy	Bridge	None	Constructed	Unknown
West Fork - 17685	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Davenport Pkwy	Bridge	None	Constructed	Unknown
West Fork - 13730	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Unnamed Bridge	Bridge	None	Constructed	Unknown
West Fork - 12800	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge - Manvel-Sandy Point Rd	Bridge	None	Constructed	Unknown
West Fork - 8340	6	San Jacinto	Brazoria	12040204	120402040400	Mustang	Bridge	Bridge	None	Constructed	Unknown

Table F1.2. Existing Flood Infrastructure Summary (Texas Water Development Board Exhibit C Table Flood Infrastructure Tab)

Existing Infrastructure ID	Infrastructure Dimensions					Existing Infrastructure ID	Level of Service	Condition	Condition Description	Deficiency	Deficiency Description	Population Protected by Infrastructure	Owning Entity	Operating Entity	Associated		
	Diameter (ft)	Height (ft)	Width (ft)	Length (ft)	Area (acre)										FMEs	FMSs	FMPs
North Hayes Creek - 28600							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
North Hayes Creek - 26820							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
North Hayes Creek - 22780							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
North Hayes Creek - 20050							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
North Hayes Creek - 19310							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
North Hayes Creek - 17750							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
North Hayes Creek - 13690							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
North Hayes Creek - 7900							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
North Hayes Creek - 3815							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
South Hayes Creek - 34700							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
South Hayes Creek - 32000							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
South Hayes Creek - 30175							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
South Hayes Creek - 29175							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
South Hayes Creek - 24000							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
South Hayes Creek - 18000							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
South Hayes Creek - 3600							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
South Hayes Creek - 2875							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
West Fork - 44336							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
West Fork - 38158							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
West Fork - 31872							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
West Fork -27770							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
West Fork - 27060							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
West Fork -23383							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
West Fork - 17685							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
West Fork - 13730							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
West Fork - 12800							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	
West Fork - 8340							Unknown	Unknown		Unknown	NA	Unknown	Unknown	Unknown	None	None	

Table F2.1. Existing Condition Flood Risk Summary (Texas Water Development Board Exhibit C Table Existing Flood Risk Tab)

I.D. #	RFPG No.	RFPG Name	County	Area in Flood Planning Region (sqmi)	1% Annual Chance Flood Risk									
					Area in Floodplain (sqmi)	Number of Structures in Floodplain	Residential Structures in Floodplain	Population (daytime)	Population (nighttime)	Population	Roadway Stream Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)
1	6	San Jacinto	Brazoria	27.76	16.16	1111	1075	311	1002	657	9	25.76	11.88	0

Table F2.2: Existing Condition Flood Risk Summary (Texas Water Development Board Exhibit C Table Existing Flood Risk Tab)

I.D. #	RFPG No.	RFPG Name	County	Area in Flood Planning Region (sqmi)	0.2% Annual Chance Flood Risk							
					Area in Floodplain (sqmi)	Number of Structures in Floodplain	Residential Structures in Floodplain	Population	Roadway Stream Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)
1	6	San Jacinto	Brazoria	27.76	19.33	1775	1713	1166	11	39.9	11.88	0

Table F2.3: Existing Condition Flood Risk Summary (Texas Water Development Board Exhibit C Table Existing Flood Risk Tab)

I.D. #	RFPG No.	RFPG Name	County	Area in Flood Planning Region (sqmi)	Possible Flood Prone Areas								Average SVI of features in floodplain or flood prone areas
					Area (sqmi)	Number of Structures in Flood Prone Area	Residential Structures in in Flood Prone Area	Population	Roadway Stream Crossings (#)	Roadways Segments (miles)	Agricultural Areas (sqmi)	Critical Facilities (#)	
1	6	San Jacinto	Brazoria	27.76	-	-	-	-	-	-	-	-	0.4567

Table F3.1. Flood Mitigation Projects Summary (Texas Water Development Board Exhibit C Table FMP Tab)

FMP ID	RFPG No.	RFPG Name	FMP Name	Description	Associated Goals (ID)	Counties	HUC12s	Watershed Name	Project Type	Project Area (sqmi)	Flood Risk Type (Riverine, Coastal, Urban, Playa, Other)
063000001	6	San Jacinto	CIP	Capital Improvement Project proposing ponds along West Fork of Chocolate Bayou, North Hayes and South Hayes Creek		Brazoria	120402040400	06000001 West Fork of Chocolate Bayou, 06000002 North Hayes Creek, 06000003 South Hayes Creek, Mustang Bayou	Detention Ponds	27.85	Riverine
063000002	6	San Jacinto	Alternative	An alternative to the Capital Improvement Project proposing ponds and channel improvements along West Fork of Chocolate Bayou, North Hayes and South Hayes Creek		Brazoria	120402040400	06000001 West Fork of Chocolate Bayou, 06000002 North Hayes Creek, 06000003 South Hayes Creek, Mustang Bayou	Detention Ponds, Channel	27.85	Riverine

Table F3.2. Flood Mitigation Projects Summary (Texas Water Development Board Exhibit C Table FMP Tab)

FMP ID	Sponsor	Entities with Oversight	Emergency Need (Y/N)	Estimated Project Cost ($)	Potential Funding Sources and Amount	Flood Risk									
						Area in 100yr (1% annual chance) Floodplain (sqmi)	Area in 500yr (0.2% annual chance) Floodplain (sqmi)	Estimated number of structures at 100yr flood risk	Residential structures at 100-year flood risk	Estimated Population at 100-year flood risk	Critical facilities at 100-year flood risk (#)	Number of low water crossings at flood risk (#)*	Estimated number of road closures (#)	Estimated length of roads at 100-year flood risk (Miles)	Estimated farm & ranch land at 100-year flood risk (acres)
063000001	Iowa Colony, Brazoria Drainage District 4, Brazoria County Drainage District 5, Brazoria		N	$ 17,492,285.00	Yes, Federal, Iowa Colony, Brazoria	15.42	19.26	857	666	982	1	19		6.9	7309.9
063000002	Iowa Colony, Brazoria Drainage District 4, Brazoria County Drainage District 5, Brazoria		N	$ 30,878,913.00	Yes, Federal, Iowa Colony, Brazoria	14.09	18.63	884	483	775	1	19		6.9	6691.3

Table F3.3. Flood Mitigation Projects Summary (Texas Water Development Board Exhibit C Table FMP Tab)

FMP ID	Reduction in Flood Risk											
	Number of structures with reduced 100yr (1% annual chance) Flood risk	Number of structures removed from 100yr (1% annual chance) Flood risk	Number of structures removed from 500yr (0.2% annual chance) Flood risk	Residential structures removed from 100yr (1% annual chance) Flood risk	Estimated Population removed from 100yr (1% annual chance) Flood risk	Critical facilities removed from 100yr (1% annual chance) Flood risk (#)	Number of low water crossings removed from 100yr (1% annual chance) Flood risk (#)	Estimated reduction in road closure occurrences	Estimated length of roads removed from 100yr flood risk (Miles)	Estimated farm & ranch land removed from 100yr flood risk (acres)	Estimated reduction in fatalities (if available)	Estimated reduction in injuries (if available)
063000001		46	95	35	28	0	1	0	16.9	619.2	0	0
063000002		224	507	192	186	0	1	0	16.9	1237.8	0	0

Table F3.4. Flood Mitigation Projects Summary (Texas Water Development Board Exhibit C Table FMP Tab)

FMP ID	Pre-Project Level-of-Service	Post-Project Level-of-Service	Cost/ Structure removed	Percent Nature-based Solution (by cost)	Negative Impact (Y/N)	Negative Impact Mitigation (Y/N)	Social Vulnerability Index (SVI)*	Water Supply Benefit (Y/N)	Traffic Count for Low Water Crossings	Benefit-Cost Ratio	RFPG Recommendation (Y/N)	Reason for Recommendation
063000001	10%	2.31%	$968,845.89	0	N	Y	0.46	N				
063000002	10%	0.798%	$375,999.45	0	Y	N	0.46	N				

Table F.4. Potential Cost Summary (Texas Water Development Board Exhibit C Table Cost Template Tab)

			FMP	CIP	Alt
Non-recurring	Study costs and other (non-capital costs)	Non-engineering studies: (e.g., flood plain regulation development; flood authority or revenue raising studies; public awareness program)	x	$100,000	$100,000.00
		Engineering/technical/feasibility studies: (e.g. Hydrologic & hydraulic modeling/mapping; identification of potential flood risk reduction solutions; BCA and alternative analyses; project design; construction engineering)	x	$768,716	$1,452,996.88
		Surveying; geotechnical; testing	x	$431,400	$1,019,775.00
	Total study costs		**x**	**$1,300,116**	**$2,572,771.88**
	Construction-related (capital costs)	Design and Permitting	x	$5,765,371	$10,897,476.62
	Construction-related (capital costs)	Environmental; archaeological & historical resources	x	$110,777	$312,249.24
		Temporary and/or permanent easements; land acquisition	x	$39,108,138	$63,327,045.32
		Mitigation; utility relocation	x	$4,230,570.97	$5,973,128.88
		Legal assistance; fiscal services & costs (bond counsel); outreach	x	$100,000	$100,000.00
		Direct construction costs of components/facilities	x	$38,435,805	$72,649,844.15
		Buyouts; property elevations	x	$0	$0.00
		Interest during construction	x	$3,170,954	$5,993,612.14
		Project management (by engineer)	x	$480,000	$960,000.00
		Inspection; pilot testing; warranty; manuals	x	$0	$0.00
		(other special services or relevant costs)	x	$0	$0.00
		Contingency(s)	x	$18,280,323	$32,042,671.27
	Total construction costs		x	**$109,681,939**	**$192,256,027.62**
TOTAL PROJECT COSTS[1]			**x**	**$110,982,055**	**$194,828,799.51**
Recurring		Debt service $ /yr [5%, (30 years)]	x	$184,970	$324,714.67
		Operation & Maintenance (Ponds) $/yr	x	$90,000	$110,000.00
		Operation & Maintenance (Channel) $/yr	x	$0	$52,800.00
		Other (i.e., public awareness campaign)	x	$0	$0.00
TOTAL ANNUAL RECURRING COSTS			**x**	**$274,970**	**$487,514.67**

[1] To be listed as total project cost in the project database.

Table F.5. Texas Water Development Board No Negative Impact Determination Table

Region Number	FMP ID	FMP Name	FMP Meets ALL No Negative Impacts Requirements from Exhibit C Section 3.6.A (Yes/ No)	Negative Impact Description	Planning level Mitigation Plan (Yes/ No)	Mitigation Plan Description	No Negative Impact Determination (Yes/No)	Basis of No Negative Impact Determination (Model, Study, Engineering Judgement)	Model ID	Model Name	Model Submitted	Study Name and Location	Engineer of Record (Optional)	Engineering Judgement Description
6	063000001	CIP	Y		Y	9 detention ponds	Y	Model, Study and Engineering judgement	60000000002	Iowa Colony	HEC-RAS Version 6.3	City of Iowa Colony Master Drainage Plan, City of Iowa Colony, Brazoria County		Increase > 0.35ft in the 2D mesh, approximately 0.75 miles from the nearest plan feature. Likely due to computational mesh issue and not a result of the project.
6	063000002	Alternative	N	Increase in peak flows at the downstream end of the study area. No available ROW in study area to provide mitigation. Mitigation volume has been quantified and will need to be provided downstream, beyond the limits of the study area.	Y	9 detention ponds and channel improvements	N	Model and Study	60000000002	Iowa Colony	HEC-RAS Version 6.3	City of Iowa Colony Master Drainage Plan, City of Iowa Colony, Brazoria County		

Appendix G – Surveyed Bridges

The surveyed bridges from The Wilson Survey Group, Inc.

THE WILSON SURVEY GROUP, INC.
PROFESSIONAL LAND SURVEYORS

June 30, 2022

Mr. Dinh Ho, P.E.
Adico Consulting Engineers
2114 El Dorado Blvd. Suite 400
Friendswood, Texas 77546

RE: Survey Information on Existing Bridges on North Hayes Creek and South Hayes Creek in Iowa Colony, Brazoria County, Texas (WSG # 22-125)

Creek location	H.C.	L.C.	Piers	Pier size	Culvert diameter
A	48.91	47.50	9	10" DIA.	N/A
B	47.71	45.13	0	N/A	N/A
C	45.86	44.10	0	N/A	N/A
D	41.52	39.32	3	30" X 14'	N/A
F	53.60	N/A	0	N/A	10"
G	50.61	48.98	31	12" DIA.	N/A
H	50.56	46.96	0	N/A	N/A
I	46.15	44.32	8	18" X 18"	N/A
J	35.51	33.79	10	16" X 16"	N/A
K	34.79	31.92	0	N/A	N/A

H.C. = High chord elevation
L.C. = Low chord elevation

NOTE:

1. Elevations shown hereon are related to NAVD88 (Geoid18).

Michael D. Wilson R.P.L.S.
Texas Registration No. 4821

STATE OF TEXAS
REGISTERED
MICHAEL D. WILSON
4821
PROFESSIONAL
LAND SURVEYOR

2006 E. Broadway • Suite 103 • Pearland, Texas 77581
Ph (281) 485-3991
E-mail: mwilson@wilsonsurvey.com
T.B.P.E.L.S. Firm No. 10014900

Existing bridge/culvert crossings that were surveyed along North Hayes are shown in the figures below. The crossings are identified as A, B, C, & D. Refer to the **Exhibit G-1** at the end of this Appendix for locations.

Figure G-1 View of survey location "A"

Figure G-2 Cross section view of survey location "A"

Figure G-3 View of survey Location "B"

Figure G-4 Cross section view of survey Location "B"

Figure G-5 Survey Location "C"

Figure G-6 Cross Section view of survey location "C"

Figure G-7 View of survey location "D"

Figure G-8 Cross section view of survey location "D"

Existing bridge/culvert crossings that were surveyed along South Hayes are shown in the figures below. The crossings are identified as F, G, H, I, J, & K. Refer to the **Exhibit G-1** at the end of this Appendix for locations.

Figure G-9 View of survey location "F"

Figure G-10 Cross section view of survey location "F"

Figure G-11 View of survey location "G"

Figure G-12 Cross section view of survey location "G"

Figure G-13 View of survey location "H"

Figure G-14 Cross section view of survey location "H"

Figure G-15 View of survey location "I"

Figure G-16 Cross section view of survey location "I"

Figure G-17 View of survey location "J"

Figure G-18 Cross section view of survey location "J"

Figure G-19 View of survey location "K"

Figure G-20 Cross Section view of location "K"

Appendix H – Benefit-Cost Analysis Tables

Table H1. Structural Damage Function

Flood Depth (in)	Flood Depth (ft)	Residential Average Home ($ per 2500 sf)	Commercial		
			Average ($ per sf)	Industrial (Light) ($ per sf)	Hospital/School ($ per sf)
1"	0.08	29,580.05	2.24	2.03	2.12
2"	0.17	29,673.85	3.34	2.99	3.23
3"	0.25	32,316.60	4.45	3.95	4.34
4"	0.33	42,540.02	5.55	4.92	5.45
5"	0.42	50,029.10	6.66	5.88	6.56
6"	0.50	57,419.98	7.76	6.85	7.67
7"	0.58	61,120.93	8.86	7.81	8.78
8"	0.67	64,822.99	9.97	8.77	9.89
9"	0.75	68,523.94	11.07	9.74	11.00
10"	0.83	72,223.80	12.18	10.70	12.11
11"	0.92	75,925.85	13.28	11.67	13.22
12"	1.00	79,626.81	14.38	12.63	14.33
13"	1.08	81,021.20	15.17	13.33	15.12
14"	1.17	82,415.58	15.96	14.03	15.91
15"	1.25	83,809.97	16.74	14.73	16.70
16"	1.33	85,204.36	17.53	15.42	17.49
17"	1.42	86,598.74	18.32	16.12	18.29
18"	1.50	87,993.13	19.10	16.82	19.08
19"	1.58	89,387.52	19.89	17.52	19.87
20"	1.67	90,781.90	20.68	18.22	20.66
21"	1.75	92,176.29	21.46	18.92	21.45
22"	1.83	93,570.68	22.25	19.62	22.24
23"	1.92	94,965.06	23.04	20.32	23.03
24"	2.00	96,359.45	23.82	21.01	23.83
25"	2.08	97,022.62	24.42	21.54	24.41
26"	2.17	97,685.79	25.02	22.06	24.99
27"	2.25	98,348.96	25.61	22.58	25.58
28"	2.33	99,012.13	26.21	23.10	26.16
29"	2.42	99,675.30	26.81	23.62	26.74
30"	2.50	100,338.47	27.41	24.14	27.33
31"	2.58	101,001.64	28.00	24.67	27.91
32"	2.67	101,664.82	28.60	25.19	28.50
33"	2.75	102,327.99	29.20	25.71	29.08
34"	2.83	102,991.16	29.80	26.23	29.66
35"	2.92	103,654.33	30.39	26.75	30.25
36"	3.00	104,317.50	30.99	27.28	30.83
37"	3.08	105,128.25	31.63	27.80	31.54
38"	3.17	105,939.01	32.27	28.32	32.25
39"	3.25	106,749.77	32.91	28.84	32.95
40"	3.33	107,560.52	33.55	29.36	33.66
41"	3.42	108,371.28	34.19	29.88	34.37
42"	3.50	109,182.04	34.84	30.41	35.08
43"	3.58	109,992.79	35.48	30.93	35.78
44"	3.67	110,803.55	36.12	31.45	36.49
45"	3.75	111,614.30	36.76	31.97	37.20
46"	3.83	112,425.06	37.40	32.49	37.91
47"	3.92	113,235.82	38.04	33.02	38.61
48"	4.00	114,046.57	38.68	33.54	39.32
>48"	> 4.0	187,585.68	61.06	42.45	76.41

Table H2. Number of Structures Inundated

Structure Type	Number of Structures Inundated											
	Existing				CIP				Alternative			
	500-Year	100-year	50-year	10-year	500-Year	100-year	50-year	10-year	500-Year	100-year	50-year	10-year
Commercial	60	35	33	22	55	35	32	20	49	34	31	19
Industrial	2	1	1	0	2	1	1	0	1	1	0	0
Residential	1713	1075	867	313	1655	1007	808	235	1368	840	656	193
Critical Infrastructure	0	0	0	0	0	0	0	0	0	0	0	0
Total No. of Inundated Structures	**1775**	**1111**	**901**	**335**	**1712**	**1043**	**841**	**255**	**1418**	**875**	**687**	**212**
Removed Residential Struc.					**58**	**68**	**59**	**78**	**345**	**235**	**211**	**120**
Removed Structures					**63**	**68**	**60**	**80**	**357**	**236**	**214**	**123**
No. of Structures with Reduced Damages					**973**	**666**	**-**	**-**	**1610**	**956**	**-**	**-**

Table H3. Expected Damages to Structures Based on Flood Depth (Baseline Condition)

Structure Type	Expected Damages to Structures based on Flood Depth											
	Existing				CIP				Alternative			
	500-Year	100-year	50-year	10-year	500-Year	100-year	50-year	10-year	500-Year	100-year	50-year	10-year
Commercial	$8.5 M	$6.1 M	$5.3 M	$3.2 M	$8.3 M	$5.9 M	$5.0 M	$2.4 M	$8.1 M	$6.0 M	$4.6 M	$2.4 M
Industrial	$0.1 M	$0.0 M	$0.0 M	$0.0 M	$0.1 M	$0.0 M	$0.0 M	$0.0 M	$0.0 M	$0.0 M	$0.0 M	$0.0 M
Residential	$117.5 M	$66.3 M	$49.3 M	$16.9 M	$112.4 M	$61.5 M	$44.9 M	$13.0 M	$90.5 M	$46.9 M	$33.7 M	$10.7 M
Critical Infrastructure	$0.0 M	$0.0 M	$0.0 M	$0.0 M	$0.0 M	$0.0 M	$0.0 M	$0.0 M	$0.0 M	$0.0 M	$0.0 M	$0.0 M
Total Damages ($)	**$126.2 M**	**$72.4 M**	**$54.7 M**	**$20.1 M**	**$120.9 M**	**$67.5 M**	**$49.8 M**	**$15.4 M**	**$98.6 M**	**$52.9 M**	**$38.3 M**	**$13.1 M**
Benefits per Storm Event ($)					**$5.3 M**	**$5.0 M**	**$4.8 M**	**$4.7 M**	**$27.6 M**	**$19.6 M**	**$16.3 M**	**$7.0 M**

Table H4. Estimated length of roads Inundated (Miles)

	Total Road (mi)	Length of Inundated Road (mi)					
		Existing		CIP		Alternative	
		500-YR	100-YR	500-YR	100-YR	500-YR	100-YR
Road Inundated	126.55	39.99	25.76	39.07	24.19	35.38	19.19
Road Removed from Inundation				0.93	1.57	4.61	6.57

Table H5. Estimated length of roads Inundated (Miles)

	Average SVI of Study Area	Average SVI of Buildings Inundated per Event					
		Existing		CIP		Alternative	
		500-YR	100-YR	500-YR	100-YR	500-YR	100-YR
SVI	0.459	0.452	0.457	0.452	0.458	0.455	0.462
Change in Average SVI				0.000	0.001	0.003	0.005

Table H6. Day & Night Populations at Risk

	Population at Risk											
	Existing				CIP				Alternative			
	500-Year	100-year	50-year	10-year	500-Year	100-year	50-year	10-year	500-Year	100-year	50-year	10-year
Day Population at Risk	717	311	263	103	656	301	257	92	517	297	240	70
Night Population at Risk	1614	1002	803	332	1565	959	755	287	1403	834	653	218
Average Population at Risk	**1166**	**657**	**533**	**218**	**1111**	**630**	**506**	**190**	**960**	**566**	**447**	**144**
Benefit - Population Removed from Risk				Day	61	10	6	11	200	14	23	33
				Night	49	43	48	45	211	168	150	114
				Average	**55**	**27**	**27**	**28**	**206**	**91**	**87**	**74**

Table H7. Farm & ranch land inundated (sq. mi)

Agricultural Land Use Type	Total Area in Study Area (sq mi)	Inundated Area (sq mi)					
		Existing		CIP		Alternative	
		500-YR	100-YR	500-YR	100-YR	500-YR	100-YR
Hay/Pasture	13.80	9.52	6.91	9.42	6.62	8.90	5.58
Cultivated Crops	4.65	2.37	1.72	2.35	1.59	2.18	1.45
Total Inundated Agricultural Land	**18.45**	**11.88**	**8.62**	**11.77**	**8.21**	**11.08**	**7.02**
Removed Inundated Hay/Pasture				0.10	0.29	0.62	1.33
Removed Inundated Cultivated Crops				0.01	0.12	0.19	0.27
Total Agricultural Land Removed				**0.11**	**0.41**	**0.81**	**1.60**

Table H8. Benefit-Cost Ratio

Benefit-Cost Ratio Calculations (Project Life 30-years)		
Variable	**CIP**	**Alt**
Capital Cost (Includes Design) ($)	**$110.98 M**	**$278.96 M**
Operation & Maintenance Costs ($/30 yrs)	**$8.25 M**	**$18.83 M**
Summary of Expected Benefits over the Project Lifetime		
Benefit to Residential Structures	$7.32 M	$19.77 M
Benefit to Commercial Structures	$0.99 M	$1.07 M
Benefit to Industrial Structures	$0.00	$10,868.15
Benefit to Agricultural Land	$0.00	$0.00
Total Expected Benefits* ($/30 yrs)	**$8.31 M**	**$20.84 M**
BCR	**0.07**	**0.07**

*Does not include monetized benefits for roadway and agricultural land