00BREAK00

1) COUNTY: OSCEOLA

2) STUDY NAME: CITY OF EVART

3) WATERCOURSE: TWIN CREEK

4) DOCUMENT TYPE: 100YR NATURAL

00BREAK00

THIS RUN EXECUTED 05AUG91 17:05:44

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*************************************************
  HEC2 RELEASE DATED SEP 88 UPDATED JUN  1990

  ERROR CORR -  01,02,03,04
  MODIFICATION -
*************************************************

T1      CITY OF EVART, MI, FIS
T2      TWIN CREEK
T3      100-YEAR DISCHARGE, NATURAL PROFILE

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    G        WSEL     FQ

                 2                                                        986.14

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE

      1                 -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    110       150      200

NC     .03       .03      .045      .3        .5
QT       2       390      390
ET                        1.4
                CROSS SECTION A MOVED D/S TO CONFLUENCE WITH THE MUSKEGON R.
X1       0        17       80      112        0        0        0                -1.1
GR   991.3         0    990.6       20    988.8       40    988.1       50    987.6       70
GR   987.1        80    985.6       85    984.2       94    985.6      103    987.5      112
GR   988.3       120    989.7      130    990.0      140    990.9      170    991.5      180
GR   991.4       190    994.5      230

X1      10                                 10       10       10                 .1

ET                        4.1       70      112
                CROSS SECTION A
X1     120                                110      110      110                1.0

ET                  4.1    6.1      170      500      250      340
                CROSS SECTION B
X1     500        25      250    270.1      380      380      380
GR   989.7         0    990.0       30    989.9       50    990.3       70    990.7       90
GR   990.7       150    991.1      170    991.2      246    990.0      250    988.9      254
GR   987.7     254.1    987.7      270    988.3    270.1    989.9      290    989.8      340
GR   989.2       350    989.2      358    991.2      372    992.5      382    991.6      398
GR   992.6       414    993.1      420    993.9      450    994.4      460    994.5      500
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ET                  4.1       6.1       170       500       250       340
X1      545                                        45        45        45                  .47

NC      .07         .07      .045        .5       1.0
ET                  4.1       6.1       170       325       250       325
                CROSS SECTION B MOVED U/S
X1      630                                        85        85        85                 0.90

ET                            4.1        61       111
                ABANDON STRUCTURE
X1      700          15        61       111        70        70        70
GR    994.5           0     995.4        20     995.1        50     990.3        61     989.8        70
GR    990.4          80     992.6        84     993.5      84.1     993.5        96     990.8      76.1
GR    989.4         103     990.0       111     993.6     111.1     994.2       131     994.0       166

ET                  4.1       6.1       170       285       250       285
                CROSS SECTION B MOVED U/S
X1      735          25       250     270.1        35        35        35                 2.7
GR    989.7           0     990.0        30     989.9        50     990.3        70     990.7        90
GR    990.7         150     991.1       170     991.2       246     990.0       250     988.9       254
GR    987.7       254.1     987.7       270     988.3     270.1     989.9       290     989.8       340
GR    989.2         350     989.2       358     991.2       372     992.5       382     991.6       398
GR    992.6         414     993.1       420     993.9       450     994.4       460     994.5       500

ET                  4.1       4.1       250       264
X1      801          15       250       264        66        66        66
GR    998.9           0     997.4        75     996.4       150     996.0       175     993.5       200
GR    991.7         249     990.7       250     990.5       257     990.7       264     991.7       265
GR    993.2         275     995.8       300     995.9       325     996.9       425     996.4       500

NC      .03         .03       .03
SB                 4.25      2.80                 6.7                21.3
ET                  4.1      6.11         0       425       200       350
X1      882                                        81        81        81
X2                             1     994.1     995.7
BT      -20           0     998.9                  75     997.4       150     996.4
BT                  175     996.0                 200     995.9       249     995.7
BT                  250     995.7               253.5     995.7     991.8     254.3     995.7     993.6
BT                255.6     995.7     994.7       257     995.7     994.9     258.4     995.7     994.7
BT                259.7     995.7     993.6     260.5     995.7     991.8       264     995.7
BT                  265     995.7                 300     995.8       325     995.9
BT                  425     996.9                 500     996.4

NC                                     .3        .5
ET                  4.1       1.4         0       425
X1      897          19     250.1     263.1        15        15        15
GR    998.9           0     997.4        75     996.4       150     996.0       175     995.3       200
GR    994.8         250     992.0     250.1     991.7       255     990.9       261     990.9     261.1
GR    990.6         263     990.6     263.1     990.7       267     991.0       272     994.8     272.1
GR    995.8         300     995.9       325     996.9       425     996.4       500
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ET		4.1	1.41	0	425					
X1	898				1	1	1			
BT	-17	0	998.9		75	997.4		150	996.4	
BT		175	996.0		200	995.3		250	995.3	994.8
BT		250.1	995.3	994.8	261	995.3	994.8	261.1	995.3	990.9
BT		263	995.2	990.6	263.1	995.2	994.8	272	995.2	994.6
BT		272.1	995.2	994.6	300	995.8		325	995.9	
BT		425	996.9		500	996.4				
ET		4.1	1.41	0	425					
X1	903				5	5	5			
X2							1			
NC			.045							
ET		4.1	1.4	0	425					
X1	904				1	1	1			
X1	930	18	78	90	26	26	26		-0.7	
GR	995.1	0	994.6	10	994.6	20	993.9	30	993.5	40
GR	993.2	70	993.2	78	992.6	80	991.4	85	992.6	88
GR	993.5	90	993.8	100	995.1	120	996.9	140	998.2	160
GR	998.6	180	998.6	200	998.0	240				
X1	1100				170	170	170		0.7	
X1	1225				125	125	125		0.93	
ET			4.1	15	110					
X1	1350				125	125	125		0.92	
NC			.04							
ET			4.1	203	313					
X1	1411	31	274	286.4	61	61	61			
GR	1000.3	20	998.9	95	998.3	120	995.4	230	995.0	240
GR	994.7	270	994.8	274	994.8	274.1	994.0	274.8	993.7	275.8
GR	994.0	276.8	994.8	277.6	994.8	277.7	994.8	278.1	994.8	278.2
GR	994.0	278.9	993.7	279.9	994.0	280.9	994.8	281.7	994.8	281.8
GR	994.8	282.7	994.8	282.8	994.0	283.5	993.7	284.5	994.0	285.5
GR	994.8	286.3	994.8	286.4	995.0	290	995.3	300	996.6	320
GR	998.4	340								
SB		4.25	3.00		12		28.86			
ET			4.11	203	313					
X1	1499				88	88	88			
X2			1	996.7	997.2					
BT	-31	20	1000.3		95	998.9		120	998.3	
BT		230	997.4		240	997.4		270	997.4	
BT		274	997.4	994.8	274.1	997.4	996.1	274.8	997.4	996.9
BT		275.8	997.4	997.2	276.8	997.4	996.9	277.6	997.4	996.1
BT		277.7	997.4	994.8	278.1	997.4	994.8	278.2	997.4	996.1
BT		278.9	997.4	996.9	279.9	997.4	997.2	280.9	997.4	996.9
BT		281.7	997.4	996.1	281.8	997.4	994.8	282.7	997.4	994.8
BT		282.8	997.4	996.1	283.5	997.4	996.9	284.5	997.4	997.2

BT		285.5	997.4	996.9	286.3	997.4	996.1	286.4	997.4	994.8
BT		290	997.3		300	997.2		320	997.2	
BT		340	998.4							
NC	.09	.09	.045							
ET			4.1	10	110					
X1	1550	18	78	90	51	51	51		2.8	
GR	995.1	0	994.6	10	994.6	20	993.9	30	993.5	40
GR	993.2	70	993.2	78	992.6	80	991.4	85	992.6	88
GR	993.5	90	993.8	100	995.1	120	996.9	140	998.2	160
GR	998.6	180	998.6	200	998.0	240				
NC				.3	.5					
ET			1.4							
X1	1700				150	150	150		1.35	
ET		4.1	4.1	6	50					
X1	1883	15	17	38	183	183	183			
GR	1000.8	0	998.5	17	998.5	17.1	998.1	21	997.2	28
GR	995.6	38	995.6	38.1	1000	58	999.7	68	999.8	88
GR	1000.1	98	1000.1	118	1000.9	148	1001.7	158	1003.0	168
NC				.5	1.0					
SB		1.81	3.00		21		61.85			
ET		4.1	4.11	7	48					
X1	1889				6	6	6			
X2			1	1000.1	999.7					
BT	-13	0	1000.8		17	1001.2	998.5	17.1	1001.2	1000
BT		38	1001.3	1000.1	38.1	1001.3	995.6	58	1000	
BT		68	999.7		88	999.8		98	1000.1	
BT		118	1000.1		148	1000.9		158	1001.7	
BT		168	1003.0							
NC	.075	.045	.045	.5	1.0					
ET		4.1	4.1	68	100					
X1	1910	18	78	90	21	21	21		4.2	
GR	995.1	0	994.6	10	994.6	20	993.9	30	993.5	40
GR	993.2	70	993.2	78	992.6	80	991.4	85	992.6	88
GR	993.5	90	993.8	100	995.1	120	996.9	140	998.2	160
GR	998.6	180	998.6	200	998.0	240				
ET		4.1	4.1	250	272					
X1	1931	20	250	266.1	21	21	21			
GR	1006.1	0	1005.8	75	1005.8	175	1005.5	200	1000.0	225
GR	996.5	250	996.5	250.1	997.0	254	996.3	257.0	996.3	257.1
GR	995.8	259	995.8	259.1	995.8	263	994.6	266	994.6	266.1
GR	1003.4	272	1005.2	300	1005.7	375	1005.7	400	1006.1	425
NC	.04	.04	.03							
SB		1.89	3.00		14		69.4			
ET		4.1	4.11	250	272					

X1	1967				36	36	36			
X2			1	1000.5	1005.1					
BT	-18	0	1006.1		75	1005.8		175	1005.8	
BT		200	1005.5		225	1005.5		250	1005.3	996.5
BT		250.1	1005.3	1000.5	257	1005.2	1000.5	257.1	1005.2	996.3
BT		259	1005.2	995.8	259.1	1005.2	1000.5	266	1005.1	1000.5
BT		266.1	1005.1	994.6	272	1005.1		300	1005.2	
BT		375	1005.7		400	1005.7		425	1006.1	
NC	.045	.06	.045							
ET		4.1	1.4	196	324					
X1	2020	20	250	270	53	53	53		-6.9	
GR	1016.9	0	1017.8	10	1016.9	70	1015.7	90	1012.8	120
GR	1010.4	140	1009.7	160	1008.3	170	1006.9	190	1006.2	210
GR	1005.3	230	1004.5	250	1003.0	255	1003.7	260	1004.3	267
GR	1004.8	270	1003.7	276	1004.7	281	1004.3	290	1004.3	330
NC				.3	.5					
X1	2090				70	70	70		0.4	
X1	2160				70	70	70		0.4	
ET		4.1		42	425					
X1	2210	18	250	260	50	50	50			
GR	1002.0	0	1000.9	125	1000.9	150	1001.6	225	997.3	250
GR	997.3	250.1	997.1	254	997.1	259	997.1	259.1	997.1	260
GR	997.1	260.1	997.4	264	997.8	268	997.8	268.1	1002.5	275
GR	1004.7	350	1006.0	375	1008.3	425				
NC	.03	.03	.03							
ET		4.1	1.41	42	425					
X1	2211				1	1	1			
BT	-16	0	1002.0		125	1000.9		150	1000.9	
BT		225	1001.6		250	1002.0	997.3	250.1	1002.0	1000.6
BT		259	1002.2	1000.6	259.1	1002.2	997.1	260	1002.2	997.1
BT		260.1	1002.2	1000.7	268	1002.4	1000.8	268.1	1002.4	997.8
BT		275	1002.5		350	1004.7		375	1006.0	
BT		425	1008.3							
ET		4.1	1.41	71	425					
X1	2268				57	57	57			
X2							1			
NC	.08	.08	.05							
ET		4.1	1.4	71	425					
X1	2269				1	1	1			
X1	2320	20	250	270	51	51	51		-5.6	
GR	1016.9	0	1017.8	10	1016.9	70	1015.7	90	1012.8	120
GR	1010.4	140	1009.7	160	1008.3	170	1006.9	190	1006.2	210
GR	1005.3	230	1004.5	250	1003.0	255	1003.7	260	1004.3	267
GR	1004.8	270	1003.7	276	1004.7	281	1004.3	290	1004.3	330

ET		4.1	4.1	204	316					
X1	2450				130	130	130		0.7	
NC				.5	1.0					
ET		4.1	4.1	229	291					
X1	2550				100	100	100		.60	
ET		4.1	4.1	226	258					
X1	2610	21	232	252	60	60	60			
GR	1005.8	0	1005.7	34	1006.4	40	1004.2	50	1003.2	70
GR	1003.1	80	1003.1	90	1003.8	110	1003.8	160	1001.0	232
GR	999.6	235	999.2	237.4	999.2	237.5	999.0	244	999.5	250
GR	999.5	250.1	1001.0	252	1003.5	300	1004.1	320	1003.5	351
GR	1003.5	377								
ET		4.1	4.1	231	253					
X1	2630				20	20	20			
ET		4.1	4.1	217	270					
X1	2650	25	237.4	250.1	20	20	20			
GR	1005.8	0	1005.7	34	1006.4	40	1004.2	50	1003.2	70
GR	1003.1	80	1003.1	90	1003.8	110	1003.8	160	1004.3	180
GR	1004.3	210	1004.9	220	1005.3	230	1005.3	237.4	999.2	237.5
GR	999.0	244	999.5	250	1005.5	250.1	1005.9	260	1006.2	270
GR	1006.2	275	1003.5	300	1004.1	320	1003.5	351	1003.5	377
ET		4.1	4.1	217	270					
X1	2670				20	20	20			
ET		4.1	4.1	230	254					
X1	2675	21	232	252	5	5	5			
GR	1005.8	0	1005.7	34	1006.4	40	1004.2	50	1003.2	70
GR	1003.1	80	1003.1	90	1003.8	110	1003.8	160	1001.0	232
GR	999.0	235	999.2	237.4	999.2	237.5	999.0	244	999.5	250
GR	999.5	250.1	1001.0	252	1003.5	300	1004.1	320	1003.5	351
GR	1003.5	377								
ET		4.1	4.1	215	269					
X1	2690				15	15	15			
ET			1.4							
X1	2740	20	250	270	50	50	50		-5.9	
GR	1016.9	0	1017.8	10	1016.9	70	1015.7	90	1012.8	120
GR	1010.4	140	1009.7	160	1008.3	170	1006.9	190	1006.2	210
GR	1005.3	230	1004.5	250	1003.0	255	1003.7	260	1004.3	267
GR	1004.8	270	1003.7	276	1004.7	281	1004.3	290	1004.3	330
NC				.3	.5					
ET		4.1	4.1	205	315					

X1	3100				360	360	360		3.1	
NC				.5	1.0					
ET		4.1	4.1	229	291					
X1	3200				100	100	100		0.9	
NC				.5	1.0					
ET		4.1	4.1	250	273.1					
X1	3281	22	250	273.1	81	81	81			
GR	1005.9	0	1006.0	125	1006.2	200	1006.5	225	1003.0	240
GR	1001.8	250	1001.8	250.1	1001.4	255	1002.0	261	1002.0	261.1
GR	1002.0	263	1002.0	263.1	1001.7	268	1001.6	273	1001.6	273.1
GR	1003.9	283	1006.4	300	1006.4	350	1006.5	375	1006.5	400
GR	1006.7	425	1006.7	500						
NC			.03							
SB		1.9	3.0		13		73.4			
ET		4.1	4.11	250	273.1	200	325			
X1	3322				41	41	41			
X2			1	1005.2	1005.9					
BT	-18	0	1005.9		125	1006.0		200	1006.2	
BT		225	1006.5		250	1006.7	1001.8	250.1	1006.7	1005.2
BT		261	1006.7	1005.2	261.1	1006.7	1002.0	263	1006.6	1002.0
BT		263.1	1006.6	1005.2	273	1006.6	1005.2	273.1	1006.6	1001.6
BT		300	1006.4		350	1006.4		375	1006.5	
BT		400	1006.5		425	1006.7		500	1006.7	
NC			.045	.5	1.0					
ET		4.1	4.1	216	305					
X1	3355	20	250	281	33	33	33		-1.5	
GR	1016.9	0	1017.8	10	1016.9	70	1015.7	90	1012.8	120
GR	1010.4	140	1009.7	160	1008.3	170	1006.9	190	1006.2	210
GR	1005.3	230	1004.5	250	1003.0	255	1003.7	260	1004.3	267
GR	1004.8	270	1003.7	276	1004.7	281	1004.3	290	1004.3	330
ET		4.1	1.4	191	330					
X1	3385				30	30	30			
NC	.07	.07		.3	.5					
X1	3700				315	315	315		0.75	
X1	4000				300	300	300		0.75	
ET		4.1		200	321					
X1	4280				280	280	280		0.1	
NC				.5	1.0					
ET		4.1	6.1	204	317	240	317			
X1	4320	23	250	281	40	40	40		0.1	
X4	8	1003.7	255	1009.0	255.1	1009.0	264.9	1003.7	265	1004.6
X4	269	1009.0	269.1	1009.0	278.9	1003.7	279			
GR	1016.9	0	1017.8	10	1016.9	70	1015.7	90	1012.8	120
GR	1010.4	140	1009.7	160	1008.3	170	1006.9	190	1006.2	210
GR	1005.3	230	1004.5	250	1003.0	255	1003.7	255	1003.7	255

GR	1003.7	279	1003.7	279	1004.7	281	1004.3	290	1004.3	330
GR	1004.3	360	1005.1	370	1005.5	430				
NC	.07	.07	.045							
ET		4.1	6.1	90	240	93	200			
X1	4331	20	107	129.6	11	11	11			
GR	1013.8	0	1009.5	20	1008.9	30	1008.6	40	1008.2	50
GR	1007.8	60	1007.4	70	1007.1	80	1007.4	90	1005.6	105
GR	1003.3	107	1009.7	107.1	1009.2	118	1003.2	118.1	1003.2	127.5
GR	1009.6	129.6	1009.6	141	1007.5	141.1	1006.2	180	1009.0	240
ET		4.1	6.1	80	210	85	205			
X1	4342				11	11	11			
NC	.03	.03	.035	.5	1.0					
ET		4.1	6.1	80	215	85	210			
X1	4390	13	110	185	48	48	48			
GR	1013.8	0	1009.5	20	1008.9	30	1007.1	80	1007.2	110
GR	1004.3	111	1003	120	1003	140	1004.2	150	1004.2	185
GR	1008.2	185.1	1008	215	1009	235				
X1	4435	10	110	123	45	45	45			
GR	1013.8	0	1009.5	20	1008.9	30	1007.1	80	1007.5	110
GR	1002.9	110.1	1003.9	123	1007.9	123.1	1008	155	1009	175
NC				.5	1.0					
ET		4.1	6.1	75	175	76	174			
X1	4475	12	110	121	40	40	40			
GR	1013.8	0	1009.5	20	1008.9	30	1007.1	80	1008.1	95
GR	1008.3	110	1003.4	110.1	1004.1	121	1008.7	121.1	1008.5	132
GR	1008	155	1009	175						
NC				.5	1.0					
ET		4.1	4.1	100	185					
X1	4485	12	100	135	10	10	10		-0.3	
GR	1013.8	0	1009.5	20	1008.9	30	1007.1	80	1005.9	100
GR	1004.0	110	1004.0	125	1005.9	135	1006	145	1008.7	146
GR	1008.9	190	1009.7	220						
ET		4.1	4.1	100	177					
X1	4500				15	15	15		0.3	
ET		4.1	4.1	102	149					
X1	4560	16	102	149	60	60	60			
GR	1013.9	0	1009.5	20	1008.9	30	1007.1	80	1007.4	90
GR	1006.1	102	1005.3	114	1004.7	119	1004.6	134	1005.1	144
GR	1006.1	149	1007.4	150	1007.9	160	1008.0	170	1009.3	200
GR	1009.7	220								

ET		4.1	6.11	250	850	250	425			
X1	4611	18	245	276	51	51	51			
GR	1020.2	0	1019.4	75	1018.9	100	1016.7	150	1013.9	175
GR	1009.0	225	1005.9	245	1005.2	250	1005.2	250.1	1004.9	262
GR	1005.0	262.1	1005.9	276	1010.2	300	1009.6	325	1009.3	350
GR	1009.1	400	1009.6	500	1013.8	850				
NC	.07	.06	.045							
SB		2.3	3.0		12		52.2			
ET			1.41							
X1	4668				57	57	57			
X2			1	1009.1	1009.1					
BT	-17	0	1020.2		75	1019.4		100	1018.9	
BT		150	1016.7		175	1013.9		225	1012.6	
BT		250	1011.9	1005.2	250.1	1011.9	1009.5	262	1011.5	1009.4
BT		262.1	1011.5	1005.0	276	1010.9		300	1010.2	
BT		325	1009.6		350	1009.3		400	1009.1	
BT		500	1009.6		850	1013.8				
ET			1.4							
X1	4720	17	250	277	52	52	52		-0.8	
GR	1021.7	0	1021.9	60	1022.1	100	1022.3	140	1022.4	180
GR	1022.3	200	1021.0	208	1010.4	245	1009.9	250	1006.8	260
GR	1005.8	267	1006.7	274	1008.8	277	1010.7	295	1008.8	299
GR	1008.5	313	1006.6	343						
X1	5050				330	330	330		0.8	
NC				.3	.5					
X1	5800	28	232	250	750	750	750			
GR	1009.1	0	1009.4	30	1009.5	70	1009.0	100	1009.2	120
GR	1009.2	130	1008.9	140	1009.1	180	1008.6	200	1009.2	231.8
GR	1008.6	231.9	1008.0	232	1006.8	241	1008.6	247	1008.8	250
GR	1009.3	260	1009.7	290	1009.0	310	1009.8	330	1009.3	350
GR	1009.3	380	1010.2	390	1010.7	410	1008.6	420	1009.8	450
GR	1009.7	470	1010.2	480	1010.2	500				
X1	6500	29	195	224	700	700	700			
GR	1012.0	0	1013.1	50	1013.1	70	1012.1	90	1012.2	140
GR	1011.8	160	1010.6	170	1009.9	180	1010.2	190	1009.5	195
GR	1008.7	201	1009.5	207	1010.9	224	1009.9	225	1009.1	233
GR	1009.9	243	1010.0	247	1010.1	267	1010.7	277	1011.5	297
GR	1011.0	307	1013.4	357	1013.7	367	1013.0	377	1013.0	427
GR	1012.7	437	1012.8	447	1018.9	467	1019.2	497		
X1	6630				130	130	130		0.4	

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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    G          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*PROF 1


CCHV=     0.300 CEHV=     0.500
*SECNO 0.000
                CROSS SECTION A MOVED D/S TO CONFLUENCE WITH THE MUSKEGON R.
     0.000      3.04     986.14     986.13     986.14     986.98       0.84       0.00       0.00     986.00
     390.0       0.3      389.7        0.0        0.2       52.9        0.0        0.0        0.0     986.40
      0.00      1.32       7.36       0.00      0.030      0.045      0.000      0.000     983.10      77.20
  0.024742        0.         0.         0.          0          4          0       0.00      33.57     110.77

*SECNO 10.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.71

    10.000      3.65     986.85       0.00       0.00     987.25       0.40       0.14       0.13     986.10
     390.0      15.6      373.5        0.9        6.2       72.2        0.6        0.0        0.0     986.50
      0.00      2.52       5.17       1.42      0.030      0.045      0.030      0.000     983.20      60.10
  0.008506       10.        10.        10.          5          0          0       0.00      55.37     115.47

*SECNO 120.000
                CROSS SECTION A
   120.000      3.61     987.81       0.00       0.00     988.23       0.42       0.97       0.01     987.10
     390.0      13.6      375.7        0.6        5.4       70.9        0.5        0.2        0.1     987.50
      0.01      2.53       5.30       1.35      0.030      0.045      0.030      0.000     984.20      61.80
  0.009172      110.       110.       110.          2          0          0       0.00      53.24     115.05

*SECNO 500.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.50


3470 ENCROACHMENT STATIONS=      170.0      500.0  TYPE=      1  TARGET=      330.000
                CROSS SECTION B
   500.000      2.69     990.39       0.00       0.00     990.55       0.16       2.24       0.08     990.00
     390.0       0.3      165.5      224.2        0.3       47.0       76.1        1.1        0.9     988.30
      0.04      1.04       3.52       2.95      0.030      0.045      0.030      0.000     987.70     248.70
  0.004103      380.       380.       380.          5          0          0       0.00     117.63     366.33
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 545.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.67

3470 ENCROACHMENT STATIONS=      170.0     500.0  TYPE=      1  TARGET=      330.000
   545.000      2.42    990.59      0.00      0.00    990.88      0.30      0.27      0.07    990.47
     390.0       0.0     202.4     187.6       0.0      41.6      50.3       1.2       1.0    988.77
      0.04      0.05      4.87      3.73     0.030     0.045     0.030     0.000    988.17    249.60
  0.009242       45.       45.       45.         2         0         0      0.00    114.84    364.44

CCHV=    0.500 CEHV=    1.000
*SECNO 630.000

3470 ENCROACHMENT STATIONS=      170.0     325.0  TYPE=      1  TARGET=      155.000
                CROSS SECTION B MOVED U/S
   630.000      2.55    991.62    991.61      0.00    992.20      0.58      1.03      0.28    991.37
     390.0       0.1     301.5      88.4       0.1      44.2      36.4       1.4       1.2    989.67
      0.05      0.67      6.82      2.43     0.070     0.045     0.070     0.000    989.07    249.16
  0.016705       85.       85.       85.         3         8         0      0.00     75.84    325.00

*SECNO 700.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.92

                ABANDON STRUCTURE
   700.000      3.28    992.68      0.00      0.00    992.92      0.24      0.55      0.17    990.30
     390.0       9.9     380.1       0.0       6.5      96.1       0.1       1.5       1.3    990.00
      0.05      1.52      3.96      0.16     0.070     0.045     0.070     0.000    989.40     55.53
  0.004554       70.       70.       70.         2         0         0      0.00     43.52    111.07

*SECNO 735.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.50

3470 ENCROACHMENT STATIONS=      170.0     285.0  TYPE=      1  TARGET=      115.000
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CROSS SECTION B MOVED U/S

735.000	2.57	992.97	0.00	0.00	993.66	0.69	0.28	0.45	992 70
390.0	0.1	320.1	69.8	0.1	44.5	20.4	1.6	1.3	991.00
0.05	0.73	7.19	3.42	0.070	0.045	0.070	0.000	990.40	249.10
0.018335	35.	35.	35.	2	0	0	0.00	35.89	285.00

*SECNO 801.000

3470 ENCROACHMENT STATIONS= 250.0 264.0 TYPE= 1 TARGET= 14.000

801.000	3.66	994.16	0.00	0.00	995.11	0.95	1.19	0.26	990.70
390.0	0.0	390.0	0.0	0.0	49.7	0.0	1.7	1.4	100000.00
0.06	0.00	7.84	0.00	0.000	0.045	0.000	0.000	990.50	250.00
0.017747	66.	66.	66.	2	0	0	0.00	14.00	264.00

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	4.25	2.80	0.00	6.70	0.00	21.30	0.00	990.50	990.50

*SECNO 882.000

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 17.28

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1016.28	994.28	0.00	266.	126.	21.	24.	994.10	995.70	250.

882.000	5.96	996.46	0.00	0.00	996.48	0.01	1.36	0.00	990.70
390.0	208.0	102.1	79.9	245.0	82.2	126.6	2.1	1.6	990.70
0.08	0.85	1.24	0.63	0.030	0.030	0.030	0.000	990.50	144.64
0.000059	81.	81.	81.	1	0	8	0.00	237.52	382.15

CCHV= 0.300 CEHV= 0.500
*SECNO 897.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.47

897.000	5.85	996.45	0.00	0.00	996.50	0.05	0.00	0.02	992.00
390.0	86.4	153.9	149.6	96.6	65.4	113.2	2.3	1.7	990.60
0.08	0.89	2.35	1.32	0.030	0.030	0.030	0.000	990.60	146.26
0.000264	15.	15.	15.	2	0	0	0.00	233.73	379.99

```
 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 898.000
3280 CROSS SECTION    898.00 EXTENDED      0.05 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.50

3370 NORMAL BRIDGE, NRD=  17 MIN ELTRD=   995.20 MAX ELLC=   994 80

3470 ENCROACHMENT STATIONS=        0.0     425.0  TYPE=      1  TARGET=      425.000
   898.000      5.86    996.46      0.00      0.00    996.50      0.04      0.00      0.00    992.00
     390.0     132.3      90.8     166.9      84.1      50.9     103.1       2.3       1.7    990.60
      0.08      1.57      1.78      1.62     0.030     0.030     0.030     0.000    990.60    146.27
  0.001040        1.        1.        1.         0         0         0    -37.13    233.70    379.97

*SECNO 903.000

3370 NORMAL BRIDGE, NRD=  17 MIN ELTRD=   995.20 MAX ELLC=   994.80

   903.000      5.86    996.46      0.00      0.00    996.50      0.04      0.01      0.00    992.00
     390.0     133.1      90.1     166.9      85.1      51.0     104.3       2.3       1.7    990.60
      0.08      1.56      1.76      1.60     0.030     0.030     0.030     0.000    990.60    145.50
  0.001015        5.        5.        5.         0         0         0    -37.13    235.50    381.00

*SECNO 904.000
3280 CROSS SECTION    904.00 EXTENDED      0.06 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.72

3470 ENCROACHMENT STATIONS=        0.0     425.0  TYPE=      1  TARGET=      425.000
   904.000      5.87    996.47      0.00      0.00    996.51      0.03      0.00      0.00    992.00
     390.0     100.4     117.3     172.2      98.1      65.6     114.8       2.3       1.7    990.60
      0.08      1.02      1.79      1.50     0.030     0.045     0.030     0.000    990.60    145.20
  0.000342        1.        1.        1.         0         0         0      0.00    236.20    381.40

*SECNO 930.000
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3280 CROSS SECTION 930.00 EXTENDED 2.10 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.15

930.000	5.80	996.50	0.00	0.00	996.52	0.01	0.00	0.01	992.50
390.0	251.5	46.0	92.5	261.2	58.5	115.0	2.5	1.8	992.80
0.09	0.96	0.79	0.80	0.030	0.045	0.030	0.000	990.70	0.00
0.000074	26.	26.	26.	1	0	0	0.00	144.57	144.57

*SECNO 1100.000
3280 CROSS SECTION 1100.00 EXTENDED 1.42 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.69

1100.000	5.12	996.52	0.00	0.00	996.54	0.02	0.02	0.00	993.20
390.0	254.7	52.3	83.0	208.3	50.3	81.2	4.0	2.4	993.50
0.13	1.22	1.04	1.02	0.030	0.045	0.030	0.000	991.40	0.00
0.000157	170.	170.	170.	2	0	0	0.00	135.75	135.75

*SECNO 1225.000
3280 CROSS SECTION 1225.00 EXTENDED 0.50 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.52

1225.000	4.21	996.54	0.00	0.00	996.59	0.05	0.03	0.01	994.13
390.0	255.2	67.1	67.7	136.9	39.3	44.0	4.8	2.8	994.43
0.15	1.86	1.71	1.54	0.030	0.045	0.030	0.000	992.33	0.00
0.000589	125.	125.	125.	0	0	0	0.00	125.58	125.58

*SECNO 1350.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.42

1350.000	3.38	996.63	0.00	0.00	996.79	0.16	0.15	0.06	995.05
390.0	245.2	97.4	47.3	73.5	29.4	18.6	5.3	3.1	995.35
0.16	3.34	3.31	2.55	0.030	0.045	0.030	0.000	993.25	6.49
0.003271	125.	125.	125.	2	0	0	0.00	108.52	115.01

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1411.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.89

1411.000	3.16	996.86	0.00	0.00	996.92	0.06	0.10	0.03	994.80
390.0	247.9	63.5	78.6	125.6	33.0	42.7	5.5	3.3	994.80
0.17	1.97	1.92	1.84	0.030	0.040	0.030	0.000	993.70	174.70
0.000914	61.	61.	61.	2	0	0	0.00	148.16	322.86

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED

SB XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
0.00	4.25	3.00	0.00	12.00	0.00	28.86	0.00	993.70	993.70

*SECNO 1499.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.80

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1008.91	996.92	0.00	264.	127.	29.	36.	996.70	997.20	194.

1499.000	4.41	998.11	0.00	0.00	998.13	0.01	1.21	0.00	994.80
390.0	255.8	43.3	90.9	281.3	48.7	97.6	6.2	3.6	994.80
0.20	0.91	0.89	0.93	0.030	0.040	0.030	0.000	993.70	126.77
0.000116	88.	88.	88.	1	0	7	0.00	210.13	336.91

*SECNO 1550.000
3280 CROSS SECTION 1550.00 EXTENDED 0.16 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.15

1550.000	3.86	998.06	0.00	0.00	998.22	0.17	0.02	0.08	996.00
390.0	181.6	165.5	42.8	109.8	35.2	32.3	6.5	3.8	996.30
0.20	1.65	4.71	1.33	0.090	0.045	0.090	0.000	994.20	0.00
0.005201	51.	51.	51.	2	0	0	0.00	121.73	121.73

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          GLOB       GCH        GROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

CCHV=    0.300 CEHV=    0.500
*SECNO 1700.000
  1700.000      3.50     999.05       0.00       0.00     999.35       0.30       1.06       0.07     997.35
     390.0     169.1      186.5       34.5       82.4       30.9       21.8        7.1        4.2     997.65
      0.21      2.05       6.04       1.58      0.090      0.045      0.090      0.000     995.55       4.02
  0.010170      150.       150.       150.          3          0          0       0.00     112.89     116.91

*SECNO 1883.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.55

3470 ENCROACHMENT STATIONS=        6.0       50.0  TYPE=       1  TARGET=       44.000
  1883.000      4.66   1000.26       0.00       0.00   1000.51       0.25       1.15       0.01     998.50
     390.0      11.8     292.0       86.2       11.1       64.6       40.2        7.6        4.6     995.60
      0.23      1.06      4.52       2.14      0.090      0.045      0.090      0.000     995.60       6.00
  0.004238      183.       183.       183.          2          0          0       0.00      44.00      50.00

CCHV=    0.500 CEHV=    1.000

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED
SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     0.00       1.81       3.00       0.00      21.00       0.00      61.85       0.00     995.60     995.60

*SECNO 1889.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS=   1001.376  EGLWC=   1000.512  ELLC=   1000.100  PCWSE=   1000.258  ELTRD=    999.700

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.41

3370 NORMAL BRIDGE, NRD=  13 MIN ELTRD=   999.70 MAX ELLC=  1000.10

3470 ENCROACHMENT STATIONS=        7.0       48.0  TYPE=       1  TARGET=       41.000
  1889.000      4.71   1000.31       0.00       0.00   1000.96       0.65       0.05       0.40     998.50
     390.0       0.0     389.9        0.1        0.0       60.2        0.2        7.6        4.6     995.60
      0.23      0.00      6.48       0.35      0.000      0.045      0.090      0.000     995.60       7.00
  0.025029        6.         6.         6.          2          0          0     -52.88      41.00      48.00
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

CCHV=    0.500 CEHV=    1.000
*SECNO 1910.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.42

3470 ENCROACHMENT STATIONS=        68.0      100.0  TYPE=       1  TARGET=        32.000
  1910.000       5.51    1001.11       0.00       0.00    1001.30       0.19       0.11       0.23     997.40
     390.0       73.6      224.7       91.8       37.1       55.1       32.7        7.7        4.6     997.70
      0.23       1.98       4.08       2.81      0.075      0.045      0.045      0.000     995.60      68.00
  0.002144        21.        21.        21.          2          0          0       0.00      32.00     100.00

*SECNO 1931.000

3470 ENCROACHMENT STATIONS=       250.0      272.0  TYPE=       1  TARGET=        22.000
  1931.000       6.56    1001.16       0.00       0.00    1001.43       0.27       0.05       0.08     996.50
     390.0        0.0      352.0       38.0        0.0       81.4       14.4        7.7        4.6     994.60
      0.23       0.00       4.32       2.63      0.000      0.045      0.045      0.000     994.60     250.00
  0.002847        21.        21.        21.          2          0          0       0.00      20.50     270.50

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED
SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     0.00       1.89       3.00       0.00      14.00       0.00      69.40       0.00     994.60     994.60

*SECNO 1967.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.79

PRESSURE FLOW

 EGPRS      EGLWC      H3         QWEIR      QPR        BAREA      TRAPEZOID      ELLC       ELTRD      WEIRLN
                                                                     AREA
   1002.09    1001.45       0.00         0.        390.        69.        83.    1000.50    1005.10         0.

3470 ENCROACHMENT STATIONS=       250.0      272.0  TYPE=       1  TARGET=        22.000
  1967.000       7.27    1001.87       0.00       0.00    1002.09       0.22       0.65       0.00     996.50
     390.0        0.0      358.6       31.4        0.0       92.8       17.7        7.8        4.6     994.60
      0.23       0.00       3.86       1.77      0.000      0.030      0.040      0.000     994.60     250.00
  0.000886        36.        36.        36.          2          0          0       0.00      20.97     270.97
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 G         GLOB      GCH       GROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 2020.000
3280 CROSS SECTION   2020.00 EXTENDED     11.70 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.18

3470 ENCROACHMENT STATIONS=      196.0     324.0  TYPE=      1  TARGET=      128.000
  2020.000      6.10   1002.20      0.00      0.00   1002.20      0.01      0.01      0.10    997.60
     390.0     133.4      96.5     160.1     187.9     104.8     257.9       8.2       4.7    997.90
      0.25      0.71      0.92      0.62     0.045     0.045     0.060     0.000    996.10    196.00
  0.000088       53.       53.       53.         2         0         0      0.00    128.00    324.00

CCHV=    0.300 CEHV=    0.500
*SECNO 2090.000
3280 CROSS SECTION   2090.00 EXTENDED     11.30 FEET

  2090.000      5.70   1002.20      0.00      0.00   1002.21      0.01      0.01      0.00    998.00
     390.0     132.8      90.7     166.5     200.8      96.9     263.1       9.1       4.9    998.30
      0.28      0.66      0.94      0.63     0.045     0.045     0.060     0.000    996.50    167.13
  0.000100       70.       70.       70.         2         0         0      0.00    162.87    330.00

*SECNO 2160.000
3280 CROSS SECTION   2160.00 EXTENDED     10.91 FEET

  2160.000      5.31   1002.21      0.00      0.00   1002.22      0.01      0.01      0.00    998.40
     390.0     124.0      94.5     171.5     168.7      89.0     239.5       9.9       5.2    998.70
      0.30      0.73      1.06      0.72     0.045     0.045     0.060     0.000    996.90    169.94
  0.000144       70.       70.       70.         0         0         0      0.00    160.06    330.00

*SECNO 2210.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.58

3470 ENCROACHMENT STATIONS=       42.0     425.0  TYPE=      1  TARGET=      383.000
  2210.000      5.11   1002.21      0.00      0.00   1002.24      0.03      0.01      0.01    997.30
     390.0     219.9     102.6      67.5     253.3      50.7      53.1      10.4       5.4    997.10
      0.32      0.87      2.02      1.27     0.045     0.045     0.060     0.000    997.10     42.00
  0.000430       50.       50.       50.         0         0         0      0.00    232.58    274.58
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 2211.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.68

3370 NORMAL BRIDGE, NRD=  16 MIN ELTRD=  1000.90 MAX ELLC=  1000.60

3470 ENCROACHMENT STATIONS=       42.0     425.0  TYPE=      1  TARGET=      383.000
  2211.000      5.11   1002.21      0.00      0.00   1002.25      0.04      0.00      0.01    997.30
     390.0     289.2      46.1      54.6     194.0      32.1      26.6      10.4       5.4    997.10
      0.32      1.49      1.44      2.05     0.030     0.030     0.030     0.000    997.10     42.00
  0.000935        1.        1.        1.         0         0         0   -103.80    232.58    274.58

*SECNO 2268.000

3370 NORMAL BRIDGE, NRD=  16 MIN ELTRD=  1000.90 MAX ELLC=  1000.60

3470 ENCROACHMENT STATIONS=       71.0     425.0  TYPE=      1  TARGET=      354.000
  2268.000      5.16   1002.26      0.00      0.00   1002.30      0.04      0.05      0.00    997.30
     390.0     289.4      48.0      52.6     180.7      32.5      26.6      10.8       5.7    997.10
      0.33      1.60      1.47      1.97     0.030     0.030     0.030     0.000    997.10     71.00
  0.000970       57.       57.       57.         1         0         0   -104.33    203.64    274.64

*SECNO 2269.000

3470 ENCROACHMENT STATIONS=       71.0     425.0  TYPE=      1  TARGET=      354.000
  2269.000      5.16   1002.26      0.00      0 00   1002.31      0.05      0.00      0.00    997.30
     390.0     179.6     135.8      74.6     240.8      51.2      53.8      10.8       5.7    997.10
      0.33      0.75      2.65      1.39     0.080     0.050     0.080     0.000    997.10     71.00
  0.000903        1.        1.        1.         0         0         0      0.00    203.65    274.65

*SECNO 2320.000
3280 CROSS SECTION   2320.00 EXTENDED      3.63 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.51

  2320.000      4.93   1002.33      0.00      0.00   1002.34      0.02      0.03      0.01    998.90
     390.0      88.1     121.2     180.7     139.2      81.4     216.6      11.2       5.9    999.20
      0.34      0.63      1.49      0.83     0.080     0.050     0.080     0.000    997.40    175.33
  0.000395       51.       51.       51.         2         0         0      0.00    154.67    330.00
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

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*SECNO 2450.000
3280 CROSS SECTION   2450.00 EXTENDED      3.00 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.62

3470 ENCROACHMENT STATIONS=      204.0     316.0  TYPE=      1  TARGET=      112.000
  2450.000      4.29   1002.39      0.00      0.00   1002.43      0.04      0.08      0.01    999.60
     390.0      79.5     148.4     162.2      85.1      68.9     137.1      12.3       6.3    999.90
      0.36      0.93      2.15      1.18     0.080     0.050     0.080     0.000    998.10    204.00
  0.001031      130.      130.      130.         1         0         0      0.00    112.00    316.00

CCHV=    0.500 CEHV=    1.000
*SECNO 2550.000
3280 CROSS SECTION   2550.00 EXTENDED      1.87 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.54

3470 ENCROACHMENT STATIONS=      229.0     291.0  TYPE=      1  TARGET=       62.000
  2550.000      3.87   1002.57      0.00      0.00   1002.70      0.14      0.17      0.10   1000.20
     390.0      68.8     217.5     103.7      40.9      60.2      52.9      12.8       6.5   1000.50
      0.37      1.68      3.61      1.96     0.080     0.050     0.080     0.000    998.70    229.00
  0.003476      100.      100.      100.         2         0         0      0.00     62.00    291.00

*SECNO 2610.000

3470 ENCROACHMENT STATIONS=      226.0     258.0  TYPE=      1  TARGET=       32.000
  2610.000      3.85   1002.85      0.00      0.00   1003.23      0.39      0.28      0.25   1001.00
     390.0      19.0     352.5      18.4      10.4      67.4      10.1      13.0       6.6   1001.00
      0.38      1.84      5.23      1.82     0.080     0.050     0.080     0.000    999.00    226.00
  0.006479       60.       60.       60.         2         0         0      0.00     32.00    258.00

*SECNO 2630.000

3470 ENCROACHMENT STATIONS=      231.0     253.0  TYPE=      1  TARGET=       22.000
  2630.000      3.98   1002.98      0.00      0.00   1003.44      0.46      0.13      0.08   1001.00
     390.0       2.3     385.4       2.3       2.0      70.1       2.0      13.0       6.6   1001.00
      0.38      1.17      5.50      1.17     0.080     0.050     0.080     0.000    999.00    231.00
  0.006809       20.       20.       20.         2         0         0      0.00     22.00    253.00
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 SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
 Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
 TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        EL MIN     SSTA
 SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 2650.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.59

3470 ENCROACHMENT STATIONS=      217.0      270.0  TYPE=      1  TARGET=      53.000
  2650.000      4.19   1003.19      0.00       0.00   1004.12      0.92       0.22       0.46   1005.30
     390.0       0.0     390.0       0.0        0.0      50.5       0.0       13.1        6.6   1005.50
      0.38      0.00      7.72      0.00      0.000     0.050     0.000      0.000     999.00    237.43
  0.019878       20.       20.       20.          2         0         0       0.00      12.63    250.06

*SECNO 2670.000
3280 CROSS SECTION   2670.00 EXTENDED      0.39 FEET

3470 ENCROACHMENT STATIONS=      217.0      270.0  TYPE=      1  TARGET=      53.000
  2670.000      4.89   1003.89      0.00       0.00   1004.56      0.67       0.31       0.13   1005.30
     390.0       0.0     390.0       0.0        0.0      59.3       0.0       13.1        6.6   1005.50
      0.38      0.00      6.58      0.00      0.000     0.050     0.000      0.000     999.00    237.42
  0.012747       20.       20.       20.          3         0         0       0.00      12.65    250.07

*SECNO 2675.000
3280 CROSS SECTION   2675.00 EXTENDED      1.12 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.70

3470 ENCROACHMENT STATIONS=      230.0      254.0  TYPE=      1  TARGET=      24.000
  2675.000      5.62   1004.62      0.00       0.00   1004.82      0.20       0.02       0.24   1001.00
     390.0       6.6     376.8       6.6        7.2     104.6       7.1       13.1        6.6   1001.00
      0.38      0.92      3.60      0.92      0.080     0.050     0.080      0.000     999.00    230.00
  0.001744        5.        5.        5.          3         0         0       0.00      24.00    254.00

*SECNO 2690.000
3280 CROSS SECTION   2690.00 EXTENDED      1.33 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.51
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         GLOB      GCH       GROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3470 ENCROACHMENT STATIONS=      215.0     269.0  TYPE=      1  TARGET=      54.000
  2690.000      5.83   1004.83      0.00      0.00   1004.90      0.07      0.02      0.06   1001.00
     390.0     63.0     267.0      60.1      59.5     108.7      57.5      13.1       6.6   1001.00
      0.38      1.06      2.46      1.04     0.080     0.050     0.080     0.000    999.00    215.00
  0.000770      15.       15.       15.         2         0         0      0.00     54.00    269.00

*SECNO 2740.000
3280 CROSS SECTION   2740.00 EXTENDED      6.53 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.20

  2740.000      7.83   1004.93      0.00      0.00   1004.94      0.00      0.01      0.03    998.60
     390.0    134.7      99.0     156.4     405.3     139.5     390.9      13.8       6.8    998.90
      0.41      0.33      0.71      0.40     0.080     0.050     0.080     0.000    997.10    136.40
  0.000044      50.       50.       50.         2         0         0      0.00    193.60    330.00

CCHV=    0.300 CEHV=    0.500
*SECNO 3100.000
3280 CROSS SECTION   3100.00 EXTENDED      3.46 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.26

3470 ENCROACHMENT STATIONS=      205.0     315.0  TYPE=      1  TARGET=     110.000
  3100.000      4.76   1004.96      0.00      0.00   1004.99      0.03      0.04      0.01   1001.70
     390.0     88.2     144.1     157.7     104.7      78.0     154.7      19.1       8.0   1002.00
      0.49      0.84      1.85      1.02     0.080     0.050     0.080     0.000   1000.20    205.00
  0.000643      360.      360.      360.         2         0         0      0.00    110.00    315.00

CCHV=    0.500 CEHV=    1.000
*SECNO 3200.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.46

3470 ENCROACHMENT STATIONS=      229.0     291.0  TYPE=      1  TARGET=      62.000
  3200.000      3.98   1005.08      0.00      0.00   1005.20      0.12      0.12      0.10   1002.60
     390.0     70.4     215.6     104.0      43.3      62.4      55.3      19.6       8.2   1002.90
      0.50      1.63      3.45      1.88     0.080     0.050     0.080     0.000   1001.10    229.00
  0.003023      100.      100.      100.         2         0         0      0.00     62.00    291.00
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 G         GLOB      GCH       GROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

CCHV=    0.500 CEHV=    1.000
*SECNO 3281.000

3470 ENCROACHMENT STATIONS=      250.0     273.1  TYPE=      1  TARGET=      23.100
  3281.000      4.02   1005.42      0.00      0.00   1005.74      0.33      0.34      0.20   1001.80
     390.0       0.0     390.0       0.0       0.0      85.2       0.0      19.9       8.3 100000.00
      0.51      0.00      4.58      0.00     0.000     0.050     0.000     0.000   1001.40    250.00
  0.006051       81.       81.       81.         2         0         0      0.00     23.10    273.10


SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      1.90      3.00      0.00     13.00      0.00     73.40      0.00   1001.40   1001.40

*SECNO 3322.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.98

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS     EGLWC     H3        QWEIR     QPR       BAREA     TRAPEZOID     ELLC      ELTRD     WEIRLN
                                                              AREA
  1006.25   1005.74     0.00       30.      360.       73.       49.     1005.20   1005.90      172.


3470 ENCROACHMENT STATIONS=      250.0     273.1  TYPE=      1  TARGET=      23.100
  3322.000      4.47   1005.87      0.00      0.00   1006.13      0.26      0.39      0.00   1001.80
     390.0       0.0     390.0       0.0       0.0      95.7       0.0      20.0       8.3 100000.00
      0.51      0.00      4.08      0.00     0.000     0.030     0.000     0.000   1001.40    250.00
  0.001538       41.       41.       41.         2         0         4      0.00     23.10    273.10


CCHV=    0.500 CEHV=    1.000
*SECNO 3355.000
3280 CROSS SECTION   3355.00 EXTENDED      4.92 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.52
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 SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
 Q          GLOB       GCH        GROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
 TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
 SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


3470 ENCROACHMENT STATIONS=      216.0     305.0  TYPE=      1  TARGET=      89.000
  3355.000      4.72   1006.22      0.00      0.00   1006.27      0.04      0.03      0.11   1003.00
     390.0      75.6     235.2      79.2      85.9     115.7      80.3      20.1       8.4   1003.20
      0.51      0.88      2.03      0.99     0.080     0.045     0.080     0.000   1001.50    216.00
  0.000669       33.       33.       33.         2         0         0      0.00     89.00    305.00

*SECNO 3385.000
3280 CROSS SECTION   3385.00 EXTENDED      4.96 FEET

3470 ENCROACHMENT STATIONS=      191.0     330.0  TYPE=      1  TARGET=      139.000
  3385.000      4.77   1006.27      0.00      0.00   1006.29      0.02      0.01      0.01   1003.00
     390.0      75.0     182.0     133.0     120.8     117.0     167.8      20.3       8.4   1003.20
      0.52      0.62      1.56      0.79     0.080     0.045     0.080     0.000   1001.50    191.00
  0.000386       30.       30.       30.         1         0         0      0.00    139.00    330.00

CCHV=    0.300 CEHV=    0.500
*SECNO 3700.000
3280 CROSS SECTION   3700.00 EXTENDED      2.88 FEET

  3700.000      4.17   1006.42      0.00      0.00   1006.45      0.03      0.15      0.00   1003.75
     390.0      67.1     177.8     145.1      87.2      98.9     139.2      23.0       9.5   1003.95
      0.59      0.77      1.80      1.04     0.070     0.045     0.070     0.000   1002.25    186.03
  0.000647      315.      315.      315.         1         0         0      0.00    143.97    330.00

*SECNO 4000.000
3280 CROSS SECTION   4000.00 EXTENDED      2.38 FEET

  4000.000      3.68   1006.68      0.00      0.00   1006.73      0.05      0.26      0.01   1004.50
     390.0      53.7     187.8     148.4      57.2      83.3     114.6      25.0      10.4   1004.70
      0.64      0.94      2.26      1.30     0.070     0.045     0.070     0.000   1003.00    196.42
  0.001278      300.      300.      300.         2         0         0      0.00    133.58    330.00

*SECNO 4280.000
3280 CROSS SECTION   4280.00 EXTENDED      2.61 FEET

3470 ENCROACHMENT STATIONS=      200.0     321.0  TYPE=      1  TARGET=      121.000
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  SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
  Q          GLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
  TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
  SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

4280.000      3.91    1007.01       0.00       0.00    1007.05       0.05       0.33       0.00    1004.60
   390.0      64.4      197.6      127.9       68.5       90.4      102.4       26.6       11.2    1004.80
    0.68      0.94       2.19       1.25      0.070      0.045      0.070      0.000    1003.10     200.00
0.001076      280.       280.       280.          2          0          0       0.00     121.00     321.00

CCHV=    0.500 CEHV=    1.000
*SECNO 4320.000

3265 DIVIDED FLOW

3280 CROSS SECTION   4320.00 EXTENDED      1.37 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.59

3470 ENCROACHMENT STATIONS=      204.0      317.0  TYPE=      1  TARGET=      113.000
4320.000      3.97    1007.07       0.00       0.00    1007.14       0.06       0.07       0.02    1004.60
   390.0     115.0       74.6      200.4       69.9       33.3       94.4       26.9       11.3    1004.80
    0.69      1.64       2.24       2.12      0.070      0.045      0.070      0.000    1003.10     204.00
0.003040       40.        40.        40.          2          0          0       0.00      93.24     317.00

*SECNO 4331.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.41

3470 ENCROACHMENT STATIONS=       90.0      240.0  TYPE=      1  TARGET=      150.000
4331.000      3.94    1007.14    1007.05       0.00    1007.76       0.62       0.07       0.55    1003.30
   390.0      36.6      314.3       39.1       15.3       45.3       22.7       26.9       11.4    1009.60
    0.69      2.40       6.94       1.72      0.070      0.045      0.070      0.000    1003.20      92.16
0.018023       11.        11.        11.          4          8          0       0.00      74.72     200.15
```

```
 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 4342.000

3265 DIVIDED FLOW


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.87


3470 ENCROACHMENT STATIONS=       80.0     210.0  TYPE=      1  TARGET=      130.000
  4342.000      4.73   1007.93      0.00      0.00   1008.09      0.15      0.10      0.23   1003.30
     390.0      59.4     214.7     115.9      35.4      54.5      73.4      26.9      11.4   1009.60
      0.69      1.68      3.94      1.58     0.070     0.045     0.070     0.000   1003.20     80.00
  0.005162       11.       11.       11.         9         0         0      0.00    107.55    210.00


CCHV=    0.500 CEHV=    1.000
*SECNO 4390.000

3265 DIVIDED FLOW


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  7.04


3470 ENCROACHMENT STATIONS=       80.0     215.0  TYPE=      1  TARGET=      135.000
  4390.000      5.15   1008.15      0.00      0.00   1008.17      0.02      0.02      0.07   1007.20
     390.0      14.7     375.1       0.2      29.9     329.4       1.8      27.2      11.5   1004.20
      0.70      0.49      1.14      0.09     0.030     0.035     0.030     0.000   1003.00     80.00
  0.000104       48.       48.       48.         2         0         0      0.00    127.00    215.00


*SECNO 4435.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.20

  4435.000      5.26   1008.16      0.00      0.00   1008.46      0.30      0.01      0.28   1007.50
     390.0      82.6     301.4       6.0      41.4      61.7       7.2      27.5      11.6   1003.90
      0.70      2.00      4.89      0.84     0.030     0.035     0.030     0.000   1002.90     50.57
  0.002476       45.       45.       45.         2         0         0      0.00    107.61    158.19


CCHV=    0.500 CEHV=    1.000
```

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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         GLOB      GCH       GROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 4475.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.67

3470 ENCROACHMENT STATIONS=       75.0     175.0  TYPE=      1  TARGET=      100.000
  4475.000      4.90   1008.30   1007.63      0.00   1008.93      0.63      0.14      0.33   1008.30
     390.0      50.8     336.0       3.2      17.6      49.8       3.2      27.5      11.7   1004.10
      0.71      2.89      6.74      1.00     0.030     0.035     0.030     0.000   1003.40     75.00
  0.005458       40.       40.       40.         4        11         0      0.00     65.95    161.02

CCHV=    0.500 CEHV=    1.000
*SECNO 4485.000
3280 CROSS SECTION   4485.00 EXTENDED      0.09 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.74

3470 ENCROACHMENT STATIONS=      100.0     185.0  TYPE=      1  TARGET=       85.000
  4485.000      5.48   1009.18      0.00      0.00   1009.22      0.04      0.01      0.29   1005.60
     390.0       0.0     309.1      80.9       0.0     173.0      64.7      27.6      11.7   1005.60
      0.71      0.00      1.79      1.25     0.000     0.035     0.030     0.000   1003.70    100.00
  0.000242       10.       10.       10.         2         0         0      0.00     85.00    185.00

*SECNO 4500.000

3470 ENCROACHMENT STATIONS=      100.0     177.0  TYPE=      1  TARGET=       77.000
  4500.000      5.18   1009.18      0.00      0.00   1009.24      0.06      0.00      0.01   1005.90
     390.0       0.0     320.2      69.8       0.0     162.4      46.9      27.6      11.8   1005.90
      0.71      0.00      1.97      1.49     0.000     0.035     0.030     0.000   1004.00    100.00
  0.000318       15.       15.       15.         2         0         0      0.00     77.00    177.00
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	DLOSS	L-BANK ELEV
Q	GLOB	GCH	GROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4560.000

3470 ENCROACHMENT STATIONS= 102.0 149.0 TYPE= 1 TARGET= 47.000

4560.000	4.60	1009.20	0.00	0.00	1009.27	0.06	0.02	0.01	1006.10
390.0	0.0	390.0	0.0	0.0	192.7	0.0	27.9	11.8	100000.00
0.72	0.00	2.02	0.00	0.000	0.035	0.000	0.000	1004.60	102.00
0.000410	60.	60.	60.	0	0	0	0.00	47.00	149.00

*SECNO 4611.000

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.63

3470 ENCROACHMENT STATIONS= 250.0 850.0 TYPE= 1 TARGET= 600.000

4611.000	4.34	1009.24	0.00	0.00	1009.37	0.13	0.03	0.07	100000.00
390.0	0.0	320.4	69.6	0.0	103.1	34.7	28.1	11.9	1005.90
0.72	0.00	3.11	2.01	0.000	0.035	0.030	0.000	1004.90	250.00
0.001038	51.	51.	51.	1	0	0	0.00	102.75	425.85

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	2.30	3.00	0.00	12.00	0.00	52.20	0.00	1004.90	1004.90

*SECNO 4668.000

3265 DIVIDED FLOW

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1011.23	1009.37	0.00	184.	209.	52.	50.	1009.10	1009.10	201.

4668.000	4.86	1009.76	0.00	0.00	1009.81	0.05	0.44	0.00	1005.90
390.0	40.4	286.6	63.0	49.1	137.9	119.7	28.4	12.2	1005.90
0.73	0.82	2.08	0.53	0.070	0.045	0.060	0.000	1004.90	217.26
0.000544	57.	57.	57.	2	0	4	0.00	275.14	513.24

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
G	GLOB	GCH	GROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 4720.000

3265 DIVIDED FLOW

3280 CROSS SECTION 4720.00 EXTENDED 4.00 FEET

4720.000	4.80	1009.80	0.00	0.00	1009.85	0.05	0.04	0.00	1009.10
390.0	0.9	206.5	182.7	2.3	91.6	137.6	28.7	12.4	1008.00
0.74	0.38	2.25	1.33	0.070	0.045	0.060	0.000	1005.00	244.30
0.000971	52.	52.	52.	0	0	0	0.00	97.54	343.00

*SECNO 5050.000

3265 DIVIDED FLOW

3280 CROSS SECTION 5050.00 EXTENDED 3.60 FEET

5050.000	4.40	1010.20	0.00	0.00	1010.28	0.08	0.40	0.02	1009.90
390.0	0.1	213.8	176.1	0.4	80.8	112.5	30.3	13.1	1008.80
0.78	0.24	2.65	1.57	0.070	0.045	0.060	0.000	1005.80	247.01
0.001584	330.	330.	330.	2	0	0	0.00	90.18	343.00

CCHV= 0.300 CEHV= 0.500
*SECNO 5800.000
3280 CROSS SECTION 5800.00 EXTENDED 1.63 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.30

5800.000	3.93	1010.73	0.00	0.00	1010.73	0.01	0.44	0.02	1008.00
390.0	185.5	63.7	140.8	369.4	54.2	283.7	38.1	18.2	1008.80
1.12	0.50	1.18	0.50	0.070	0.045	0.060	0.000	1006.80	0.00
0.000299	750.	750.	750.	3	0	0	0.00	500.00	500.00

*SECNO 6500.000

3265 DIVIDED FLOW

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.21

6500.000	2.54	1011.24	0.00	0.00	1011.36	0.13	0.57	0.06	1009.50
390.0	57.0	153.7	179.4	30.4	43.3	74.3	45.0	23.3	1010.90
1.19	1.87	3.55	2.41	0.070	0.045	0.060	0.000	1008.70	164.67
0.006804	700.	700.	700.	2	0	0	0.00	135.56	311.98

*SECNO 6630.000

6630.000	2.82	1011.92	0.00	0.00	1012.00	0.08	0.62	0.01	1009.90
390.0	60.0	147.3	182.7	39.2	51.4	98.1	45.5	23.7	1011.30
1.21	1.53	2.86	1.86	0.070	0.045	0.060	0.000	1009.10	162.35
0.003531	130.	130.	130.	2	0	0	0.00	155.45	317.80

1) COUNTY: OSCEOLA

2) STUDY NAME: CITY OF EVART

3) WATERCOURSE: TWIN CREEK

4) DOCUMENT TYPE: 100 YR NATURAL

THIS RUN EXECUTED 05AUG91 16:53:23

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**************************************************
  HEC2 RELEASE DATED SEP 88 UPDATED JUN  1990

  ERROR CORR -  01,02,03,04
  MODIFICATION -
**************************************************

T1      CITY OF EVART, MI, FIS
T2      TWIN CREEK
T3      100-YEAR DISCHARGE

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                 2                                                                  984.3

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1                  -1


NC      .03       .03       .045       .3        .5
QT        2       390       500
                CROSS SECTION A MOVED D/S TO CONFLUENCE WITH THE MUSKEGON R.
X1        0        17        80       112         0         0         0                -1.1
GR    991.3         0     990.6        20     988.8        40     988.1        50     987.6        70
GR    987.1        80     985.6        85     984.2        94     985.6       103     987.5       112
GR    988.3       120     989.7       130     990.0       140     990.9       170     991.5       180
GR    991.4       190     994.5       230

X1       10                                      10        10        10                 .1

                CROSS SECTION A
X1      120                                     110       110       110                1.0

                CROSS SECTION B
X1      500        25       250     270.1       380       380       380
X3                                 170
GR    989.7         0     990.0        30     989.9        50     990.3        70     990.7        90
GR    990.7       150     991.1       170     991.2       246     990.0       250     988.9       254
GR    987.7     254.1     987.7       270     988.3     270.1     989.9       290     989.8       340
GR    989.2       350     989.2       358     991.2       372     992.5       382     991.6       398
GR    992.6       414     993.1       420     993.9       450     994.4       460     994.5       500

X1      545                                      45        45        45                .47
X3                                 170

NC      .07       .07       .045       .5       1.0
                CROSS SECTION B MOVED U/S
X1      630                                      85        85        85               0.90
X3                                 170                  325
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                ABANDON STRUCTURE
X1      700      15       61      111       70       70       70
GR    994.5       0    995.4       20    995.1       50    990.3       61    989.8       70
GR    990.4      80    992.6       84    993.5     84.1    993.5       96    990.8     96.1
GR    989.4     103    990.0      111    993.6    111.1    994.2      131    994.0      166

                CROSS SECTION B MOVED U/S
X1      735      25      250    270.1       35       35       35                2.7
X3                              170                285
GR    989.7       0    990.0       30    989.9       50    990.3       70    990.7       90
GR    990.7     150    991.1      170    991.2      246    990.0      250    988.9      254
GR    987.7   254.1    987.7      270    988.3    270.1    989.9      290    989.8      340
GR    989.2     350    989.2      358    991.2      372    992.5      382    991.6      398
GR    992.6     414    993.1      420    993.9      450    994.4      460    994.5      500

X1      801      15      250      264       66       66       66
X3                              250                264
GR    998.9       0    997.4       75    996.4      150    996.0      175    993.5      200
GR    991.7     249    990.7      250    990.5      257    990.7      264    991.7      265
GR    993.2     275    995.8      300    995.9      325    996.9      425    996.4      500

SB              4.25     2.80                  6.7                 21.3
NC       .03     .03      .03
                U/S FACE OF MAIN ST.
X1      882                                    81       81       81
X2                        1    994.1    995.7
X3                                               425
BT      -20       0    998.9                   75    997.4                  150    996.4
BT              175    996.0                  200    995.9                  249    995.7
BT              250    995.7                253.5    995.7    991.8    254.3    995.7    993.6
BT            255.6    995.7    994.7      257    995.7    994.9    258.4    995.7    994.7
BT            259.7    995.7    993.6    260.5    995.7    991.8      264    995.7
BT              265    995.7                300    995.8                  325    995.9
BT              425    996.9                500    996.4

NC                                .3       .5
X1      897      19    250.1    263.1       15       15       15
X3                                               425
GR    998.9       0    997.4       75    996.4      150    996.0      175    995.3      200
GR    994.8     250    992.0    250.1    991.7      255    990.9      261    990.9    261.1
GR    990.6     263    990.6    263.1    990.7      267    991.0      272    994.8    272.1
GR    995.8     300    995.9      325    996.9      425    996.4      500

X1      898                                     1        1        1
X3                                               425
BT      -17       0    998.9                   75    997.4                  150    996.4
BT              175    996.0                  200    995.3                  250    995.3    994.8
BT            250.1    995.3    994.8      261    995.3    994.8    261.1    995.3    990.9
BT              263    995.2    990.6    263.1    995.2    994.8      272    995.2    994.6
BT            272.1    995.2    994.6      300    995.8                  325    995.9
BT              425    996.9                500    996.4
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X1      903                                         5         5         5
X2                                                                  1
X3                                                              425

NC                          .045
X1      904                                         1         1         1
X3                                                              425

                CROSS SECTION C MOVED D/S
X1      930        18        78        90        26        26        26                -0.7
GR    995.1         0     994.6        10     994.6        20     993.9        30     993.5        40
GR    993.2        70     993.2        78     992.6        80     991.4        85     992.6        88
GR    993.5        90     993.8       100     995.1       120     996.9       140     998.2       160
GR    998.6       180     998.6       200     998.0       240

                CROSS SECTION C
X1     1100                                       170       170       170                 0.7

X1     1225                                       125       125       125               0.93

                CROSS SECTION C MOVED U/S
X1     1350                                       125       125       125               0.92

NC                          .04
X1     1411        31       274     286.4        61        61        61
GR   1000.3        20     998.9        95     998.3       120     995.4       230     995.0       240
GR    994.7       270     994.8       274     994.8     274.1     994.0     274.8     993.7     275.8
GR    994.0     276.8     994.8     277.6     994.8     277.7     994.8     278.1     994.8     278.2
GR    994.0     278.9     993.7     279.9     994.0     280.9     994.8     281.7     994.8     281.8
GR    994.8     282.7     994.8     282.8     994.0     283.5     993.7     284.5     994.0     285.5
GR    994.8     286.3     994.8     286.4     995.0       290     995.3       300     996.6       320
GR    998.4       340

SB                4.25      3.00                        12                  28.86
                U/S FACE OF PINE ST-NINETH ST. BRIDGE
X1     1499                                        88        88        88
X2                                   1     996.7     997.2
BT      -31        20    1000.3                     95     998.9                 120     998.3
BT                230     997.4                    240     997.4                 270     997.4
BT                274     997.4     994.8     274.1     997.4     996.1     274.8     997.4     996.9
BT              275.8     997.4     997.2     276.8     997.4     996.9     277.6     997.4     996.1
BT              277.7     997.4     994.8     278.1     997.4     994.8     278.2     997.4     996.1
BT              278.9     997.4     996.9     279.9     997.4     997.2     280.9     997.4     996.9
BT              281.7     997.4     996.1     281.8     997.4     994.8     282.7     997.4     994.8
BT              282.8     997.4     996.1     283.5     997.4     996.9     284.5     997.4     997.2
BT              285.5     997.4     996.9     286.3     997.4     996.1     286.4     997.4     994.8
BT                290     997.3                    300     997.2                 320     997.2
BT                340     998.4
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NC      .09        .09       .045
                CROSS SECTION C MOVED U/S
X1     1550         18         78         90         51         51         51                   2.8
GR    995.1          0      994.6         10      994.6         20      993.9         30      993.5         40
GR    993.2         70      993.2         78      992.6         80      991.4         85      992.6         88
GR    993.5         90      993.8        100      995.1        120      996.9        140      998.2        160
GR    998.6        180      998.6        200      998.0        240

NC                                        .3         .5
                CROSS SECTION C MOVED U/S
X1     1700                                        150        150        150                  1.35

X1     1883         15         17         38        183        183        183
X3                                         6                   50
GR   1000.8          0      998.5         17      998.5       17.1      998.1         21      997.2         28
GR    995.6         38      995.6       38.1       1000         58      999.7         68      999.8         88
GR   1000.1         98     1000.1        118     1000.9        148     1001.7        158     1003.0        168

NC                                        .5        1.0
SB                 1.81       3.00                   21                   61.85
                U/S FACE OF FOOT BRIDGE
X1     1889                                          6          6          6
X2                                   1     1000.1      999.7
X3                                         7                   48
BT      -13          0     1000.8                   17     1001.2      998.5       17.1     1001.2       1000
BT                  38     1001.3     1000.1      38.1     1001.3      995.6         58       1000
BT                  68      999.7                   88     999.8                     98     1000.1
BT                 118     1000.1                  148     1000.9                    158     1001.7
BT                 168     1003.0

NC     .075       .045       .045        .5        1.0
                CROSS SECTION C MOVED U/S
X1     1910         18         78         90         21         21         21                   4.2
X3                                        68                   100
GR    995.1          0      994.6         10      994.6         20      993.9         30      993.5         40
GR    993.2         70      993.2         78      992.6         80      991.4         85      992.6         88
GR    993.5         90      993.8        100      995.1        120      996.9        140      998.2        160
GR    998.6        180      998.6        200      998.0        240

X1     1931         20        250      266.1         21         21         21
X3                                       250                   272
GR   1006.1          0     1005.8         75     1005.8        175     1005.5        200     1000.0        225
GR    996.5        250      996.5      250.1      997.0        254      996.3      257.0      996.3      257.1
GR    995.8        259      995.8      259.1      995.8        263      994.6        266      994.6      266.1
GR   1003.4        272     1005.2        300     1005.7        375     1005.7        400     1006.1        425

NC      .04        .04        .03
SB                 1.89       3.00                   14                   69.4
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                U/S FACE OF RR
X1      1967                                    36        36        36
X2                              1     1000.5    1005.1
X3                                      250               272
BT       -18          0    1006.1                75    1005.8                175    1005.8
BT               200     1005.5               225    1005.5                250    1005.3     996.5
BT             250.1     1005.3    1000.5     257    1005.2    1000.5    257.1    1005.2     996.3
BT               259     1005.2     995.8   259.1    1005.2    1000.5      266    1005.1    1000.5
BT             266.1     1005.1     994.6     272    1005.1                300    1005.2
BT               375     1005.7               400    1005.7                425    1006.1

NC      .045      .06       .045
                CROSS SECTION D MOVED D/S
X1      2020       20       250       270      53        53        53                -6.9
X3                                      196               324
GR    1016.9        0    1017.8        10  1016.9        70    1015.7        90    1012.8       120
GR    1010.4      140    1009.7       160  1008.3       170    1006.9       190    1006.2       210
GR    1005.3      230    1004.5       250  1003.0       255    1003.7       260    1004.3       267
GR    1004.8      270    1003.7       276  1004.7       281    1004.3       290    1004.3       330

NC                                      .3       .5
                CROSS SECTION D MOVED D/S
X1      2090                                    70        70        70                 0.4

                CROSS SECTION D MOVED D/S
X1      2160                                    70        70        70                 0.4

X1      2210       18       250       260      50        50        50
X3                                       42               425
GR    1002.0        0    1000.9       125  1000.9       150    1001.6       225     997.3       250
GR     997.3    250.1     997.1       254   997.1       259     997.1     259.1     997.1       260
GR     997.1    260.1     997.4       264   997.8       268     997.8     268.1    1002.5       275
GR    1004.7      350    1006.0       375  1008.3       425

NC      .03       .03       .03
X1      2211                                     1         1         1
X3                                       42               425
BT       -16          0    1002.0                125    1000.9                150    1000.9
BT               225     1001.6               250    1002.0     997.3    250.1    1002.0    1000.6
BT               259     1002.2    1000.6     259.1    1002.2     997.1      260    1002.2     997.1
BT             260.1     1002.2    1000.7       268    1002.4    1000.8    268.1    1002.4     997.8
BT               275     1002.5                350    1004.7                375    1006.0
BT               425     1008.3

                U/S FACE OAK ST.
X1      2268                                    57        57        57
X2                                                                   1
X3                                       71               425
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NC      .08       .08       .05
X1     2269                                  1         1         1
X3                                      71            425

                CROSS SECTION D MOVED D/S
X1     2320        20       250       270        51        51        51                  -5.6
GR   1016.9         0    1017.8        10    1016.9        70    1015.7        90    1012.8       120
GR   1010.4       140    1009.7       160    1008.3       170    1006.9       190    1006.2       210
GR   1005.3       230    1004.5       250    1003.0       255    1003.7       260    1004.3       267
GR   1004.8       270    1003.7       276    1004.7       281    1004.3       290    1004.3       330

                CROSS SECTION D MOVED D/S
X1     2450                                 130       130       130                    0.7
X3                                     204            316

NC                                      .5       1.0
X1     2550                                 100       100       100                   .60
X3                                     229            291

                CROSS SECTION OF ABANDON STRUCTURE, MODIFIED
X1     2610        21       232       252        60        60        60
X3                                     226            258
GR   1005.8         0    1005.7        34    1006.4        40    1004.2        50    1003.2        70
GR   1003.1        80    1003.1        90    1003.8       110    1003.8       160    1001.0       232
GR    999.6       235     999.2     237.4     999.2     237.5     999.0       244     999.5       250
GR    999.5     250.1    1001.0       252    1003.5       300    1004.1       320    1003.5       351
GR   1003.5       377

X1     2630                                  20        20        20
X3                                     231            253

X1     2650        25     237.4     250.1        20        20        20
X3                                     217            270
GR   1005.8         0    1005.7        34    1006.4        40    1004.2        50    1003.2        70
GR   1003.1        80    1003.1        90    1003.8       110    1003.8       160    1004.3       180
GR   1004.3       210    1004.9       220    1005.3       230    1005.3     237.4     999.2     237.5
GR    999.0       244     999.5       250    1005.5     250.1    1005.9       260    1006.2       270
GR   1006.2       275    1003.5       300    1004.1       320    1003.5       351    1003.5       377

                U/S FACE OF ABANDON STRUCTURE
X1     2670                                  20        20        20
X3                                     217            270

X1     2675        21       232       252         5         5         5
X3                                     230            254
GR   1005.8         0    1005.7        34    1006.4        40    1004.2        50    1003.2        70
GR   1003.1        80    1003.1        90    1003.8       110    1003.8       160    1001.0       232
GR    999.0       235     999.2     237.4     999.2     237.5     999.0       241     999.5       250
GR    999.5     250.1    1001.0       252    1003.5       300    1004.1       320    1003.5       351
GR   1003.5       377
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                CROSS SECTION OF ABANDON STRUCTURE, MODIFIED
X1     2690                                      15        15        15
X3                                     215                   269

X1     2740        20       250       270        50        50        50                  -5.9
GR   1016.9         0    1017.8        10    1016.9        70    1015.7        90    1012.8       120
GR   1010.4       140    1009.7       160    1008.3       170    1006.9       190    1006.2       210
GR   1005.3       230    1004.5       250    1003.0       255    1003.7       260    1004.3       267
GR   1004.8       270    1003.7       276    1004.7       281    1004.3       290    1004.3       330

NC                                      .3        .5
X1     3100                                     360       360       360                   3.1
X3                                     205                   315

NC                                      .5       1.0
                CROSS SECTION D MOVED D/S
X1     3200                                     100       100       100                   0.9
X3                                     229                   291

NC                                      .5       1.0
X1     3281        22       250     273.1        81        81        81
X3                                     250                 273.1
GR   1005.9         0    1006.0       125    1006.2       200    1006.5       225    1003.0       240
GR   1001.8       250    1001.8     250.1    1001.4       255    1002.0       261    1002.0     261.1
GR   1002.0       263    1002.0     263.1    1001.7       268    1001.6       273    1001.6     273.1
GR   1003.9       283    1006.4       300    1006.4       350    1006.5       375    1006.5       400
GR   1006.7       425    1006.7       500

NC                            .03
SB                  1.9       3.0                13                73.4
ET                  4.1       4.1       250    273.1
                U/S FACE US-10, 7TH ST. BRIDGE
X1     3322                                      41        41        41
X2                                   1    1005.2    1005.9
BT      -18         0    1005.9                  125    1006.0       200    1006.2
BT                225    1006.5                  250    1006.7    1001.8     250.1    1006.7    1005.2
BT                261    1006.7    1005.2      261.1    1006.7    1002.0       263    1006.6    1002.0
BT              263.1    1006.6    1005.2        273    1006.6    1005.2     273.1    1006.6    1001.6
BT                300    1006.4                  350    1006.4       375    1006.5
BT                400    1006.5                  425    1006.7       500    1006.7

NC                           .045       .5       1.0
X1     3355        20       250       281        33        33        33                  -1.5
X3                                     216                   305
GR   1016.9         0    1017.8        10    1016.9        70    1015.7        90    1012.8       120
GR   1010.4       140    1009.7       160    1008.3       170    1006.9       190    1006.2       210
GR   1005.3       230    1004.5       250    1003.0       255    1003.7       260    1004.3       267
GR   1004.8       270    1003.7       276    1004.7       281    1004.3       290    1004.3       330
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                CROSS SECTION D MOVED D/S
X1     3385                                    30        30        30
X3                                     191              330

NC     .07       .07                   .3       .5
X1     3700                                    315       315       315                  0.75

                CROSS SECTION D
X1     4000                                    300       300       300                  0.75

                CROSS SECTION D MOVED U/S
X1     4280                                    280       280       280                   0.1
X3                                     200              321

NC                                      .5       1.0
X1     4320        23       250       281        40        40        40                   0.1
X3                                     204              317
X4        8    1003.7       255    1009.0     255.1    1009.0     264.9    1003.7       265    1004.6
X4      269    1009.0     269.1    1009.0     278.9    1003.7       279
GR   1016.9         0    1017.8        10    1016.9        70    1015.7        90    1012.8       120
GR   1010.4       140    1009.7       160    1008.3       170    1006.9       190    1006.2       210
GR   1005.3       230    1004.5       250    1003.0       255    1003.7       255    1003.7       255
GR   1003.7       279    1003.7       279    1004.7       281    1004.3       290    1004.3       330
GR   1004.3       360    1005.1       370    1005.5       430

NC      .07       .07      .045
                STRUCTURE AT D/S END OF PARK
X1     4331        20       107     129.6        11        11        11
X3                                      90              240
GR   1013.8         0    1009.5        20    1008.9        30    1008.6        40    1008.2        50
GR   1007.8        60    1007.4        70    1007.1        80    1007.4        90    1005.6       105
GR   1003.3       107    1009.7     107.1    1009.2       118    1003.2     118.1    1003.2     129.5
GR   1009.6     129.6    1009.6       141    1007.5     141.1    1006.2       180    1009.0       240

X1     4342                                    11        11        11
X3                                      80              210

NC      .03       .03      .035        .5       1.0
                POND U/S OF STRUCTURE
X1     4390        13       110       185        48        48        48
X3                                      80              215
GR   1013.8         0    1009.5        20    1008.9        30    1007.1        80    1007.2       110
GR   1004.3       111     1003       120     1003       140    1004.2       150    1004.2       185
GR   1008.2     185.1     1008       215     1009       235

X1     4435        10       110       123        45        45        45
GR   1013.8         0    1009.5        20    1008.9        30    1007.1        80    1007.5       110
GR   1002.9     110.1    1003.9       123    1007.9     123.1      1008       155      1009       175
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NC                                  .5        1.0
                STRUCTURE IN PARK
X1     4475      12       110      121         40         40         40
X3                                 75                   175
GR   1013.8       0    1009.5       20     1008.9         30     1007.1         80     1008.1         95
GR   1008.3     110    1003.4    110.1     1004.1        121     1008.7      121.1     1008.5        132
GR     1008     155      1009      175

NC                                  .5        1.0
X1     4485      12       100      135         10         10         10                   -0.3
X3                                100                   185
GR   1013.8       0    1009.5       20     1008.9         30     1007.1         80     1005.9        100
GR   1004.0     110    1004.0      125     1005.9        135       1006        145     1008.7        146
GR   1008.9     190    1009.7      220

                POND U/S OF STRUCTURE
X1     4500                                   15         15         15                    0.3
X3                                100                   177

                POND U/S OF STRUCTURE
X1     4560      16       102      149         60         60         60
X3                                102                   149
GR   1013.9       0    1009.5       20     1008.9         30     1007.1         80     1007.4         90
GR   1006.1     102    1005.3      114     1004.7        119     1004.6        134     1005.1        144
GR   1006.1     149    1007.4      150     1007.9        160     1008.0        170     1009.3        200
GR   1009.7     220

X1     4611      18       245      276         51         51         51
X3                                250                   850
GR   1020.2       0    1019.4       75     1018.9        100     1016.7        150     1013.9        175
GR   1009.0     225    1005.9      245     1005.2        250     1005.2      250.1     1004.9        262
GR   1005.0   262.1    1005.9      276     1010.2        300     1009.6        325     1009.3        350
GR   1009.1     400    1009.6      500     1013.8        850

NC      .07     .06      .045
SB              2.3        3.0                 12                 52.2
                U/S FACE OF 5TH ST.
X1     4668                                   57         57         57
X2                          1    1009.1    1009.1
BT      -17       0    1020.2                 75     1019.4                  100     1018.9
BT              150    1016.7                175     1013.9                  225     1012.6
BT              250    1011.9    1005.2    250.1     1011.9     1009.5       262     1011.5    1009.4
BT            262.1    1011.5    1005.0      276     1010.9                  300     1010.2
BT              325    1009.6                350     1009.3                  400     1009.1
BT              500    1009.6                850     1013.8

                CROSS SECTION D MOVED U/S
X1     4720      17       250      277         52         52         52                   -0.8
GR   1021.7       0    1021.9       60     1022.1        100     1022.3        140     1022.4        180
GR   1022.3     200    1021.0      208     1010.4        245     1009.9        250     1006.8        260
GR   1005.8     267    1006.7      274     1008.8        277     1010.7        295     1008.8        299
GR   1008.5     313    1006.6      343
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                CROSS SECTION E
X1     5050                                     330       330       330                 0.8

NC                                     .3        .5
                CROSS SECTION F
X1     5800        28       232       250       750       750       750
GR   1009.1         0    1009.4        30    1009.5        70    1009.0       100    1009.2       120
GR   1009.2       130    1008.9       140    1009.1       180    1008.6       200    1009.2     231.8
GR   1008.6     231.9    1008.0       232    1006.8       241    1008.6       247    1008.8       250
GR   1009.3       260    1009.7       290    1009.0       310    1009.8       330    1009.3       350
GR   1009.3       380    1010.2       390    1010.7       410    1008.6       420    1009.8       450
GR   1009.7       470    1010.2       480    1010.2       500

                CROSS SECTION G
X1     6500        29       195       224       700       700       700
GR   1012.0         0    1013.1        50    1013.1        70    1012.1        90    1012.2       140
GR   1011.8       160    1010.6       170    1009.9       180    1010.2       190    1009.5       195
GR   1008.7       201    1009.5       207    1010.9       224    1009.9       225    1009.1       233
GR   1009.9       243    1010.0       247    1010.1       267    1010.7       277    1011.5       297
GR   1011.0       307    1013.4       357    1013.7       367    1013.0       377    1013.0       427
GR   1012.7       437    1012.8       447    1018.9       467    1019.2       497

                CROSS SECTION G MOVED U/S, TO U/S CORPORATE LIMIT
X1     6630                                     130       130       130                 0.4
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*PROF 1


CCHV=     0.300 CEHV=     0.500
*SECNO 0.000
3720 CRITICAL DEPTH ASSUMED
                CROSS SECTION A MOVED D/S TO CONFLUENCE WITH THE MUSKEGON R.
     0.000      3.04     986.14     986.14     984.30     986.98       0.85       0.00       0.00     986.00
     390.0       0.2      389.8        0.0        0.2       52.8        0.0        0.0        0.0     986.40
      0.00      1.30       7.38       0.00      0.030      0.045      0.000      0.000     983.10      77.28
  0.024924        0.         0.         0.          0         19          0       0.00      33.47     110.75

*SECNO 10.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.72

    10.000      3.65     986.85       0.00       0.00     987.25       0.40       0.14       0.13     986.10
     390.0      15.8      373.3        0.9        6.3       72.3        0.6        0.0        0.0     986.50
      0.00      2.52       5.16       1.42      0.030      0.045      0.030      0.000     983.20      59.96
  0.008451       10.        10.        10.          5          0          0       0.00      55.55     115.51

*SECNO 120.000
                CROSS SECTION A
   120.000      3.61     987.81       0.00       0.00     988.23       0.42       0.97       0.01     987.10
     390.0      13.6      375.8        0.6        5.4       70.8        0.5        0.2        0.1     987.50
      0.01      2.53       5.31       1.35      0.030      0.045      0.030      0.000     984.20      61.86
  0.009193      110.       110.       110.          2          0          0       0.00      53.18     115.04

*SECNO 500.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.50

3470 ENCROACHMENT STATIONS=      170.0      500.0  TYPE=      1  TARGET=     -170.000
                CROSS SECTION B
   500.000      2.69     990.39       0.00       0.00     990.55       0.16       2.24       0.08     990.00
     390.0       0.3      165.4      224.3        0.3       47.0       76.1        1.1        0.9     988.30
      0.04      1.04       3.52       2.95      0.030      0.045      0.030      0.000     987.70     248.70
  0.004095      380.       380.       380.          5          0          0       0.00     117.64     366.34
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 G         GLOB      GCH       GROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 545.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.67

3470 ENCROACHMENT STATIONS=      170.0     500.0  TYPE=      1  TARGET=     -170.000
   545.000      2.42    990.59      0.00      0.00    990.88      0.29      0.27      0.07    990.47
     390.0       0.0     202.4     187.6       0.0      41.6      50.4       1.2       1.0    988.77
      0.04      0.05      4.87      3.73     0.030     0.045     0.030     0.000    988.17    249.60
  0.009233       45.       45.       45.         2         0         0      0.00    114.84    364.44

CCHV=    0.500 CEHV=    1.000
*SECNO 630.000

3470 ENCROACHMENT STATIONS=      170.0     325.0  TYPE=      1  TARGET=      155.000
                CROSS SECTION B MOVED U/S
   630.000      2.55    991.62    991.61      0.00    992.20      0.58      1.03      0.29    991.37
     390.0       0.1     301.5      88.4       0.1      44.2      36.4       1.4       1.2    989.67
      0.05      0.67      6.82      2.43     0.070     0.045     0.070     0.000    989.07    249.16
  0.016711       85.       85.       85.         3         8         0      0.00     75.84    325.00

*SECNO 700.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.92

                ABANDON STRUCTURE
   700.000      3.29    992.69      0.00      0.00    992.92      0.24      0.55      0.17    990.30
     390.0       9.9     380.1       0.0       6.5      96.1       0.1       1.5       1.3    990.00
      0.05      1.52      3.96      0.16     0.070     0.045     0.070     0.000    989.40     55.53
  0.004553       70.       70.       70.         2         0         0      0.00     43.52    111.07

*SECNO 735.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.50

3470 ENCROACHMENT STATIONS=      170.0     285.0  TYPE=      1  TARGET=      115.000
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                CROSS SECTION B MOVED U/S
   735.000      2.57     992.97      0.00      0.00     993.66      0.69      0.28      0.45    992.70
     390.0       0.1     320.1      69.8       0.1      44.5      20.4       1.6       1.3    991.00
      0.05      0.73      7.19      3.42     0.070     0.045     0.070     0.000    990.40    249.10
  0.018332       35.       35.       35.         2         0         0      0.00     35.90    285.00

*SECNO 801.000

3470 ENCROACHMENT STATIONS=      250.0     264.0  TYPE=      1  TARGET=       14.000
   801.000      3.66     994.16      0.00      0.00     995.11      0.95      1.19      0.26    990.70
     390.0       0.0     390.0       0.0       0.0      49.7       0.0       1.7       1.4 100000.00
      0.06      0.00      7.84      0.00     0.000     0.045     0.000     0.000    990.50    250.00
  0.017747       66.       66.       66.         2         0         0      0.00     14.00    264.00


SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED
SB  XK        XKOR      CDFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      4.25      2.80      0.00      6.70      0.00     21.30      0.00    990.50    990.50

*SECNO 882.000
3280 CROSS SECTION    882.00 EXTENDED      0.07 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO = 17.28

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA   TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                              AREA
  1016.28    994.28    0.00      266.      126.       21.       24.      994.10    995.70      250.


3470 ENCROACHMENT STATIONS=        0.0     425.0  TYPE=      1  TARGET=      424.999
                U/S FACE OF MAIN ST.
   882.000      5.96     996.46      0.00      0.00     996.48      0.01      1.36      0.00    990.70
     390.0     208.0     102.1      79.9     245.0      82.2     126.6       2.1       1.6    990.70
      0.08      0.85      1.24      0.63     0.030     0.030     0.030     0.000    990.50    144.64
  0.000059       81.       81.       81.         1         0         8      0.00    237.52    382.15


CCHV=    0.300 CEHV=    0.500
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       EL.MIN    SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 897.000
3280 CROSS SECTION    897.00 EXTENDED      0.05 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.47

3470 ENCROACHMENT STATIONS=        0.0     425.0  TYPE=      1  TARGET=      424.999
   897.000      5.85    996.45      0.00      0.00    996.50      0.05      0.00      0.02    992.00
     390.0      86.4     153.9     149.6      96.6      65.4     113.2       2.3       1.7    990.60
      0.08      0.89      2.35      1.32     0.030     0.030     0.030     0.000    990.60    146.26
  0.000264       15.       15.       15.         2         0         0      0.00    233.73    379.99

*SECNO 898.000
3280 CROSS SECTION    898.00 EXTENDED      0.05 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.50

3370 NORMAL BRIDGE, NRD=  17 MIN ELTRD=   995.20 MAX ELLC=   994.80

3470 ENCROACHMENT STATIONS=        0.0     425.0  TYPE=      1  TARGET=      424.999
   898.000      5.86    996.46      0.00      0.00    996.50      0.04      0.00      0.00    992.00
     390.0     132.3      90.8     166.9      84.1      50.9     103.1       2.3       1.7    990.60
      0.08      1.57      1.78      1.62     0.030     0.030     0.030     0.000    990.60    146.27
  0.001040        1.        1.        1.         0         0         0    -37.13    233.70    379.97

*SECNO 903.000
3280 CROSS SECTION    903.00 EXTENDED      0.06 FEET

3370 NORMAL BRIDGE, NRD=  17 MIN ELTRD=   995.20 MAX ELLC=   994.80

3470 ENCROACHMENT STATIONS=        0.0     425.0  TYPE=      1  TARGET=      424.999
   903.000      5.86    996.46      0.00      0.00    996.50      0.04      0.01      0.00    992.00
     390.0     133.1      90.1     166.9      85.1      51.0     104.3       2.3       1.7    990.60
      0.08      1.56      1.76      1.60     0.030     0.030     0.030     0.000    990.60    145.50
  0.001015        5.        5.        5.         0         0         0    -37.13    235.50    381.00
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 G         GLOB      GCH       GROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 904.000
3280 CROSS SECTION    904.00 EXTENDED      0.06 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.72

3470 ENCROACHMENT STATIONS=        0.0     425.0  TYPE=      1  TARGET=      424.999
   904.000      5.87    996.47      0.00      0.00    996.51      0.03      0.00      0.00    992.00
     390.0     100.4     117.3     172.2      98.1      65.6     114.8       2.3       1.7    990.60
      0.08      1.02      1.79      1.50     0.030     0.045     0.030     0.000    990.60    145.20
  0.000342        1.        1.        1.         0         0         0      0.00    236.20    381.40

*SECNO 930.000
3280 CROSS SECTION    930.00 EXTENDED      2.10 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.15

                CROSS SECTION C MOVED D/S
   930.000      5.80    996.50      0.00      0.00    996.52      0.01      0.00      0.01    992.50
     390.0     251.5      46.0      92.5     261.2      58.5     115.0       2.5       1.8    992.80
      0.09      0.96      0.79      0.80     0.030     0.045     0.030     0.000    990.70      0.00
  0.000074       26.       26.       26.         1         0         0      0.00    144.57    144.57

*SECNO 1100.000
3280 CROSS SECTION   1100.00 EXTENDED      1.42 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.69

                CROSS SECTION C
  1100.000      5.12    996.52      0.00      0.00    996.54      0.02      0.02      0.00    993.20
     390.0     254.7      52.3      83.0     208.3      50.3      81.2       4.0       2.4    993.50
      0.13      1.22      1.04      1.02     0.030     0.045     0.030     0.000    991.40      0.00
  0.000157      170.      170.      170.         2         0         0      0.00    135.75    135.75

*SECNO 1225.000
3280 CROSS SECTION   1225.00 EXTENDED      0.50 FEET
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.52

1225.000	4.21	996.54	0.00	0.00	996.59	0.05	0.03	0.01	994.13
390.0	255.2	67.1	67.7	136.9	39.3	44.0	4.8	2.8	994.43
0.15	1.86	1.71	1.54	0.030	0.045	0.030	0.000	992.33	0.00
0.000589	125.	125.	125.	0	0	0	0.00	125.58	125.58

*SECNO 1350.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.42

CROSS SECTION C MOVED U/S

1350.000	3.38	996.63	0.00	0.00	996.79	0.16	0.15	0.06	995.05
390.0	245.2	97.4	47.3	73.5	29.4	18.6	5.3	3.1	995.35
0.16	3.34	3.31	2.55	0.030	0.045	0.030	0.000	993.25	6.49
0.003271	125.	125.	125.	2	0	0	0.00	108.52	115.01

*SECNO 1411.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.89

1411.000	3.16	996.86	0.00	0.00	996.92	0.06	0.10	0.03	994.80
390.0	247.9	63.5	78.6	125.6	33.0	42.7	5.5	3.3	994.80
0.17	1.97	1.92	1.84	0.030	0.040	0.030	0.000	993.70	174.70
0.000914	61.	61.	61.	2	0	0	0.00	148.16	322.86

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	4.25	3.00	0.00	12.00	0.00	28.86	0.00	993.70	993.70

*SECNO 1499.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.80

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1008.91	996.92	0.00	264.	127.	29.	36.	996.70	997.20	194.

U/S FACE OF PINE ST-NINETH ST. BRIDGE

1499.000	4.41	998.11	0.00	0.00	998.13	0.01	1.21	0.00	994.80
390.0	255.8	43.3	90.9	281.3	48.7	97.6	6.2	3.6	994.80
0.20	0.91	0.89	0.93	0.030	0.040	0.030	0.000	993.70	126.77
0.000116	88.	88.	88.	1	0	7	0.00	210.13	336.91

*SECNO 1550.000
3280 CROSS SECTION 1550.00 EXTENDED 0.16 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.15

CROSS SECTION C MOVED U/S

1550.000	3.86	998.06	0.00	0.00	998.22	0.17	0.02	0.08	996.00
390.0	181.6	165.5	42.8	109.8	35.2	32.3	6.5	3.8	996.30
0.20	1.65	4.71	1.33	0.090	0.045	0.090	0.000	994.20	0.00
0.005201	51.	51.	51.	2	0	0	0.00	121.73	121.73

CCHV= 0.300 CEHV= 0.500
*SECNO 1700.000

CROSS SECTION C MOVED U/S

1700.000	3.50	999.05	0.00	0.00	999.35	0.30	1.06	0.07	997.35
390.0	169.1	186.5	34.5	82.4	30.9	21.8	7.1	4.2	997.65
0.21	2.05	6.04	1.58	0.090	0.045	0.090	0.000	995.55	4.02
0.010170	150.	150.	150.	3	0	0	0.00	112.89	116.91

*SECNO 1883.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.55

3470 ENCROACHMENT STATIONS= 6.0 50.0 TYPE= 1 TARGET= 44.000

1883.000	4.66	1000.26	0.00	0.00	1000.51	0.25	1.15	0.01	998.50
390.0	11.8	292.0	86.2	11.1	64.6	40.2	7.6	4.6	995.60
0.23	1.06	4.52	2.14	0.090	0.045	0.090	0.000	995.60	6.00
0.004238	183.	183.	183.	2	0	0	0.00	44.00	50.00

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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

CCHV=    0.500 CEHV=    1.000

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      1.81      3.00      0.00     21.00      0.00     61.85      0.00    995.60    995.60

*SECNO 1889.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS=   1001.376  EGLWC=   1000.512  ELLC=   1000.100  PCWSE=   1000.258  ELTRD=    999.700

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.41

3370 NORMAL BRIDGE, NRD=  13 MIN ELTRD=   999.70 MAX ELLC=  1000.10

3470 ENCROACHMENT STATIONS=        7.0      48.0  TYPE=      1  TARGET=       41.000
                U/S FACE OF FOOT BRIDGE
  1889.000      4.71   1000.31      0.00      0.00   1000.96      0.65      0.05      0.40    998.50
     390.0       0.0     389.9       0.1       0.0      60.2       0.2       7.6       4.6    995.60
      0.23      0.00      6.48      0.35     0.000     0.045     0.090     0.000    995.60      7.00
  0.025029        6.        6.        6.         2         0         0    -52.88     41.00     48.00

CCHV=    0.500 CEHV=    1.000
*SECNO 1910.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.42

3470 ENCROACHMENT STATIONS=       68.0     100.0  TYPE=      1  TARGET=       32.000
                CROSS SECTION C MOVED U/S
  1910.000      5.51   1001.11      0.00      0.00   1001.30      0.19      0.11      0.23    997.40
     390.0      73.6     224.7      91.8      37.1      55.1      32.7       7.7       4.6    997.70
      0.23      1.98      4.08      2.81     0.075     0.045     0.045     0.000    995.60     68.00
  0.002144       21.       21.       21.         2         0         0      0.00     32.00    100.00

*SECNO 1931.000

3470 ENCROACHMENT STATIONS=      250.0     272.0  TYPE=      1  TARGET=       22.000
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
1931.000	6.56	1001.16	0.00	0.00	1001.43	0.27	0.05	0.08	996.50
390.0	0.0	352.0	38.0	0.0	81.4	14.4	7.7	4.6	994.60
0.23	0.00	4.32	2.63	0.000	0.045	0.045	0.000	994.60	250.00
0.002847	21.	21.	21.	2	0	0	0.00	20.50	270.50

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED

SB XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
0.00	1.89	3.00	0.00	14.00	0.00	69.40	0.00	994.60	994.60

*SECNO 1967.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.79

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1002.09	1001.45	0.00	0.	390.	69.	83.	1000.50	1005.10	0.

3470 ENCROACHMENT STATIONS= 250.0 272.0 TYPE= 1 TARGET= 22.000

U/S FACE OF RR

1967.000	7.27	1001.87	0.00	0.00	1002.09	0.22	0.65	0.00	996.50
390.0	0.0	358.6	31.4	0.0	92.8	17.7	7.8	4.6	994.60
0.23	0.00	3.86	1.77	0.000	0.030	0.040	0.000	994.60	250.00
0.000886	36.	36.	36.	2	0	0	0.00	20.97	270.97

*SECNO 2020.000

3280 CROSS SECTION 2020.00 EXTENDED 11.70 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.18

3470 ENCROACHMENT STATIONS= 196.0 324.0 TYPE= 1 TARGET= 128.000

CROSS SECTION D MOVED D/S

2020.000	6.10	1002.20	0.00	0.00	1002.20	0.01	0.01	0.10	997.60
390.0	133.4	96.5	160.1	187.9	104.8	257.9	8.2	4.7	997.90
0.25	0.71	0.92	0.62	0.045	0.045	0.060	0.000	996.10	196.00
0.000088	53.	53.	53.	2	0	0	0.00	128.00	324.00

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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

CCHV=    0.300 CEHV=    0.500
*SECNO 2090.000
3280 CROSS SECTION   2090.00 EXTENDED     11.30 FEET

                CROSS SECTION D MOVED D/S
  2090.000      5.70   1002.20      0.00      0.00   1002.21      0.01      0.01      0.00    998.00
     390.0    132.8      90.7     166.5     200.8      96.9     263.1       9.1       4.9    998.30
      0.28     0.66      0.94      0.63     0.045     0.045     0.060     0.000    996.50    167.13
  0.000100      70.       70.       70.         2         0         0      0.00    162.87    330.00

*SECNO 2160.000
3280 CROSS SECTION   2160.00 EXTENDED     10.91 FEET

                CROSS SECTION D MOVED D/S
  2160.000      5.31   1002.21      0.00      0.00   1002.22      0.01      0.01      0.00    998.40
     390.0    124.0      94.5     171.5     168.7      89.0     239.5       9.9       5.2    998.70
      0.30     0 73      1.06      0.72     0.045     0.045     0.060     0.000    996.90    169.94
  0.000144      70.       70.       70.         0         0         0      0.00    160.06    330.00

*SECNO 2210.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.58

3470 ENCROACHMENT STATIONS=        42.0      425.0  TYPE=       1  TARGET=       383.000
  2210.000      5.11   1002.21      0.00      0.00   1002.24      0.03      0.01      0.01    997.30
     390.0    219.9     102.6      67.5     253.3      50.7      53.1      10.4       5.4    997.10
      0.32     0.87      2.02      1.27     0.045     0.045     0.060     0.000    997.10     42.00
  0.000430      50.       50.       50.         0         0         0      0.00    232.58    274.58

*SECNO 2211.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.68

3370 NORMAL BRIDGE, NRD=  16 MIN ELTRD=  1000.90 MAX ELLC=  1000.60

3470 ENCROACHMENT STATIONS=        42.0      425.0  TYPE=       1  TARGET=       383.000
  2211.000      5.11   1002.21      0.00      0.00   1002.25      0.04      0.00      0.01    997.30
     390.0    289.2      46.1      54.6     194.0      32.1      26.6      10.4       5.4    997.10
      0.32     1.49      1.44      2.05     0.030     0.030     0.030     0.000    997.10     42.00
  0.000935       1.        1.        1.         0         0         0   -103.80    232.58    274.58
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 SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
 Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
 TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        EL.MIN     SSTA
 SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 2268.000

3370 NORMAL BRIDGE, NRD=  16 MIN ELTRD=  1000.90 MAX ELLC=  1000.60

3470 ENCROACHMENT STATIONS=        71.0      425.0  TYPE=       1  TARGET=       354.000
                U/S FACE OAK ST.
  2268.000      5.16    1002.26      0.00       0.00    1002.30       0.04       0.05       0.00     997.30
     390.0     289.4       48.0      52.6      180.7       32.5       26.6       10.8        5.7     997.10
      0.33      1.60       1.47      1.97      0.030      0.030      0.030      0.000     997.10      71.00
  0.000970       57.        57.       57.          1          0          0    -104.33     203.64     274.64

*SECNO 2269.000

3470 ENCROACHMENT STATIONS=        71.0      425.0  TYPE=       1  TARGET=       354.000
  2269.000      5.16    1002.26      0.00       0.00    1002.31       0.05       0.00       0.00     997.30
     390.0     179.6      135.8      74.6      240.8       51.2       53.8       10.8        5.7     997.10
      0.33      0.75       2.65      1.39      0.080      0.050      0.080      0.000     997.10      71.00
  0.000903        1.         1.        1.          0          0          0       0.00     203.65     274.65

*SECNO 2320.000
3280 CROSS SECTION   2320.00 EXTENDED      3.63 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.51

                CROSS SECTION D MOVED D/S
  2320.000      4.93    1002.33      0.00       0.00    1002.34       0.02       0.03       0.01     998.90
     390.0      88.1      121.2     180.7      139.2       81.4      216.6       11.2        5.9     999.20
      0.34      0.63       1.49      0.83      0.080      0.050      0.080      0.000     997.40     175.33
  0.000395       51.        51.       51.          2          0          0       0.00     154.67     330.00

*SECNO 2450.000
3280 CROSS SECTION   2450.00 EXTENDED      3.00 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.62

3470 ENCROACHMENT STATIONS=       204.0      316.0  TYPE=       1  TARGET=       112.000
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                CROSS SECTION D MOVED D/S
  2450.000      4.29   1002.39      0.00      0.00   1002.43      0.04      0.08      0.01    999.60
     390.0      79.5     148.4     162.2      85.1      68.9     137.1      12.3       6.3    999.90
      0.36      0.93      2.15      1.18     0.080     0.050     0.080     0.000    998.10    204.00
  0.001031      130.      130.      130.         1         0         0      0.00    112.00    316.00

CCHV=    0.500 CEHV=    1.000
*SECNO 2550.000
3280 CROSS SECTION   2550.00 EXTENDED      1.87 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.54

3470 ENCROACHMENT STATIONS=      229.0     291.0  TYPE=      1  TARGET=      62.000
  2550.000      3.87   1002.57      0.00      0.00   1002.70      0.14      0.17      0.10   1000.20
     390.0      68.8     217.5     103.7      40.9      60.2      52.9      12.8       6.5   1000.50
      0.37      1.68      3.61      1.96     0.080     0.050     0.080     0.000    998.70    229.00
  0.003476      100.      100.      100.         2         0         0      0.00     62.00    291.00

*SECNO 2610.000

3470 ENCROACHMENT STATIONS=      226.0     258.0  TYPE=      1  TARGET=      32.000
                CROSS SECTION OF ABANDON STRUCTURE, MODIFIED
  2610.000      3.85   1002.85      0.00      0.00   1003.23      0.39      0.28      0.25   1001.00
     390.0      19.0     352.5      18.4      10.4      67.4      10.1      13.0       6.6   1001.00
      0.38      1.84      5.23      1.82     0.080     0.050     0.080     0.000    999.00    226.00
  0.006479       60.       60.       60.         2         0         0      0.00     32.00    258.00

*SECNO 2630.000

3470 ENCROACHMENT STATIONS=      231.0     253.0  TYPE=      1  TARGET=      22.000
  2630.000      3.98   1002.98      0.00      0.00   1003.44      0.46      0.13      0.08   1001.00
     390.0       2.3     385.4       2.3       2.0      70.1       2.0      13.0       6.6   1001.00
      0.38      1.17      5.50      1.17     0.080     0.050     0.080     0.000    999.00    231.00
  0.006809       20.       20.       20.         2         0         0      0.00     22.00    253.00

*SECNO 2650.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.59

3470 ENCROACHMENT STATIONS=      217.0     270.0  TYPE=      1  TARGET=      53.000
  2650.000      4.19   1003.19      0.00      0.00   1004.12      0.92      0.22      0.46   1005.30
     390.0       0.0     390.0       0.0       0.0      50.5       0.0      13.1       6.6   1005.50
      0.38      0.00      7.72      0.00     0.000     0.050     0.000     0.000    999.00    237.43
  0.019878       20.       20.       20.         2         0         0      0.00     12.63    250.06
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 SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
 Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
 TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
 SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 2670.000
3280 CROSS SECTION   2670.00 EXTENDED      0.39 FEET

3470 ENCROACHMENT STATIONS=      217.0     270.0  TYPE=      1  TARGET=       53.000
                U/S FACE OF ABANDON STRUCTURE
  2670.000      4.89   1003.89      0.00       0.00   1004.56      0.67       0.31       0.13   1005.30
     390.0       0.0     390.0       0.0        0.0      59.3       0.0       13.1        6.6   1005.50
      0.38      0.00      6.58      0.00      0.000     0.050     0.000      0.000     999.00    237.42
  0.012747       20.       20.       20.          3         0         0       0.00      12.65    250.07

*SECNO 2675.000
3280 CROSS SECTION   2675.00 EXTENDED      1.12 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.70

3470 ENCROACHMENT STATIONS=      230.0     254.0  TYPE=      1  TARGET=       24.000
  2675.000      5.62   1004.62      0.00       0.00   1004.82      0.20       0.02       0.24   1001.00
     390.0       6.6     376.8       6.6        7.2     104.6       7.1       13.1        6.6   1001.00
      0.38      0.92      3.60      0.92      0.080     0.050     0.080      0.000     999.00    230.00
  0.001744        5.        5.        5.          3         0         0       0.00      24.00    254.00

*SECNO 2690.000
3280 CROSS SECTION   2690.00 EXTENDED      1.33 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.51

3470 ENCROACHMENT STATIONS=      215.0     269.0  TYPE=      1  TARGET=       54.000
                CROSS SECTION OF ABANDON STRUCTURE, MODIFIED
  2690.000      5.83   1004.83      0.00       0.00   1004.90      0.07       0.02       0.06   1001.00
     390.0      63.0     267.0      60.1       59.5     108.7      57.5       13.1        6.6   1001.00
      0.38      1.06      2.46      1.04      0.080     0.050     0.080      0.000     999.00    215.00
  0.000770       15.       15.       15.          2         0         0       0.00      54.00    269.00

*SECNO 2740.000
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

3280 CROSS SECTION   2740.00 EXTENDED      6.53 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.20

 2740.000      7.83   1004.93      0.00      0.00   1004.94      0.00      0.01      0.03    998.60
    390.0    134.7      99.0     156.4     405.3     139.5     390.9      13.8       6.8    998.90
     0.41     0.33      0.71      0.40     0.080     0.050     0.080     0.000    997.10    136.40
 0.000044      50.       50.       50.         2         0         0      0.00    193.60    330.00

CCHV=    0.300 CEHV=    0.500
*SECNO 3100.000
3280 CROSS SECTION   3100.00 EXTENDED      3.46 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.26

3470 ENCROACHMENT STATIONS=      205.0     315.0  TYPE=      1  TARGET=      110.000
 3100.000      4.76   1004.96      0.00      0.00   1004.99      0.03      0.04      0.01   1001.70
    390.0     88.2     144.1     157.7     104.7      78.0     154.7      19.1       8.0   1002.00
     0.49     0.84      1.85      1.02     0.080     0.050     0.080     0.000   1000.20    205.00
 0.000643      360.      360.      360.         2         0         0      0.00    110.00    315.00

CCHV=    0.500 CEHV=    1.000
*SECNO 3200.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.46

3470 ENCROACHMENT STATIONS=      229.0     291.0  TYPE=      1  TARGET=       62.000
                CROSS SECTION D MOVED D/S
 3200.000      3.98   1005.08      0.00      0.00   1005.20      0.12      0.12      0.10   1002.60
    390.0     70.4     215.6     104.0      43.3      62.4      55.3      19.6       8.2   1002.90
     0.50     1.63      3.45      1.88     0.080     0.050     0.080     0.000   1001.10    229.00
 0.003023      100.      100.      100.         2         0         0      0.00     62.00    291.00

CCHV=    0.500 CEHV=    1.000
*SECNO 3281.000
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3470 ENCROACHMENT STATIONS=      250.0     273.1  TYPE=      1  TARGET=      23.100
  3281.000      4.02   1005.42      0.00      0.00   1005.74      0.33      0.34      0.20   1001.80
     390.0       0.0     390.0       0.0       0.0      85.2       0.0      19.9       8.3 100000.00
      0.51      0.00      4.58      0.00     0.000     0.050     0.000     0.000   1001.40    250.00
  0.006051       81.       81.       81.         2         0         0      0.00     23.10    273.10


SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      1.90      3.00      0.00     13.00      0.00     73.40      0.00   1001.40   1001.40

*SECNO 3322.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.98

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS     EGLWC     H3        QWEIR     QPR       BAREA     TRAPEZOID     ELLC      ELTRD     WEIRLN
                                                                AREA
  1006.25   1005.74     0.00       30.      360.       73.       49.    1005.20   1005.90      172.


3470 ENCROACHMENT STATIONS=      250.0     273.1  TYPE=      1  TARGET=      23.100
                U/S FACE US-10, 7TH ST. BRIDGE
  3322.000      4.47   1005.87      0.00      0.00   1006.13      0.26      0.39      0.00   1001.80
     390.0       0.0     390.0       0.0       0.0      95.7       0.0      20.0       8.3 100000.00
      0.51      0.00      4.08      0.00     0.000     0.030     0.000     0.000   1001.40    250.00
  0.001538       41.       41.       41.         2         0         4      0.00     23.10    273.10


CCHV=    0.500 CEHV=    1.000
*SECNO 3355.000
3280 CROSS SECTION   3355.00 EXTENDED      4.92 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.52

3470 ENCROACHMENT STATIONS=      216.0     305.0  TYPE=      1  TARGET=      89.000
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  SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
  Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
  TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
  SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

3355.000      4.72    1006.22       0.00       0.00    1006.27       0.04       0.03       0.11    1003.00
   390.0      75.6      235.2       79.2       85.9      115.7       80.3       20.1        8.4    1003.20
    0.51      0.88       2.03       0.99      0.080      0.045      0.080      0.000    1001.50     216.00
0.000669       33.        33.        33.          2          0          0       0.00      89.00     305.00

*SECNO 3385.000
3280 CROSS SECTION   3385.00 EXTENDED      4.96 FEET

3470 ENCROACHMENT STATIONS=      191.0      330.0  TYPE=      1  TARGET=      139.000
                CROSS SECTION D MOVED D/S
3385.000      4.77    1006.27       0.00       0.00    1006.29       0.02       0.01       0.01    1003.00
   390.0      75.0      182.0      133.0      120.8      117.0      167.8       20.3        8.4    1003.20
    0.52      0.62       1.56       0.79      0.080      0.045      0.080      0.000    1001.50     191.00
0.000386       30.        30.        30.          1          0          0       0.00     139.00     330.00

CCHV=    0.300 CEHV=    0.500
*SECNO 3700.000
3280 CROSS SECTION   3700.00 EXTENDED      2.88 FEET

3700.000      4.17    1006.42       0.00       0.00    1006.45       0.03       0.15       0.00    1003.75
   390.0      67.1      177.8      145.1       87.2       98.9      139.2       23.0        9.5    1003.95
    0.59      0.77       1.80       1.04      0.070      0.045      0.070      0.000    1002.25     186.03
0.000647      315.       315.       315.          1          0          0       0.00     143.97     330.00

*SECNO 4000.000
3280 CROSS SECTION   4000.00 EXTENDED      2.38 FEET

                CROSS SECTION D
4000.000      3.68    1006.68       0.00       0.00    1006.73       0.05       0.26       0.01    1004.50
   390.0      53.7      187.8      148.4       57.2       83.3      114.6       25.0       10.4    1004.70
    0.64      0.94       2.26       1.30      0.070      0.045      0.070      0.000    1003.00     196.42
0.001278      300.       300.       300.          2          0          0       0.00     133.58     330.00

*SECNO 4280.000
3280 CROSS SECTION   4280.00 EXTENDED      2.61 FEET

3470 ENCROACHMENT STATIONS=      200.0      321.0  TYPE=      1  TARGET=      121.000
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                CROSS SECTION D MOVED U/S
  4280.000      3.91   1007.01      0.00      0.00   1007.05      0.05      0.33      0.00   1004.60
     390.0      64.4     197.6     127.9      68.5      90.4     102.4      26.6      11.2   1004.80
      0.68      0.94      2.19      1.25     0.070     0.045     0.070     0.000   1003.10    200.00
  0.001076      280.      280.      280.         2         0         0      0.00    121.00    321.00

CCHV=    0.500 CEHV=    1.000
*SECNO 4320.000

3265 DIVIDED FLOW

3280 CROSS SECTION   4320.00 EXTENDED      1.37 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.59

3470 ENCROACHMENT STATIONS=      204.0     317.0  TYPE=      1  TARGET=      113.000
  4320.000      3.97   1007.07      0.00      0.00   1007.14      0.06      0.07      0.02   1004.60
     390.0     115.0      74.6     200.4      69.9      33.3      94.4      26.9      11.3   1004.80
      0.69      1.64      2.24      2.12     0.070     0.045     0.070     0.000   1003.10    204.00
  0.003040       40.       40.       40.         2         0         0      0.00     93.24    317.00

*SECNO 4331.000

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.41

3470 ENCROACHMENT STATIONS=       90.0     240.0  TYPE=      1  TARGET=      150.000
                STRUCTURE AT D/S END OF PARK
  4331.000      3.94   1007.14   1007.05      0.00   1007.76      0.62      0.07      0.55   1003.30
     390.0      36.6     314.3      39.1      15.3      45.3      22.7      26.9      11.4   1009.60
      0.69      2.40      6.94      1.72     0.070     0.045     0.070     0.000   1003.20     92.16
  0.018023       11.       11.       11.         4         8         0      0.00     74.72    200.15

*SECNO 4342.000

3265 DIVIDED FLOW
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.87

3470 ENCROACHMENT STATIONS= 80.0 210.0 TYPE= 1 TARGET= 130.000

4342.000	4.73	1007.93	0.00	0.00	1008.09	0.15	0.10	0.23	1003.30
390.0	59.4	214.7	115.9	35.4	54.5	73.4	26.9	11.4	1009.60
0.69	1.68	3.94	1.58	0.070	0.045	0.070	0.000	1003.20	80.00
0.005162	11.	11.	11.	9	0	0	0.00	107.55	210.00

CCHV= 0.500 CEHV= 1.000
*SECNO 4390.000

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 7.04

3470 ENCROACHMENT STATIONS= 80.0 215.0 TYPE= 1 TARGET= 135.000
POND U/S OF STRUCTURE

4390.000	5.15	1008.15	0.00	0.00	1008.17	0.02	0.02	0.07	1007.20
390.0	14.7	375.1	0.2	29.9	329.4	1.8	27.2	11.5	1004.20
0.70	0.49	1.14	0.09	0.030	0.035	0.030	0.000	1003.00	80.00
0.000104	48.	48.	48.	2	0	0	0.00	127.00	215.00

*SECNO 4435.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.20

4435.000	5.26	1008.16	0.00	0.00	1008.46	0.30	0.01	0.28	1007.50
390.0	82.6	301.4	6.0	41.4	61.7	7.2	27.5	11.6	1003.90
0.70	2.00	4.89	0.84	0.030	0.035	0.030	0.000	1002.90	50.57
0.002476	45.	45.	45.	2	0	0	0.00	107.61	158.19

CCHV= 0.500 CEHV= 1.000
*SECNO 4475.000

3265 DIVIDED FLOW

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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.67


3470 ENCROACHMENT STATIONS=       75.0     175.0  TYPE=      1  TARGET=      100.000
                STRUCTURE IN PARK
  4475.000      4.90   1008.30   1007.63      0.00   1008.93      0.63      0.14      0.33   1008.30
     390.0      50.8     336.0       3.2      17.6      49.8       3.2      27.5      11.7   1004.10
      0.71      2.89      6.74      1.00     0.030     0.035     0.030     0.000   1003.40     75.00
  0.005458       40.       40.       40.         4        11         0      0.00     65.95    161.02


CCHV=    0.500 CEHV=    1.000
*SECNO 4485.000
3280 CROSS SECTION   4485.00 EXTENDED      0.09 FEET


3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.74


3470 ENCROACHMENT STATIONS=      100.0     185.0  TYPE=      1  TARGET=       85.000
  4485.000      5.48   1009.18      0.00      0.00   1009.22      0.04      0.01      0.29   1005.60
     390.0       0.0     309.1      80.9       0.0     173.0      64.7      27.6      11.7   1005.60
      0.71      0.00      1.79      1.25     0.000     0.035     0.030     0.000   1003.70    100.00
  0.000242       10.       10.       10.         2         0         0      0.00     85.00    185.00


*SECNO 4500.000

3470 ENCROACHMENT STATIONS=      100.0     177.0  TYPE=      1  TARGET=       77.000
                POND U/S OF STRUCTURE
  4500.000      5.18   1009.18      0.00      0.00   1009.24      0.06      0.00      0.01   1005.90
     390.0       0.0     320.2      69.8       0.0     162.4      46.9      27.6      11.8   1005.90
      0.71      0.00      1.97      1.49     0.000     0.035     0.030     0.000   1004.00    100.00
  0.000318       15.       15.       15.         2         0         0      0.00     77.00    177.00


*SECNO 4560.000

3470 ENCROACHMENT STATIONS=      102.0     149.0  TYPE=      1  TARGET=       47.000
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                POND U/S OF STRUCTURE
  4560.000      4.60   1009.20      0.00      0.00   1009.27      0.06      0.02      0.01   1006.10
     390.0       0.0     390.0       0.0       0.0     192.7       0.0      27.9      11.8 100000.00
      0.72      0.00      2.02      0.00     0.000     0.035     0.000     0.000   1004.60    102.00
  0.000410       60.       60.       60.         0         0         0      0.00     47.00    149.00

*SECNO 4611.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.63

3470 ENCROACHMENT STATIONS=      250.0     850.0  TYPE=       1  TARGET=      600.000
  4611.000      4.34   1009.24      0.00      0.00   1009.37      0.13      0.03      0.07 100000.00
     390.0       0.0     320.4      69.6       0.0     103.1      34.7      28.1      11.9   1005.90
      0.72      0.00      3.11      2.01     0.000     0.035     0.030     0.000   1004.90    250.00
  0.001038       51.       51.       51.         1         0         0      0.00    102.75    425.85


SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      2.30      3.00      0.00     12.00      0.00     52.20      0.00   1004.90   1004.90

*SECNO 4668.000

3265 DIVIDED FLOW

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape

 EGPRS      EGLWC      H3       QWEIR      QPR       BAREA    TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                              AREA
  1011.23   1009.37    0.00      184.      209.       52.       50.      1009.10   1009.10      201.


                U/S FACE OF 5TH ST.
  4668.000      4.86   1009.76      0.00      0.00   1009.81      0.05      0.44      0.00   1005.90
     390.0      40.4     286.6      63.0      49.1     137.9     119.7      28.4      12.2   1005.90
      0.73      0.82      2.08      0.53     0.070     0.045     0.060     0.000   1004.90    217.26
  0.000544       57.       57.       57.         2         0         4      0.00    275.14    513.24

*SECNO 4720.000
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 G         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3265 DIVIDED FLOW

3280 CROSS SECTION   4720.00 EXTENDED      4.00 FEET

                CROSS SECTION D MOVED U/S
  4720.000      4.80   1009.80      0.00      0.00   1009.85      0.05      0.04      0.00   1009.10
     390.0      0.9     206.5     182.7       2.3      91.6     137.6      28.7      12.4   1008.00
      0.74      0.38     2.25      1.33     0.070     0.045     0.060     0.000   1005.00    244.30
  0.000971      52.      52.       52.         0         0         0      0.00     97.54    343.00

*SECNO 5050.000

3265 DIVIDED FLOW

3280 CROSS SECTION   5050.00 EXTENDED      3.60 FEET

                CROSS SECTION E
  5050.000      4.40   1010.20      0.00      0.00   1010.28      0.08      0.40      0.02   1009.90
     390.0      0.1     213.8     176.1       0.4      80.8     112.5      30.3      13.1   1008.80
      0.78      0.24     2.65      1.57     0.070     0.045     0.060     0.000   1005.80    247.01
  0.001584      330.     330.      330.         2         0         0      0.00     90.18    343.00

CCHV=    0.300 CEHV=    0.500
*SECNO 5800.000
3280 CROSS SECTION   5800.00 EXTENDED      1.63 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.30

                CROSS SECTION F
  5800.000      3.93   1010.73      0.00      0.00   1010.73      0.01      0.44      0.02   1008.00
     390.0    185.5      63.7     140.8     369.4      54.2     283.7      38.1      18.2   1008.80
      1.12      0.50     1.18      0.50     0.070     0.045     0.060     0.000   1006.80      0.00
  0.000299      750.     750.      750.         3         0         0      0.00    500.00    500.00

*SECNO 6500.000

3265 DIVIDED FLOW
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.21

CROSS SECTION G

6500.000	2.54	1011.24	0.00	0.00	1011.36	0.13	0.57	0.06	1009.50
390.0	57.0	153.7	179.4	30.4	43.3	74.3	45.0	23.3	1010.90
1.19	1.87	3.55	2.41	0.070	0.045	0.060	0.000	1008.70	164.67
0.006804	700.	700.	700.	2	0	0	0.00	135.56	311.98

*SECNO 6630.000

CROSS SECTION G MOVED U/S, TO U/S CORPORATE LIMIT

6630.000	2.82	1011.92	0.00	0.00	1012.00	0.08	0.62	0.01	1009.90
390.0	60.0	147.3	182.7	39.2	51.4	98.1	45.5	23.7	1011.30
1.21	1.53	2.86	1.86	0.070	0.045	0.060	0.000	1009.10	162.35
0.003531	130.	130.	130.	2	0	0	0.00	155.45	317.80

00BREAK00

1) COUNTY: OSCEOLA

2) STUDY NAME: CITY OF EVART

3) WATERCOURSE: TWIN CREEK

4) DOCUMENT TYPE: 500 YR ENCROACHED SUMMARY

00BREAK00

```
T1      CITY OF EVART, MI, FIS
T2      TWIN CREEK
T3      500-YEAR DISCHARGE

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                                                                   986.24

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     15                  -1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2


CCHV=    0.300 CEHV=    0.500
*SECNO 0.000
 2800 NAT Q1=      24.79  WSEL=     986.14  ENC Q1=      26.97  WSEL=     986.24  RATIO=  -0.0876
 NAT Q1=      27.  RATIOS LOB, CH, ROB=   0.0026  0.9974  0.0000  WSEL=     986.24

3470 ENCROACHMENT STATIONS=       80.0     112.0  TYPE=      4  TARGET=        0.003
                CROSS SECTION A MOVED D/S TO CONFLUENCE WITH THE MUSKEGON R.
     0.000      3.14    986.24      0.00    986.14    986.99      0.75      0.00      0.00    986.00
     390.0       0.0     390.0       0.0       0.0      56.0       0.0       0.0       0.0    986.40
      0.00      0.00      6.96      0.00     0.000     0.045     0.000     0.000    983.10     80.00
  0.021127        0.        0.        0.         0         0         0      0.00     31.24    111.24


*SECNO 10.000
 2800 NAT Q1=      42.29  WSEL=     986.85  ENC Q1=      43.50  WSEL=     986.95  RATIO=  -0.0286
 NAT Q1=      46.  RATIOS LOB, CH, ROB=   0.0533  0.9428  0.0039  WSEL=     986.95

3470 ENCROACHMENT STATIONS=       80.0     112.0  TYPE=      4  TARGET=        0.057
    10.000      3.49    986.69      0.00    986.85    987.22      0.52      0.16      0.07    986.10
     390.0       0.0     390.0       0.0       0.0      67.1       0.0       0.0       0.0    986.50
      0.00      0.00      5.81      0.00     0.000     0.045     0.000     0.000    983.20     80.00
  0.012199       10.       10.       10.         4         0         0      0.00     32.00    112.00


*SECNO 120.000

3470 ENCROACHMENT STATIONS=       70.0     112.0  TYPE=      1  TARGET=       42.000
                CROSS SECTION A
   120.000      3.74    987.94      0.00    987.81    988.31      0.37      1.04      0.05    987.10
     390.0      17.3     372.7       0.0       5.9      75.0       0.0       0.2       0.1 100000.00
      0.01      2.95      4.97      0.00     0.030     0.045     0.000     0.000    984.20     70.00
  0.007592      110.      110.      110.         3         0         0      0.00     42.00    112.00


*SECNO 500.000

3470 ENCROACHMENT STATIONS=      250.0     340.0  TYPE=      1  TARGET=       90.000
                CROSS SECTION B
   500.000      2.78    990.48      0.00    990.39    990.68      0.21      2.33      0.05    990.00
     390.0       0.0     191.9     198.1       0.0      48.7      58.5       1.0       0.7    988.30
      0.04      0.00      3.94      3.38     0.000     0.045     0.030     0.000    987.70    250.00
  0.005048      380.      380.      380.         4         0         0      0.00     90.00    340.00
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 545.000

3470 ENCROACHMENT STATIONS=      250.0     340.0  TYPE=      1  TARGET=      90.000
  545.000     2.55    990.72      0.00    990.59    991.04      0.33      0.30      0.06    990.47
    390.0      0.0     221.1     168.9       0.0      44.1      42.6       1.1       0.8    988.77
     0.04     0.00      5.02      3.96     0.000     0.045     0.030     0.000    988.17    250.00
 0.009187      45.       45.       45.         2         0         0      0.00     90.00    340.00

CCHV=    0.500 CEHV=    1.000
*SECNO 630.000

3470 ENCROACHMENT STATIONS=      250.0     325.0  TYPE=      1  TARGET=      75.000
                CROSS SECTION B MOVED U/S
  630.000     2.62    991.69      0.00    991.62    992.20      0.51      0.97      0.19    991.37
    390.0      0.0     294.8      95.2       0.0      45.6      40.2       1.3       0.9    989.67
     0.04     0.00      6.47      2.37     0.000     0.045     0.070     0.000    989.07    250.00
 0.014701      85.       85.       85.         2         0         0      0.00     75.00    325.00

*SECNO 700.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.61

3470 ENCROACHMENT STATIONS=       61.0     111.0  TYPE=      1  TARGET=      50.000
                ABANDON STRUCTURE
  700.000     3.28    992.68      0.00    992.68    992.93      0.26      0.60      0.13    990.30
    390.0      0.0     390.0       0.0       0.0      95.8       0.0       1.4       1.0 100000.00
     0.05     0.00      4.07      0.00     0.000     0.045     0.000     0.000    989.40     61.00
 0.005660      70.       70.       70.         2         0         0      0.00     37.98    111.00

*SECNO 735.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.57

3470 ENCROACHMENT STATIONS=      250.0     285.0  TYPE=      1  TARGET=      35.000
                CROSS SECTION B MOVED U/S
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
735.000	2.60	993.00	0.00	992.97	993.67	0.67	0.32	0.41	992.70
390.0	0.0	318.9	71.1	0.0	45.2	20.9	1.5	1.1	991.00
0.05	0.00	7.06	3.41	0.000	0.045	0.070	0.000	990.40	250.00
0.017682	35.	35.	35.	2	0	0	0.00	35.00	285.00

*SECNO 801.000

3470 ENCROACHMENT STATIONS= 250.0 264.0 TYPE= 1 TARGET= 14.000

801.000	3.67	994.17	0.00	994.16	995.12	0.95	1.17	0.28	990.70
390.0	0.0	390.0	0.0	0.0	49.9	0.0	1.6	1.1	100000.00
0.05	0.00	7.82	0.00	0.000	0.045	0.000	0.000	990.50	250.00
0.017640	66.	66.	66.	2	0	0	0.00	14.00	264.00

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	4.25	2.80	0.00	6.70	0.00	21.30	0.00	990.50	990.50

*SECNO 882.000
BTCARD BRIDGE STENCL= 200.00 STENCR= 350.00
3280 CROSS SECTION 882.00 EXTENDED 0.14 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 16.35

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1016.29	994.29	0.00	262.	128.	21.	24.	994.10	995.70	150.

3470 ENCROACHMENT STATIONS= 200.0 350.0 TYPE= 1 TARGET= 150.000

882.000	6.03	996.53	0.00	996.46	996.55	0.02	1.43	0.00	990.70
390.0	191.5	109.8	88.7	198.5	83.2	127.5	2.0	1.2	990.70
0.07	0.96	1.32	0.70	0.030	0.030	0.030	0.000	990.50	200.00
0.000066	81.	81.	81.	1	0	7	0.00	150.00	350.00

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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

CCHV=    0.300 CEHV=    0.500
*SECNO 897.000
 2800 NAT Q1=     239.97  WSEL=     996.45  ENC Q1=     239.97  WSEL=     996.55  RATIO=   0.0000
 NAT Q1=     259.  RATIOS LOB, CH, ROB=   0.2364  0.3776  0.3860  WSEL=     996.55
3280 CROSS SECTION    897.00 EXTENDED      0.12 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.49

3470 ENCROACHMENT STATIONS=      195.1     308.1  TYPE=      4  TARGET=        0.074
   897.000      5.92    996.52      0.00    996.45    996.57      0.06      0.00      0.02    992.00
     390.0      82.2     160.6     147.2      79.2      66.3      91.1       2.1       1.3    990.60
      0.08      1.04      2.42      1.61     0.030     0.030     0.030     0.000    990.60    195.11
  0.000275       15.       15.       15.         2         0         0      0.00    112.97    308.08

*SECNO 898.000
BTCARD  BRIDGE STENCL=     195.11   STENCR=     308.08
 2800 NAT Q1=     120.92  WSEL=     996.46  ENC Q1=     120.92  WSEL=     996.56  RATIO=   0.0000
 NAT Q1=     138.  RATIOS LOB, CH, ROB=   0.3569  0.2141  0.4290  WSEL=     996.56
3280 CROSS SECTION    898.00 EXTENDED      0.12 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.50

3370 NORMAL BRIDGE, NRD=  17 MIN ELTRD=   995.20 MAX ELLC=   994.80

3470 ENCROACHMENT STATIONS=      192.3     313.7  TYPE=      4  TARGET=        0.121
   898.000      5.92    996.52      0.00    996.46    996.57      0.06      0.00      0.00    992.00
     390.0     129.0      97.0     164.1      69.6      51.8      84.9       2.1       1.3    990.60
      0.08      1.85      1.87      1.93     0.030     0.030     0.030     0.000    990.60    192.32
  0.001122        1.        1.        1.         0         0         0    -37.13    121.40    313.72

*SECNO 903.000
 2800 NAT Q1=     122.42  WSEL=     996.46  ENC Q1=     122.42  WSEL=     996.56  RATIO=   0.0000
 NAT Q1=     139.  RATIOS LOB, CH, ROB=   0.3578  0.2130  0.4291  WSEL=     996.56
3280 CROSS SECTION    903.00 EXTENDED      0.12 FEET
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3370 NORMAL BRIDGE, NRD=  17 MIN ELTRD=   995.20 MAX ELLC=   994.80


3470 ENCROACHMENT STATIONS=      191.5     315.3  TYPE=      4  TARGET=        0.117
   903.000      5.92    996.52      0.00    996.46    996.58      0.05      0.01      0.00    992.00
     390.0     129.7      96.0     164.2      70.7      51.9      86.2       2.2       1.3    990.60
      0.08      1.84      1.85      1.91     0.030     0.030     0.030     0.000    990.60    191.55
  0.001095        5.        5.        5.         0         0         0    -37.13    123.75    315.30


*SECNO 904.000
 2800 NAT Q1=     210.86  WSEL=     996.47  ENC Q1=     210.86  WSEL=     996.57  RATIO=   0.0000
 NAT Q1=     231.  RATIOS LOB, CH, ROB=   0.2737  0.2846  0.4417  WSEL=     996.57
3280 CROSS SECTION    904.00 EXTENDED      0.13 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.74


3470 ENCROACHMENT STATIONS=      194.8     309.4  TYPE=      4  TARGET=        0.087
   904.000      5.94    996.54      0.00    996.47    996.58      0.05      0.00      0.00    992.00
     390.0      96.1     123.2     170.6      80.4      66.5      92.7       2.2       1.3    990.60
      0.08      1.20      1.85      1.84     0.030     0.045     0.030     0.000    990.60    194.77
  0.000361        1.        1.        1.         1         0         0      0.00    114.59    309.36


*SECNO 930.000
 2800 NAT Q1=     453.56  WSEL=     996.50  ENC Q1=     453.56  WSEL=     996.60  RATIO=   0.0000
 NAT Q1=     479.  RATIOS LOB, CH, ROB=   0.6430  0.1160  0.2410  WSEL=     996.60
3280 CROSS SECTION    930.00 EXTENDED      2.18 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.18


3470 ENCROACHMENT STATIONS=        6.2     122.1  TYPE=      4  TARGET=        0.052
   930.000      5.88    996.58      0.00    996.50    996.59      0.01      0.00      0.01    992.50
     390.0     254.2      48.0      87.8     253.3      59.5      97.3       2.4       1.4    992.80
      0.08      1.00      0.81      0.90     0.030     0.045     0.030     0.000    990.70      6.22
  0.000076       26.       26.       26.         2         0         0      0.00    115.87    122.09
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 1100.000
 2800 NAT Q1=     311.18  WSEL=     996.52  ENC Q1=     311.18  WSEL=     996.62  RATIO=   0.0000
 NAT Q1=     330.  RATIOS LOB, CH, ROB=   0.6523  0.1312  0.2164  WSEL=     996.62
3280 CROSS SECTION   1100.00 EXTENDED      1.50 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.69

3470 ENCROACHMENT STATIONS=        8.3     117.8  TYPE=      4  TARGET=        0.058
  1100.000      5.19    996.59      0.00    996.52    996.62      0.02      0.02      0.00    993.20
     390.0     257.6      54.5      77.8     200.5      51.3      69.0       3.8       1.8    993.50
      0.12      1.29      1.06      1.13     0.030     0.045     0.030     0.000    991.40      8.29
  0.000161      170.      170.      170.         0         0         0      0.00    109.52    117.81

*SECNO 1225.000
 2800 NAT Q1=     160.70  WSEL=     996.54  ENC Q1=     160.70  WSEL=     996.64  RATIO=   0.0000
 NAT Q1=     176.  RATIOS LOB, CH, ROB=   0.6550  0.1660  0.1790  WSEL=     996.64
3280 CROSS SECTION   1225.00 EXTENDED      0.58 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.51

3470 ENCROACHMENT STATIONS=       15.9     107.1  TYPE=      4  TARGET=        0.085
  1225.000      4.28    996.61      0.00    996.54    996.67      0.06      0.04      0.02    994.13
     390.0     261.1      71.3      57.6     128.4      40.3      32.0       4.5       2.1    994.43
      0.14      2.03      1.77      1.80     0.030     0.045     0.030     0.000    992.33     15.87
  0.000614      125.      125.      125.         2         0         0      0.00     91.19    107.05

*SECNO 1350.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.48

3470 ENCROACHMENT STATIONS=       15.0     110.0  TYPE=      1  TARGET=       95.000
  1350.000      3.46    996.71      0.00    996.63    996.86      0.15      0.14      0.04    995.05
     390.0     246.3      93.5      50.2      77.5      30.4      19.4       5.0       2.4    995.35
      0.15      3.18      3.08      2.58     0.030     0.045     0.030     0.000    993.25     15.00
  0.002700      125.      125.      125.         2         0         0      0.00     95.00    110.00
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1411.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.77

3470 ENCROACHMENT STATIONS= 203.0 313.0 TYPE= 1 TARGET= 110.000

1411.000	3.20	996.90	0.00	996.86	996.97	0.06	0.09	0.02	994.80
390.0	249.1	63.4	77.6	118.1	33.6	40.1	5.2	2.5	994.80
0.16	2.11	1.89	1.94	0.030	0.040	0.030	0.000	993.70	203.00
0.000862	61.	61.	61.	2	0	0	0.00	110.00	313.00

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	4.25	3.00	0.00	12.00	0.00	28.86	0.00	993.70	993.70

*SECNO 1499.000

BTCARD BRIDGE STENCL= 203.00 STENCR= 313.00

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.49

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1008.95	996.97	0.00	260.	130.	29.	36.	996.70	997.20	110.

3470 ENCROACHMENT STATIONS= 203.0 313.0 TYPE= 1 TARGET= 110.000

1499.000	4.52	998.22	0.00	998.11	998.24	0.02	1.27	0.00	994.80
390.0	255.7	49.3	85.0	211.6	49.9	75.1	5.8	2.7	994.80
0.18	1.21	0.99	1.13	0.030	0.040	0.030	0.000	993.70	203.00
0.000140	88.	88.	88.	2	0	6	0.00	110.00	313.00

*SECNO 1550.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.18

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 SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
 Q          GLOB       GCH        GROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
 TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
 SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


3470 ENCROACHMENT STATIONS=        10.0      110.0  TYPE=       1  TARGET=       100.000
  1550.000      3.97     998.17      0.00     998.06     998.32      0.15       0.02       0.07     996.00
     390.0     184.7      163.1      42.2      113.8       36.6      29.7        6.1        2.9     996.30
      0.19      1.62       4.46      1.42      0.090      0.045     0.090      0.000     994.20      10.00
  0.004428       51.        51.       51.          2          0         0       0.00     100.00     110.00


CCHV=    0.300 CEHV=    0.500
*SECNO 1700.000
 2800 NAT Q1=       38.67  WSEL=      999.05  ENC Q1=       38.67  WSEL=      999.15  RATIO=    0.0000
 NAT Q1=       43.  RATIOS LOB, CH, ROB=   0.4439  0.4620  0.0941  WSEL=      999.15

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.62


3470 ENCROACHMENT STATIONS=        31.6       98.0  TYPE=       4  TARGET=         0.093
  1700.000      3.52     999.07      0.00     999.05     999.45      0.38       1.01       0.11     997.35
     390.0     168.3      201.6      20.1       71.5       31.2      10.4        6.6        3.1     997.65
      0.20      2 35       6.47      1.93      0.090      0.045     0.090      0.000     995.55      31.60
  0.011517      150.       150.      150.          2          0         0       0.00      66.41      98.01


*SECNO 1883.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.75


3470 ENCROACHMENT STATIONS=         6.0       50.0  TYPE=       1  TARGET=        44.000
  1883.000      4.77    1000.37      0.00    1000.26    1000.60      0.24       1.11       0.04     998.50
     390.0      13.1      291.6      85.3       12.4       67.0      41.6        7.1        3.4     995.60
      0.21      1.06       4.35      2.05      0.090      0.045     0.090      0.000     995.60       6.00
  0.003754      183.       183.      183.          2          0         0       0.00      44.00      50.00


CCHV=    0.500 CEHV=    1.000

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED
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    SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
    G          GLOB       GCH        GROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
    TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
    SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     0.00       1.81       3.00       0.00      21.00       0.00      61.85       0.00     995.60     995.60

*SECNO 1889.000
BTCARD  BRIDGE STENCL=       7.00   STENCR=      48.00

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS=   1001.487  EGLWC=   1000.604  ELLC=   1000.100  PCWSE=   1000.369  ELTRD=    999.700

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.42


3370 NORMAL BRIDGE, NRD=  13 MIN ELTRD=   999.70 MAX ELLC=  1000.10


3470 ENCROACHMENT STATIONS=        7.0      48.0  TYPE=       1  TARGET=       41.000
  1889.000      4.81   1000.41      0.00   1000.31   1000.93      0.52      0.04      0.28    998.50
     390.0       4.9     360.6      24.5       4.9      60.2      14.3       7.1       3.4    995.60
      0.21      1.00      5.99      1.71     0.090     0.045     0.090     0.000    995.60      7.00
  0.021408        6.        6.        6.         2         0         0    -38.12     41.00     48.00


CCHV=    0.500 CEHV=    1.000
*SECNO 1910.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.02


3470 ENCROACHMENT STATIONS=       68.0     100.0  TYPE=       1  TARGET=       32.000
  1910.000      5.40   1001.00      0.00   1001.11   1001.20      0.20      0.11      0.16    997.40
     390.0      73.3     225.6      91.1      36.0      53.8      31.5       7.1       3.4    997.70
      0.21      2.03      4.20      2.89     0.075     0.045     0.045     0.000    995.60     68.00
  0.002348       21.       21.       21.         2         0         0      0.00     32.00    100.00


*SECNO 1931.000

3470 ENCROACHMENT STATIONS=      250.0     272.0  TYPE=       1  TARGET=       22.000
  1931.000      6.46   1001.06      0.00   1001.16   1001.34      0.28      0.06      0.08    996.50
     390.0       0.0     352.4      37.6       0.0      79.7      14.0       7.2       3.4    994.60
      0 21      0.00      4.42      2.69     0.000     0.045     0.045     0.000    994.60    250.00
  0.003038       21.       21.       21.         2         0         0      0.00     20.43    270.43
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
G	GLOB	GCH	GROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	1.89	3.00	0.00	14.00	0.00	69.40	0.00	994.60	994.60

*SECNO 1967.000
BTCARD BRIDGE STENCL= 250.00 STENCR= 272.00

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.80

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1001.98	1001.36	0.00	0.	390.	69.	83.	1000.50	1005.10	0.

3470 ENCROACHMENT STATIONS= 250.0 272.0 TYPE= 1 TARGET= 22.000

1967.000	7.16	1001.76	0.00	1001.87	1001.98	0.23	0.64	0.00	996.50
390.0	0.0	359.0	31.0	0.0	91.0	17.2	7.3	3.4	994.60
0.22	0.00	3.94	1.81	0.000	0.030	0.040	0.000	994.60	250.00
0.000942	36.	36.	36.	2	0	0	0.00	20.90	270.90

*SECNO 2020 000
2800 NAT Q1= 416.83 WSEL= 1002.20 ENC Q1= 416.83 WSEL= 1002.30 RATIO= 0.0000
NAT Q1= 479. RATIOS LOB, CH, ROB= 0.3653 0.2222 0.4125 WSEL= 1002.30
3280 CROSS SECTION 2020.00 EXTENDED 4.70 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 3.05

3470 ENCROACHMENT STATIONS= 199.3 321.3 TYPE= 4 TARGET= 0.130

2020.000	6.00	1002.10	0.00	1002.20	1002.11	0.01	0.01	0.11	997.60
390.0	132.2	100.5	157.3	174.9	102.8	239.7	7.6	3.5	997.90
0.23	0.76	0.98	0.66	0.045	0.045	0.060	0.000	996.10	199.25
0.000101	53.	53.	53.	2	0	0	0.00	122.00	321.25

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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

CCHV=     0.300 CEHV=     0.500
*SECNO 2090.000
 2800 NAT Q1=      389.73  WSEL=     1002.20  ENC Q1=      389.73  WSEL=     1002.30  RATIO=    0.0000
 NAT Q1=      407.  RATIOS LOB, CH, ROB=    0.3460  0.2302  0.4238  WSEL=     1002.30
3280 CROSS SECTION   2090.00 EXTENDED      4.30 FEET

3470 ENCROACHMENT STATIONS=       189.6      327.2  TYPE=       4  TARGET=         0.043
  2090.000       5.60    1002.10       0.00    1002.20    1002.11       0.01       0.01       0.00     998.00
     390.0      128.8       95.2      166.0      172.9       94.9      245.3        8.5        3.7     998.30
      0.26       0.75       1.00       0.68      0.045      0.045      0.060      0.000     996.50     189.57
  0.000118        70.        70.        70.          0          0          0       0.00     137.67     327.24

*SECNO 2160.000
 2800 NAT Q1=      324.68  WSEL=     1002.21  ENC Q1=      324.68  WSEL=     1002.31  RATIO=    0.0000
 NAT Q1=      341.  RATIOS LOB, CH, ROB=    0.3240  0.2397  0.4364  WSEL=     1002.31
3280 CROSS SECTION   2160.00 EXTENDED      3.91 FEET

3470 ENCROACHMENT STATIONS=       193.4      327.0  TYPE=       4  TARGET=         0.047
  2160.000       5.21    1002.11       0.00    1002.21    1002.12       0.01       0.01       0.00     998.40
     390.0      119.6       99.6      170.8      144.1       87.1      222.1        9.2        3.9     998.70
      0.28       0.83       1.14       0.77      0.045      0.045      0.060      0.000     996.90     193.35
  0.000172        70.        70.        70.          0          0          0       0.00     133.68     327.03

*SECNO 2210.000
 2800 NAT Q1=      188.02  WSEL=     1002.21  ENC Q1=      188.02  WSEL=     1002.31  RATIO=    0.0000
 NAT Q1=      206.  RATIOS LOB, CH, ROB=    0.5888  0.2475  0.1637  WSEL=     1002.31
3280 CROSS SECTION   2210.00 EXTENDED      0.12 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.56

3470 ENCROACHMENT STATIONS=        70.7      268.6  TYPE=       4  TARGET=         0.089
  2210.000       5.01    1002.11       0.00    1002.21    1002.15       0.04       0.01       0.01     997.30
     390.0      213.6      113.4       63.1      215.6       49.8      40.2        9.7        4.1     997.10
      0.29       0.99       2.28       1.57      0.045      0.045      0.060      0.000     997.10      70.72
  0.000560        50.        50.        50.          1          0          0       0.00     197.91     268.63
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  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 2211.000
BTCARD  BRIDGE STENCL=      70.72   STENCR=     268.63
 2800 NAT Q1=     127.56  WSEL=    1002.21  ENC Q1=     127.56  WSEL=    1002.31  RATIO=   0.0000
 NAT Q1=     157.  RATIOS LOB, CH, ROB=   0.7272  0.1006  0.1722  WSEL=    1002.31
3280 CROSS SECTION   2211.00 EXTENDED      0.11 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.61

3370 NORMAL BRIDGE, NRD=  16 MIN ELTRD=  1000.90 MAX ELLC=  1000.60

3470 ENCROACHMENT STATIONS=       74.0     265.6  TYPE=      4  TARGET=        0.190
  2211.000      5.00   1002.10      0.00   1002.21   1002.16      0.06      0.00      0.01    997.30
     390.0     281.4      62.2      46.4     153.5      31.4      19.0       9.7       4.1    997.10
      0.29      1.83      1.98      2.45     0.030     0.030     0.030     0.000    997.10     73.99
  0.001503        1.        1.        1.         0         0         0    -84.98    191.60    265.60

*SECNO 2268.000
 2800 NAT Q1=     125.25  WSEL=    1002.26  ENC Q1=     125.25  WSEL=    1002.36  RATIO=   0.0000
 NAT Q1=     168.  RATIOS LOB, CH, ROB=   0.7448  0.0969  0.1584  WSEL=    1002.36
3280 CROSS SECTION   2268.00 EXTENDED      0.19 FEET

3370 NORMAL BRIDGE, NRD=  16 MIN ELTRD=  1000.90 MAX ELLC=  1000.60

3470 ENCROACHMENT STATIONS=       81.2     261.8  TYPE=      4  TARGET=        0.254
  2268.000      5.09   1002.19      0.00   1002.26   1002.25      0.06      0.09      0.00    997.30
     390.0     318.3      61.0      10.8     160.7      31.9       6.2       9.9       4.4    997.10
      0.30      1.98      1.91      1.75     0.030     0.030     0.030     0.000    997.10     81.22
  0.001578       57.       57.       57.         2         0         0    -80.14    180.57    261.78

*SECNO 2269.000
 2800 NAT Q1=     129.78  WSEL=    1002.26  ENC Q1=     129.78  WSEL=    1002.36  RATIO=   0.0000
 NAT Q1=     145.  RATIOS LOB, CH, ROB=   0.4994  0.3224  0.1782  WSEL=    1002.36
3280 CROSS SECTION   2269.00 EXTENDED      0.19 FEET

3470 ENCROACHMENT STATIONS=       78.6     268.5  TYPE=      4  TARGET=        0.103
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  SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
  Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
  TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
  SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

 2269.000      5.09    1002.19       0.00    1002.26    1002.25       0.06       0.00       0.00     997.30
    390.0    178.0      145.0       67.0      222.0       50.5       40.2        9.9        4.4     997.10
     0.30      0.80       2.87       1.67      0.080      0.050      0.080      0.000     997.10      78.65
 0.001077        1.         1.         1.          0          0          0       0.00     189.82     268.47

*SECNO 2320.000
 2800 NAT Q1=      196.25  WSEL=     1002.33  ENC Q1=      196.25  WSEL=     1002.43  RATIO=    0.0000
 NAT Q1=     206.  RATIOS LOB, CH, ROB=   0.2314  0.3078  0.4608  WSEL=     1002.43
3280 CROSS SECTION   2320.00 EXTENDED      3.58 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.54

3470 ENCROACHMENT STATIONS=      201.9     327.1  TYPE=      4  TARGET=        0.049
 2320.000      4.88    1002.28       0.00    1002.33    1002.30       0.02       0.03       0.01     998.90
    390.0     82.6      127.4      180.0      114.5       80.4      203.2       10.4        4.6     999.20
     0.31      0.72       1.58       0.89      0.080      0.050      0.080      0.000     997.40     201.92
 0.000455       51.        51.        51.          2          0          0       0.00     125.16     327.08

*SECNO 2450.000
3280 CROSS SECTION   2450.00 EXTENDED      2.96 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.65

3470 ENCROACHMENT STATIONS=      204.0     316.0  TYPE=      1  TARGET=      112.000
 2450.000      4.26    1002.36       0.00    1002.39    1002.40       0.04       0.09       0.01     999.60
    390.0     78.5      149.1      162.5       82.9       68.0      134.9       11.4        4.9     999.90
     0.34      0.95       2.19       1.20      0.080      0.050      0.080      0.000     998.10     204.00
 0.001091      130.       130.       130.          2          0          0       0.00     112.00     316.00

CCHV=    0.500 CEHV=    1.000
*SECNO 2550.000
3280 CROSS SECTION   2550.00 EXTENDED      1.84 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.55
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 SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
 Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
 TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
 SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST


3470 ENCROACHMENT STATIONS=      229.0     291.0  TYPE=      1  TARGET=      62.000
  2550.000      3.84   1002.54      0.00   1002.57   1002.68      0.14       0.18       0.10   1000.20
     390.0      68.4     218.0     103.6      40.2      59.6      52.3       11.9        5.1   1000.50
      0.35      1.70      3.66      1.98     0.080     0.050     0.080      0.000     998.70    229.00
  0.003614      100.      100.      100.         2         0         0       0.00      62.00    291.00

*SECNO 2610.000

3470 ENCROACHMENT STATIONS=      226.0     258.0  TYPE=      1  TARGET=      32.000
  2610.000      3.82   1002.82      0.00   1002.85   1003.22      0.39       0.29       0.25   1001.00
     390.0      18.9     352.8      18.3      10.2      67.0      10.0       12.1        5.2   1001.00
      0.35      1.85      5.26      1.83     0.080     0.050     0.080      0.000     999.00    226.00
  0.006630       60.       60.       60.         2         0         0       0.00      32.00    258.00

*SECNO 2630.000

3470 ENCROACHMENT STATIONS=      231.0     253.0  TYPE=      1  TARGET=      22.000
  2630.000      3.96   1002.96      0.00   1002.98   1003.43      0.47       0.14       0.07   1001.00
     390.0       2.3     385.4       2.3       1.9      69.7       1.9       12.1        5.2   1001.00
      0.35      1.18      5.53      1.18     0.080     0.050     0.080      0.000     999.00    231.00
  0.006932       20.       20.       20.         2         0         0       0.00      22.00    253.00

*SECNO 2650.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.59

3470 ENCROACHMENT STATIONS=      217.0     270.0  TYPE=      1  TARGET=      53.000
  2650.000      4.18   1003.18      0.00   1003.19   1004.11      0.93       0.22       0.46   1005.30
     390.0       0.0     390.0       0.0       0.0      50.3       0.0       12.1        5.2   1005.50
      0.35      0.00      7.75      0.00     0.000     0.050     0.000      0.000     999.00    237.43
  0.020095       20.       20.       20.         2         0         0       0.00      12.63    250.06

*SECNO 2670.000
3280 CROSS SECTION   2670.00 EXTENDED      0.38 FEET

3470 ENCROACHMENT STATIONS=      217.0     270.0  TYPE=      1  TARGET=      53.000
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

 2670.000      4.88    1003.88       0.00    1003.89    1004.56       0.67       0.32       0.13    1005.30
    390.0       0.0      390.0        0.0        0.0       59.2        0.0       12.1        5.2    1005.50
     0.35      0.00       6.58       0.00      0.000      0.050      0.000      0.000     999.00     237.42
 0.012783       20.        20.        20.          3          0          0       0.00      12.65     250.07

*SECNO 2675.000
3280 CROSS SECTION   2675.00 EXTENDED      1.12 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.71

3470 ENCROACHMENT STATIONS=      230.0     254.0  TYPE=      1  TARGET=       24.000
 2675.000      5.62    1004.62       0.00    1004.62    1004.82       0.20       0.02       0.24    1001.00
    390.0       6.6      376.8        6.6        7.2      104.6        7.1       12.2        5.2    1001.00
     0.35      0.92       3.60       0.92      0.080      0.050      0.080      0.000     999.00     230.00
 0.001747        5.         5.         5.          3          0          0       0.00      24.00     254.00

*SECNO 2690.000
3280 CROSS SECTION   2690.00 EXTENDED      1.33 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.51

3470 ENCROACHMENT STATIONS=      215.0     269.0  TYPE=      1  TARGET=       54.000
 2690.000      5.83    1004.83       0.00    1004.83    1004.89       0.07       0.02       0.06    1001.00
    390.0      63.0      267.0       60.0       59.4      108.7       57.5       12.2        5.2    1001.00
     0.35      1.06       2.46       1.04      0.080      0.050      0.080      0.000     999.00     215.00
 0.000771       15.        15.        15.          2          0          0       0.00      54.00     269.00

*SECNO 2740.000
 2800 NAT Q1=     589.90  WSEL=    1004.93  ENC Q1=     589.90  WSEL=    1005.03  RATIO=   0.0000
 NAT Q1=     607.  RATIOS LOB, CH, ROB=   0.3485  0.2524  0.3991  WSEL=    1005.03
3280 CROSS SECTION   2740.00 EXTENDED      6.53 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.09
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         GLOB      GCH       GROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3470 ENCROACHMENT STATIONS=      168.1     328.1  TYPE=      4  TARGET=        0.029
  2740.000      7.83   1004.93      0.00   1004.93   1004.93      0.00      0.01      0.03    998.60
     390.0     133.6     101.5     154.9     375.0     139.4     378.3      12.9       5.4    998.90
      0.38      0.36      0.73      0.41     0.080     0.050     0.080     0.000    997.10    168.08
  0.000046       50.       50.       50.         2         0         0      0.00    160.01    328.09


CCHV=    0.300 CEHV=    0.500
*SECNO 3100.000
3280 CROSS SECTION   3100.00 EXTENDED      3.46 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.27


3470 ENCROACHMENT STATIONS=      205.0     315.0  TYPE=      1  TARGET=      110.000
  3100.000      4.76   1004.96      0.00   1004.96   1004.99      0.03      0.04      0.01   1001.70
     390.0      88.1     144.1     157.7     104.7      78.0     154.6      17.9       6.5   1002.00
      0.46      0.84      1.85      1.02     0.080     0.050     0.080     0.000   1000.20    205.00
  0.000643      360.      360.      360.         2         0         0      0.00    110.00    315.00


CCHV=    0.500 CEHV=    1.000
*SECNO 3200.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.46


3470 ENCROACHMENT STATIONS=      229.0     291.0  TYPE=      1  TARGET=       62.000
  3200.000      3.98   1005.08      0.00   1005.08   1005.20      0.12      0.12      0.10   1002.60
     390.0      70.4     215.6     104.0      43.2      62.4      55.3      18.5       6.7   1002.90
      0.47      1.63      3.45      1.88     0.080     0.050     0.080     0.000   1001.10    229.00
  0.003026      100.      100.      100.         2         0         0      0.00     62.00    291.00


CCHV=    0.500 CEHV=    1.000
*SECNO 3281.000

3470 ENCROACHMENT STATIONS=      250.0     273.1  TYPE=      1  TARGET=       23.100
  3281.000      4.02   1005.42      0.00   1005.42   1005.74      0.33      0.34      0.20   1001.80
     390.0       0.0     390.0       0.0       0.0      85.2       0.0      18.7       6.7 100000.00
      0.48      0.00      4.58      0.00     0.000     0.050     0.000     0.000   1001.40    250.00
  0.006054       81.       81.       81.         2         0         0      0.00     23.10    273.10
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	1.90	3.00	0.00	13.00	0.00	73.40	0.00	1001.40	1001.40

*SECNO 3322.000
BTCARD BRIDGE STENCL= 250.00 STENCR= 273.10
ERROR ELTRD .LT. MIN ROAD ELEV, ELTRD SET EQUAL TO MIN ROAD ELEV

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.08

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1006.25	1005.74	0.00	0.	390.	73.	49.	1005.20	1006.60	0.

3470 ENCROACHMENT STATIONS= 250.0 273.1 TYPE= 1 TARGET= 23.100

3322.000	4.61	1006.01	0.00	1005.87	1006.25	0.24	0.51	0.00	1001.80
390.0	0.0	390.0	0.0	0.0	98.9	0.0	18.8	6.8	100000.00
0.48	0.00	3.94	0.00	0.000	0.030	0.000	0.000	1001.40	250.00
0.001395	41.	41.	41.	2	0	0	0.00	23.10	273.10

CCHV= 0.500 CEHV= 1.000
*SECNO 3355.000
3280 CROSS SECTION 3355.00 EXTENDED 5.04 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.53

3470 ENCROACHMENT STATIONS= 216.0 305.0 TYPE= 1 TARGET= 89.000

3355.000	4.84	1006.34	0.00	1006.22	1006.38	0.04	0.03	0.10	1003.00
390.0	76.8	234.1	79.1	89.8	119.3	83.1	19.0	6.8	1003.20
0.49	0.86	1.96	0.95	0.080	0.045	0.080	0.000	1001.50	216.00
0.000599	33.	33.	33.	2	0	0	0.00	89.00	305.00

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        DLOSS     L-BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 3385.000
 2800 NAT Q1=     198.40  WSEL=    1006.27  ENC Q1=     198.40  WSEL=    1006.37  RATIO=   0.0000
 NAT Q1=     211.  RATIOS LOB, CH, ROB=   0.2015  0.4606  0.3379  WSEL=    1006.37
3280 CROSS SECTION   3385.00 EXTENDED      5.08 FEET

3470 ENCROACHMENT STATIONS=      208.5     326.2  TYPE=      4  TARGET=        0.058
  3385.000      4.88   1006.38      0.00   1006.27   1006.40      0.02      0.01      0.01   1003.00
     390.0      71.1     190.6     128.3     104.6     120.5     159.8      19.2       6.9   1003.20
      0.49      0.68      1.58      0.80    0.080     0.045     0.080     0.000   1001.50    208.49
  0.000384       30.       30.       30.         2         0         0      0.00    117.69    326.18

CCHV=    0.300 CEHV=    0.500
*SECNO 3700.000
 2800 NAT Q1=     153.38  WSEL=    1006.42  ENC Q1=     153.38  WSEL=    1006.52  RATIO=   0.0000
 NAT Q1=     162.  RATIOS LOB, CH, ROB=   0.1781  0.4516  0.3702  WSEL=    1006.52
3280 CROSS SECTION   3700.00 EXTENDED      4.48 FEET

3470 ENCROACHMENT STATIONS=      215.6     326.6  TYPE=      4  TARGET=        0.055
  3700.000      4.28   1006.53      0.00   1006.42   1006.56      0.03      0.15      0.00   1003.75
     390.0      62.3     186.1     141.6      71.4     102.0     134.1      21.7       7.7   1003.95
      0.56      0.87      1.83      1.06    0.070     0.045     0.070     0.000   1002.25    215.59
  0.000639      315.      315.      315.         0         0         0      0.00    111.05    326.65

*SECNO 4000.000
 2800 NAT Q1=     109.11  WSEL=    1006.68  ENC Q1=     109.11  WSEL=    1006.78  RATIO=   0.0000
 NAT Q1=     117.  RATIOS LOB, CH, ROB=   0.1446  0.4762  0.3792  WSEL=    1006.78
3280 CROSS SECTION   4000.00 EXTENDED      3.98 FEET

3470 ENCROACHMENT STATIONS=      227.8     325.9  TYPE=      4  TARGET=        0.070
  4000.000      3.78   1006.78      0.00   1006.68   1006.83      0.05      0.26      0.01   1004.50
     390.0      45.6     199.6     144.8      40.9      86.6     109.5      23.6       8.4   1004.70
      0.60      1.12      2.31      1.32    0.070     0.045     0.070     0.000   1003.00    227.75
  0.001268      300.      300.      300.         1         0         0      0.00     98.10    325.85

*SECNO 4280.000
 2800 NAT Q1=     118.90  WSEL=    1007.01  ENC Q1=     118.90  WSEL=    1007.11  RATIO=   0.0000
 NAT Q1=     137.  RATIOS LOB, CH, ROB=   0.1604  0.4643  0.3753  WSEL=    1007.11
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELFV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

3280 CROSS SECTION   4280.00 EXTENDED      4.21 FEET

3470 ENCROACHMENT STATIONS=      231.8     321.9  TYPE=      4  TARGET=        0.134
  4280.000      4.01   1007.11      0.00   1007.01   1007.16      0.05      0.33      0.00   1004.60
     390.0      42.2     208.6     139.1      38.9      93.5     108.8      25.1       9.0   1004.80
      0.65      1.08      2.23      1.28     0.070     0.045     0.070     0.000   1003.10    231.82
  0.001071      280.      280.      280.         2         0         0      0.00     90.07    321.90

CCHV=    0.500 CEHV=    1.000
*SECNO 4320.000

3265 DIVIDED FLOW

3280 CROSS SECTION   4320.00 EXTENDED      1.48 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.51

3470 ENCROACHMENT STATIONS=      240.0     317.0  TYPE=      1  TARGET=       77.000
  4320.000      4.08   1007.18      0.00   1007.07   1007.28      0.10      0.08      0.05   1004.60
     390.0      50.6      90.9     248.5      23.8      34.5      98.3      25.3       9.1   1004.80
      0.65      2.13      2.63      2.53     0.070     0.045     0.070     0.000   1003.10    240.00
  0.004104       40.       40.       40.         2         0         0      0.00     57.25    317.00

*SECNO 4331.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.52

3470 ENCROACHMENT STATIONS=       93.0     200.0  TYPE=      1  TARGET=      107.000
  4331.000      4.06   1007.26      0.00   1007.14   1007.76      0.51      0.08      0.41   1003.30
     390.0      40.4     299.3      50.3      16.9      46.7      28.6      25.3       9.1   1009.60
      0.65      2.39      6.42      1.76     0.070     0.045     0.070     0.000   1003.20     93.00
  0.015106       11.       11.       11.         2         0         0      0.00     77.27    200.00
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SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 4342.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.57

3470 ENCROACHMENT STATIONS=       85.0     205.0  TYPE=      1  TARGET=      120.000
  4342.000      4.64   1007.84      0.00   1007.93   1008.03      0.18      0.10      0.16   1003.30
     390.0      53.5     228.1     108.4      29.5      53.4      65.0      25.4       9.1   1009.60
      0.65      1.82      4.27      1.67     0.070     0.045     0.070     0.000   1003.20     85.00
  0.006150       11.       11.       11.         6         0         0      0.00     97.54    205.00

CCHV=    0.500 CEHV=    1.000
*SECNO 4390.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  7.50

3470 ENCROACHMENT STATIONS=       85.0     210.0  TYPE=      1  TARGET=      125.000
  4390.000      5.10   1008.10      0.00   1008.15   1008.12      0.02      0.02      0.08   1007.20
     390.0      11.5     378.5       0.0      23.6     326.2       0.6      25.6       9.3   1004.20
      0.66      0.49      1.16      0.06     0.030     0.035     0.030     0.000   1003.00     85.00
  0.000109       48.       48.       48.         2         0         0      0.00    110.68    210.00

*SECNO 4435.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.20

  4435.000      5.22   1008.12      0.00   1008.16   1008.44      0.32      0.01      0.30   1007.50
     390.0      78.1     307.6       4.3      38.9      61.2       5.7      25.9       9.4   1003.90
      0.67      2.01      5.03      0.75     0.030     0.035     0.030     0.000   1002.90     51.73
  0.002654       45.       45.       45.         2         0         0      0.00    105.63    157.36

CCHV=    0.500 CEHV=    1.000
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 4475.000

3265 DIVIDED FLOW


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.68


3470 ENCROACHMENT STATIONS=       76.0     174.0  TYPE=      1  TARGET=       98.000
  4475.000      4.87   1008.27   1007.56   1008.30   1008.94      0.67      0.15      0.35   1008.30
     390.0      44.8     342.7       2.5      15.5      49.5       2.6      26.0       9.4   1004.10
      0.67      2.89      6.92      0.95     0.030     0.035     0.030     0.000   1003.40     76.00
  0.005798       40.       40.       40.         4        18         0      0.00     60.52    160.38


CCHV=    0.500 CEHV=    1.000
*SECNO 4485.000
3280 CROSS SECTION   4485.00 EXTENDED      0.12 FEET

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.97


3470 ENCROACHMENT STATIONS=      100.0     185.0  TYPE=      1  TARGET=       85.000
  4485.000      5.51   1009.21      0.00   1009.18   1009.26      0.04      0.01      0.31   1005.60
     390.0       0.0     307.8      82.2       0.0     174.3      66.5      26.0       9.5   1005.60
      0.67      0.00      1.77      1.24     0.000     0.035     0.030     0.000   1003.70    100.00
  0.000235       10.       10.       10.         2         0         0      0.00     85.00    185.00


*SECNO 4500.000

3470 ENCROACHMENT STATIONS=      100.0     177.0  TYPE=      1  TARGET=       77.000
  4500.000      5.22   1009.22      0.00   1009.18   1009.27      0.05      0.00      0.01   1005.90
     390.0       0.0     319.2      70.8       0.0     163.6      48.4      26.1       9.5   1005.90
      0.67      0.00      1.95      1.46     0.000     0.035     0.030     0.000   1004.00    100.00
  0.000308       15.       15.       15.         2         0         0      0.00     77.00    177.00
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         GLOB      GCH       GROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 4560.000

3470 ENCROACHMENT STATIONS=      102.0     149.0  TYPE=      1  TARGET=      47.000
  4560.000      4.64   1009.24      0.00   1009.20   1009.30      0.06      0.02      0.01   1006.10
     390.0       0.0     390.0       0.0       0.0     194.4       0.0      26.3       9.6 100000.00
      0.68      0.00      2.01      0.00     0.000     0.035     0.000     0.000   1004.60    102.00
  0.000399       60.       60.       60.         0         0         0      0.00     47.00    149.00

*SECNO 4611.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.63

3470 ENCROACHMENT STATIONS=      250.0     425.0  TYPE=      1  TARGET=      175.000
  4611.000      4.37   1009.27      0.00   1009.24   1009.40      0.13      0.03      0.07 100000.00
     390.0       0.0     318.9      71.1       0.0     104.0      37.5      26.5       9.7   1005.90
      0.69      0.00      3.07      1.90     0.000     0.035     0.030     0.000   1004.90    250.00
  0.001000       51.       51.       51.         1         0         0      0.00    110.73    425.00


SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED
SB  XK        XKOR      COFG      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      2.30      3.00      0.00     12.00      0.00     52.20      0.00   1004.90   1004.90

*SECNO 4668.000
BTCARD  BRIDGE STENCL=     250.00   STENCR=     425.00
 2800 NAT Q1=     167.19  WSEL=    1009.76  ENC Q1=     167.19  WSEL=    1009.86  RATIO=   0.0000
 NAT Q1=     179.  RATIOS LOB, CH, ROB=   0.1044  0.7125  0.1831  WSEL=    1009.86

3265 DIVIDED FLOW

PRESSURE AND WEIR FLOW,  Weir Submergence Based on TRAPEZOIDAL Shape
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


EGPRS      EGLWC      H3       QWEIR      QPR       BAREA   TRAPEZOID     ELLC      ELTRD     WEIRLN
                                                             AREA
 1011.26   1009.40    0.00      168.      223.       52.       50.     1009.10   1009.10     113.


3470 ENCROACHMENT STATIONS=      250.0     425.0  TYPE=      4  TARGET=        0.066
 4668.000     4.94   1009.84     0.00   1009.76   1009.92     0.08      0.52      0.00 100000.00
    390.0      0.0     304.9     85.1       0.0     118.9    102.9      26.8       9.8   1005.90
     0.69     0.00      2.56     0.83     0.000     0.045    0.060     0.000   1004.90    250.00
 0.000992      57.       57.      57.         2         0        4      0.00    157.87    425.00


*SECNO 4720.000
 2800 NAT Q1=      125.14  WSEL=     1009.80  ENC Q1=      125.14  WSEL=     1009.90  RATIO=    0.0000
 NAT Q1=      132.  RATIOS LOB, CH, ROB=   0.0030  0.5252  0.4718  WSEL=     1009.90
3280 CROSS SECTION   4720.00 EXTENDED      4.13 FEET

3470 ENCROACHMENT STATIONS=      250.0     340.1  TYPE=      4  TARGET=        0.053
 4720.000     4.93   1009.93     0.00   1009.80   1009.98     0.06      0.05      0.01   1009.10
    390.0      0.0     213.8    176.2       0.0      95.1    134.3      27.1      10.0   1008.00
     0.70     0.00      2.25     1.31     0.000     0.045    0.060     0.000   1005.00    250.00
 0.000956      52.       52.      52.         2         0        0      0.00     90.10    340.10


*SECNO 5050.000
 2800 NAT Q1=       97.99  WSEL=     1010.20  ENC Q1=       97.99  WSEL=     1010.30  RATIO=    0.0000
 NAT Q1=      104.  RATIOS LOB, CH, ROB=   0.0006  0.5433  0.4562  WSEL=     1010.30

3265 DIVIDED FLOW

3280 CROSS SECTION   5050.00 EXTENDED      3.72 FEET


3470 ENCROACHMENT STATIONS=      250.0     339.6  TYPE=      4  TARGET=        0.062
 5050.000     4.53   1010.33     0.00   1010.20   1010.40     0.08      0.40      0.02   1009.90
    390.0      0.0     224.6    165.4       0.0      84.1    107.6      28.6      10.7   1008.80
     0.74     0.00      2.67     1.54     0.000     0.045    0.060     0.000   1005.80    250.00
 0.001559     330.      330.     330.         1         0        0      0.00     85.21    339.59
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         GLOB      GCH       GROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

CCHV=    0.300 CEHV=    0.500
*SECNO 5800.000
 2800 NAT Q1=     225.58  WSEL=    1010.73  ENC Q1=     225.58  WSEL=    1010.83  RATIO=   0.0000
 NAT Q1=     250.  RATIOS LOB, CH, ROB=   0.4740  0.1554  0.3706  WSEL=    1010.83
3280 CROSS SECTION   5800.00 EXTENDED      1.74 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.32

3470 ENCROACHMENT STATIONS=       27.6     443.5  TYPE=      4  TARGET=        0.098
  5800.000      4.04   1010.84      0.00   1010.73   1010.85      0.01      0.43      0.02   1008.00
     390.0     183.5      66.8     139.7     351.7      56.2     261.1      36.1      15.0   1008.80
      1.07      0.52      1.19      0.53     0.070     0.045     0.060     0.000   1006.80     27.61
  0.000290      750.      750.      750.         2         0         0      0.00    415.84    443.45

*SECNO 6500.000
 2800 NAT Q1=      47.28  WSEL=    1011.24  ENC Q1=      47.28  WSEL=    1011.34  RATIO=   0.0000
 NAT Q1=      53.  RATIOS LOB, CH, ROB=   0.1492  0.3883  0.4624  WSEL=    1011.34

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.21

3470 ENCROACHMENT STATIONS=      180.2     267.6  TYPE=      4  TARGET=        0.115
  6500.000      2.63   1011.33      0.00   1011.24   1011.48      0.15      0.56      0.07   1009.50
     390.0     40.3     170.5     179.2      19.8      46.0      65.7      42.5      19.0   1010.90
      1.13      2.03      3.71      2.73     0.070     0.045     0.060     0.000   1008.70    180.25
  0.006870      700.      700.      700.         2         0         0      0.00     87.36    267.61

*SECNO 6630.000
 2800 NAT Q1=      65.63  WSEL=    1011.92  ENC Q1=      65.63  WSEL=    1012.02  RATIO=   0.0000
 NAT Q1=      73.  RATIOS LOB, CH, ROB=   0.1555  0.3711  0.4734  WSEL=    1012.02

3470 ENCROACHMENT STATIONS=      179.2     273.2  TYPE=      4  TARGET=        0.105
  6630.000      2.93   1012.03      0.00   1011.92   1012.12      0.10      0.62      0.02   1009.90
     390.0     44.2     161.9     183.9      26.0      54.5      86.0      42.9      19.3   1011.30
      1.15      1.70      2.97      2.14     0.070     0.045     0.060     0.000   1009.10    179.21
  0.003508      130.      130.      130.         2         0         0      0.00     94.00    273.21
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THIS RUN EXECUTED 05AUG91 17:06:12

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*****************************************************
  HEC2 RELEASE DATED SEP 88 UPDATED JUN  1990

  ERROR CORR -  01,02,03,04
  MODIFICATION -
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100-YEAR DISCHARGE, NATU

SUMMARY PRINTOUT TABLE 110

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	0.000	986.14	0.00	986.98	33.57	0.26	389.74	0.00	0.00	0.00	80.00	112.00	0.00
	0.000	986.24	0.10	986.99	31.24	0.00	390.00	0.00	0.00	80.00	80.00	112.00	112.00
*	10.000	986.85	0.00	987.25	55.37	15.64	373.50	0.86	0.00	0.00	80.00	112.00	0.00
	10.000	986.69	-0.15	987.22	32.00	0.00	390.00	0.00	0.06	80.00	80.00	112.00	112.00
	120.000	987.81	0.00	988.23	53.24	13.62	375.75	0.63	0.00	0.00	80.00	112.00	0.00
	120.000	987.94	0.13	988.31	42.00	17.27	372.73	0.00	42.00	70.00	80.00	112.00	112.00
*	500.000	990.39	0.00	990.55	117.63	0.26	165.50	224.23	330.00	170.00	250.00	270.10	500.00
	500.000	990.48	0.09	990.68	90.00	0.00	191.90	198.10	90.00	250.00	250.00	270.10	340.00
*	545.000	990.59	0.00	990.88	114.84	0.00	202.43	187.57	330.00	170.00	250.00	270.10	500.00
	545.000	990.72	0.13	991.04	90.00	0.00	221.13	168.86	90.00	250.00	250.00	270.10	340.00
	630.000	991.62	0.00	992.20	75.84	0.07	301.52	88.40	155.00	170.00	250.00	270.10	325.00
	630.000	991.69	0.07	992.20	75.00	0.00	294.83	95.16	75.00	250.00	250.00	270.10	325.00
*	700.000	992.68	0.00	992.92	43.52	9.91	380.08	0.02	0.00	0.00	61.00	111.00	0.00
*	700.000	992.68	-0.01	992.93	37.98	0.00	390.00	0.00	50.00	61.00	61.00	111.00	111.00
*	735.000	992.97	0.00	993.66	35.89	0.09	320.10	69.82	115.00	170.00	250.00	270.10	285.00
*	735.000	993.00	0.03	993.67	35.00	0.00	318.89	71.11	35.00	250.00	250.00	270.10	285.00
	801.000	994.16	0.00	995.11	14.00	0.00	390.00	0.00	14.00	250.00	250.00	264.00	264.00
	801.000	994.17	0.01	995.12	14.00	0.00	390.00	0.00	14.00	250.00	250.00	264.00	264.00
*	882.000	996.46	0.00	996.48	237.52	207.98	102.13	79.89	425.00	0.00	250.00	264.00	425.00
*	882.000	996.53	0.07	996.55	150.00	191.47	109.79	88.74	150.00	200.00	250.00	264.00	350.00
*	897.000	996.45	0.00	996.50	233.73	86.43	153.94	149.63	425.00	0.00	250.10	263.10	425.00
*	897.000	996.52	0.07	996.57	112.97	82.21	160.63	147.16	0.07	195.11	250.10	263.10	308.00

	SECND	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
*	898.000	996.46	0.00	996.50	233.70	132.34	90.80	166.86	425.00	0.00	250.10	263.10	425.00
*	898.000	996.52	0.06	996.57	121.40	128.96	96.96	164.08	0.12	192.32	250.10	263.10	313.72
	903.000	996.46	0.00	996.50	235.50	133.07	90.07	166.85	425.00	0.00	250.10	263.10	425.00
	903.000	996.52	0.06	996.58	123.75	129.72	96.04	164.24	0.12	191.55	250.10	263.10	315.30
*	904.000	996.47	0.00	996.51	236.20	100.41	117.34	172.25	425.00	0.00	250.10	263.10	425.00
*	904.000	996.54	0.06	996.58	114.59	96.14	123.23	170.63	0.09	194.77	250.10	263.10	309.36
*	930.000	996.50	0.00	996.52	144.57	251.46	46.05	92.49	0.00	0.00	78.00	90.00	0.00
*	930.000	996.58	0.08	996.59	115.87	254.20	48.00	87.79	0.05	6.22	78.00	90.00	122.09
*	1100.000	996.52	0.00	996.54	135.75	254.72	52.26	83.02	0.00	0.00	78.00	90.00	0.00
*	1100.000	996.59	0.08	996.62	109.52	257.64	54.55	77.81	0.06	8.29	78.00	90.00	117.81
*	1225.000	996.54	0.00	996.59	125.58	255.18	67.11	67.70	0.00	0.00	78.00	90.00	0.00
*	1225.000	996.61	0.07	996.67	91.19	261.08	71.29	57.63	0.08	15.87	78.00	90.00	107.06
*	1350.000	996.63	0.00	996.79	108.52	245.22	97.45	47.33	0.00	0.00	78.00	90.00	0.00
*	1350.000	996.71	0.08	996.86	95.00	246.29	93.54	50.17	95.00	15.00	78.00	90.00	110.00
*	1411.000	996.86	0.00	996.92	148.16	247.92	63.46	78.62	0.00	0.00	274.00	286.40	0.00
*	1411.000	996.90	0.04	996.97	110.00	249.05	63.35	77.60	110.00	203.00	274.00	286.40	313.00
*	1499.000	998.11	0.00	998.13	210.13	255.84	43.27	90.90	0.00	0.00	274.00	286.40	0.00
*	1499.000	998.22	0.10	998.24	110.00	255.67	49.32	85.01	110.00	203.00	274.00	286.40	313.00
*	1550.000	998.06	0.00	998.22	121.73	181.63	165.55	42.82	0.00	0.00	78.00	90.00	0.00
*	1550.000	998.17	0.12	998.32	100.00	184.73	163.10	42.17	100.00	10.00	78.00	90.00	110.00
	1700.000	999.05	0.00	999.35	112.89	169.05	186.47	34.47	0.00	0.00	78.00	90.00	0.00
*	1700.000	999.07	0.02	999.45	66.41	168.30	201.59	20.12	0.09	31.60	78.00	90.00	78.01
*	1883.000	1000.26	0.00	1000.51	44.00	11.80	291.97	86.23	44.00	6.00	17.00	38.00	50.00
*	1883.000	1000.37	0.11	1000.60	44.00	13.14	291.60	85.26	44.00	6.00	17.00	38.00	50.00
*	1889.000	1000.31	0.00	1000.96	41.00	0.00	389.92	0.08	41.00	7.00	17.00	38.00	48.00
*	1889.000	1000.41	0.10	1000.93	41.00	4.93	360.61	24.46	41.00	7.00	17.00	38.00	48.00
*	1910.000	1001.11	0.00	1001.30	32.00	73.57	224.68	91.75	32.00	68.00	78.00	90.00	100.00
*	1910.000	1001.00	-0.11	1001.20	32.00	73.26	225.63	91.11	32.00	68.00	78.00	90.00	100.00
	1931.000	1001.16	0.00	1001.43	20.50	0.00	352.00	38.00	22.00	250.00	250.00	266.10	272.00
	1931.000	1001.06	-0.10	1001.34	20.43	0.00	352.38	37.62	22.00	250.00	250.00	266.10	272.00
*	1967.000	1001.87	0.00	1002.09	20.97	0.00	358.64	31.36	22.00	250.00	250.00	266.10	272.00
*	1967.000	1001.76	-0.11	1001.98	20.90	0.00	358.99	31.01	22.00	250.00	250.00	266.10	272.00
*	2020.000	1002.20	0.00	1002.20	128.00	133.36	96.55	160.09	128.00	196.00	250.00	270.00	324.00
*	2020.000	1002.10	-0.10	1002.11	122.00	132.19	100.47	157.33	0.13	199.25	250.00	270.00	321.25

	SECND	CWSEL	DIFKWS	EG	TOPWID	GLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	2090.000	1002.20	0.00	1002.21	162.87	132.85	90.67	166.48	0.00	0.00	250.00	270.00	0.00
	2090.000	1002.10	-0.10	1002.11	137.67	128.80	95.23	165.97	0.04	189.57	250.00	270.00	327.24
	2160.000	1002.21	0.00	1002.22	160.06	123.96	94.51	171.53	0.00	0.00	250.00	270.00	0.00
	2160.000	1002.11	-0.10	1002.12	133.68	119.57	99.59	170.83	0.05	193.35	250.00	270.00	327.03
*	2210.000	1002.21	0.00	1002.24	232.58	219.91	102.62	67.48	383.00	42.00	250.00	260.00	425.00
*	2210.000	1002.11	-0.10	1002.15	197.91	213.56	113.36	63.09	0.09	70.72	250.00	260.00	268.63
*	2211.000	1002.21	0.00	1002.25	232.58	289.23	46.15	54.62	383.00	42.00	250.00	260.00	425.00
*	2211.000	1002.10	-0.10	1002.16	191.60	281.40	62.19	46.41	0.19	73.99	250.00	260.00	265.60
	2268.000	1002.26	0.00	1002.30	203.64	289.42	47.99	52.58	354.00	71.00	250.00	260.00	425.00
	2268.000	1002.19	-0.07	1002.25	180.57	318.28	60.96	10.76	0.25	81.22	250.00	260.00	261.79
	2269.000	1002.26	0.00	1002.31	203.65	179.57	135.81	74.63	354.00	71.00	250.00	260.00	425.00
	2269.000	1002.19	-0.07	1002.25	189.82	177.99	145.02	66.98	0.10	78.65	250.00	260.00	268.47
*	2320.000	1002.33	0.00	1002.34	154.67	88.09	121.19	180.71	0.00	0.00	250.00	270.00	0.00
*	2320.000	1002.28	-0.05	1002.30	125.16	82.57	127.44	179.99	0.05	201.92	250.00	270.00	327.08
*	2450.000	1002.39	0.00	1002.43	112.00	79.47	148.35	162.17	112.00	204.00	250.00	270.00	316.00
*	2450.000	1002.36	-0.04	1002.40	112.00	78.45	149.08	162.47	112.00	204.00	250.00	270.00	316.00
*	2550.000	1002.57	0.00	1002.70	62.00	68.84	217.46	103.70	62.00	229.00	250.00	270.00	291.00
*	2550.000	1002.54	-0.03	1002.68	62.00	68.38	217.99	103.63	62.00	229.00	250.00	270.00	291.00
	2610.000	1002.85	0.00	1003.23	32.00	19.05	352.50	18.45	32.00	226.00	232.00	252.00	258.00
	2610.000	1002.82	-0.02	1003.22	32.00	18.91	352.79	18.30	32.00	226.00	232.00	252.00	258.00
	2630.000	1002.98	0.00	1003.44	22.00	2.29	385.43	2.28	22.00	231.00	232.00	252.00	253.00
	2630.000	1002.96	-0.02	1003.43	22.00	2.28	385.44	2.27	22.00	231.00	232.00	252.00	253.00
*	2650.000	1003.19	0.00	1004.12	12.63	0.00	390.00	0.00	53.00	217.00	237.40	250.10	270.00
*	2650.000	1003.18	-0.02	1004.11	12.63	0.00	390.00	0.00	53.00	217.00	237.40	250.10	270.00
	2670.000	1003.89	0.00	1004.56	12.65	0.00	390.00	0.00	53.00	217.00	237.40	250.10	270.00
	2670.000	1003.88	0.00	1004.56	12.65	0.00	390.00	0.00	53.00	217.00	237.40	250.10	270.00
*	2675.000	1004.62	0.00	1004.82	24.00	6.60	376.83	6.57	24.00	230.00	232.00	252.00	254.00
*	2675.000	1004.62	0.00	1004.82	24.00	6.60	376.83	6.57	24.00	230.00	232.00	252.00	254.00
*	2690.000	1004.83	0.00	1004.90	54.00	62.97	266.96	60.06	54.00	215.00	232.00	252.00	269.00
*	2690.000	1004.83	0.00	1004.89	54.00	62.96	267.00	60.05	54.00	215.00	232.00	252.00	269.00
*	2740.000	1004.93	0.00	1004.94	193.60	134.67	98.96	156.36	0.00	0.00	250.00	270.00	0.00
*	2740.000	1004.93	0.00	1004.93	160.01	133.55	101.50	154.95	0.03	168.08	250.00	270.00	328.09
*	3100.000	1004.96	0.00	1004.99	110.00	88.15	144.12	157.72	110.00	205.00	250.00	270.00	315.00
*	3100.000	1004.96	0.00	1004.99	110.00	88.14	144.13	157.73	110.00	205.00	250.00	270.00	315.00

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
*	3200.000	1005.08	0.00	1005.20	62.00	70.43	215.60	103.97	62.00	229.00	250.00	270.00	291.00
*	3200.000	1005.08	0.00	1005.20	62.00	70.42	215.61	103.97	62.00	229.00	250.00	270.00	291.00
	3281.000	1005.42	0.00	1005.74	23.10	0.00	390.00	0.00	23.10	250.00	250.00	273.10	273.10
	3281.000	1005.42	0.00	1005.74	23.10	0.00	390.00	0.00	23.10	250.00	250.00	273.10	273.10
*	3322.000	1005.87	0.00	1006.13	23.10	0.00	390.00	0.00	23.10	250.00	250.00	273.10	273.10
*	3322.000	1006.01	0.14	1006.25	23.10	0.00	390.00	0.00	23.10	250.00	250.00	273.10	273.10
*	3355.000	1006.22	0.00	1006.27	89.00	75.60	235.19	79.20	89.00	216.00	250.00	281.00	305.00
*	3355.000	1006.34	0.12	1006.38	89.00	76.84	234.08	79.08	89.00	216.00	250.00	281.00	305.00
	3385.000	1006.27	0.00	1006.29	139.00	75.00	181.95	133.05	139.00	191.00	250.00	281.00	330.00
	3385.000	1006.38	0.11	1006.40	117.69	71.15	190.56	128.29	0.06	208.49	250.00	281.00	326.19
	3700.000	1006.42	0.00	1006.45	143.97	67.11	177.80	145.08	0.00	0.00	250.00	281.00	0.00
	3700.000	1006.53	0.11	1006.56	111.05	62.30	186.13	141.57	0.06	215.59	250.00	281.00	326.65
	4000.000	1006.68	0.00	1006.73	133.58	53.74	187.83	148.43	0.00	0.00	250.00	281.00	0.00
	4000.000	1006.78	0.10	1006.83	98.10	45.58	199.63	144.79	0.07	227.75	250.00	281.00	325.85
	4280.000	1007.01	0.00	1007.05	121.00	64.44	197.63	127.93	121.00	200.00	250.00	281.00	321.00
	4280.000	1007.11	0.10	1007.16	90.07	42.21	208.64	139.15	0.13	231.82	250.00	281.00	321.90
*	4320.000	1007.07	0.00	1007.14	93.24	114.99	74.58	200.43	113.00	204.00	250.00	281.00	317.00
*	4320.000	1007.18	0.11	1007.28	57.25	50.59	90.89	248.52	77.00	240.00	250.00	281.00	317.00
*	4331.000	1007.14	0.00	1007.76	74.72	36.58	314.30	39.13	150.00	90.00	107.00	129.60	240.00
*	4331.000	1007.26	0.12	1007.76	77.27	40.36	299.34	50.30	107.00	93.00	107.00	129.60	200.00
*	4342.000	1007.93	0.00	1008.09	107.55	59.39	214.70	115.92	130.00	80.00	107.00	129.60	210.00
*	4342.000	1007.84	-0.09	1008.03	97.54	53.53	228.08	108.39	120.00	85.00	107.00	129.60	205.00
*	4390.000	1008.15	0.00	1008.17	127.00	14.73	375.12	0.15	135.00	80.00	110.00	185.00	215.00
*	4390.000	1008.10	-0.04	1008.12	110.68	11.50	378.46	0.03	125.00	85.00	110.00	185.00	210.00
*	4435.000	1008.16	0.00	1008.46	107.61	82.57	301.43	6.00	0.00	0.00	110.00	123.00	0.00
*	4435.000	1008.12	-0.04	1008.44	105.63	78.15	307.56	4.29	0.00	0.00	110.00	123.00	0.00
*	4475.000	1008.30	0.00	1008.93	65.95	50.77	336.05	3.18	100.00	75.00	110.00	121.00	175.00
*	4475.000	1008.27	-0.03	1008.94	60.52	44.80	342.74	2.45	98.00	76.00	110.00	121.00	174.00
*	4485.000	1009.18	0.00	1009.22	85.00	0.00	309.06	80.94	85.00	100.00	100.00	135.00	185.00
*	4485.000	1009.21	0.04	1009.26	85.00	0.00	307.79	82.21	85.00	100.00	100.00	135.00	185.00
	4500.000	1009.18	0.00	1009.24	77.00	0.00	320.18	69.82	77.00	100.00	100.00	135.00	177.00
	4500.000	1009.22	0.04	1009.27	77.00	0.00	319.16	70.84	77.00	100.00	100.00	135.00	177.00
	4560.000	1009.20	0.00	1009.27	47.00	0.00	390.00	0.00	47.00	102.00	102.00	149.00	149.00
	4560.000	1009.24	0.04	1009.30	47.00	0.00	390.00	0.00	47.00	102.00	102.00	149.00	149.00

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
*	4611.000	1009.24	0.00	1009.37	102.75	0.00	320.42	69.58	600.00	250.00	245.00	276.00	850.00
*	4611.000	1009.27	0.03	1009.40	110.73	0.00	318.91	71.09	175.00	250.00	245.00	276.00	425.00
	4668.000	1009.76	0.00	1009.81	275.14	40.39	286.61	62.99	0.00	0.00	245.00	276.00	0.00
	4668.000	1009.84	0.08	1009.92	157.87	0.00	304.93	85.07	0.07	250.00	245.00	276.00	425.00
	4720.000	1009.80	0.00	1009.85	97.54	0.87	206.47	182.66	0.00	0.00	250.00	277.00	0.00
	4720.000	1009.93	0.13	1009.98	90.10	0.00	213.79	176.20	0.05	250.00	250.00	277.00	340.10
	5050.000	1010.20	0.00	1010.28	90.18	0.11	213.76	176.13	0.00	0.00	250.00	277.00	0.00
	5050.000	1010.33	0.13	1010.40	85.21	0.00	224.59	165.41	0.06	250.00	250.00	277.00	339.59
*	5800.000	1010.73	0.00	1010.73	500.00	185.54	63.67	140.79	0.00	0.00	232.00	250.00	0.00
*	5800.000	1010.84	0.12	1010.85	415.84	183.53	66.78	139.69	0.10	27.61	232.00	250.00	443.46
*	6500.000	1011.24	0.00	1011.36	135.56	56.96	153.69	179.35	0.00	0.00	195.00	224.00	0.00
*	6500.000	1011.33	0.09	1011.48	87.36	40.33	170.45	179.21	0.11	180.25	195.00	224.00	267.61
	6630.000	1011.92	0.00	1012.00	155.45	59.96	147.30	182.74	0.00	0.00	195.00	224.00	0.00
	6630.000	1012.03	0.11	1012.12	94.00	44.20	161.94	183.86	0.11	179.21	195.00	224.00	273.21

100-YEAR DISCHARGE, NATU

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	0.000	0.00	0.00	0.00	983.10	390.00	986.14	986.13	986.98	247.42	7.36	53.14	24.79
	0.000	0.00	0.00	0.00	983.10	390.00	986.24	0.00	986.99	211.27	6.96	56.04	26.83
*	10.000	10.00	0.00	0.00	983.20	390.00	986.85	0.00	987.25	85.06	5.17	79.02	42.29
	10.000	10.00	0.00	0.00	983.20	390.00	986.69	0.00	987.22	121.99	5.81	67.15	35.31
	120.000	110.00	0.00	0.00	984.20	390.00	987.81	0.00	988.23	91.72	5.30	76.71	40.72
	120.000	110.00	0.00	0.00	984.20	390.00	987.94	0.00	988.31	75.92	4.97	80.88	44.76
*	500.000	380.00	0.00	0.00	987.70	390.00	990.39	0.00	990.55	41.03	3.52	123.29	60.88
	500.000	380.00	0.00	0.00	987.70	390.00	990.48	0.00	990.68	50.48	3.94	107.20	54.89
*	545.000	45.00	0.00	0.00	988.17	390.00	990.59	0.00	990.88	92.42	4.87	91.91	40.57
	545.000	45.00	0.00	0.00	988.17	390.00	990.72	0.00	991.04	91.87	5.02	86.73	40.69
	630.000	85.00	0.00	0.00	989.07	390.00	991.62	991.61	992.20	167.05	6.82	80.72	30.17
	630.000	85.00	0.00	0.00	989.07	390.00	991.69	0.00	992.20	147.01	6.47	85.75	32.17
*	700.000	70.00	0.00	0.00	989.40	390.00	992.68	0.00	992.92	45.54	3.96	102.71	57.79
*	700.000	70.00	0.00	0.00	989.40	390.00	992.68	0.00	992.93	56.60	4.07	95.80	51.84
*	735.000	35.00	0.00	0.00	990.40	390.00	992.97	0.00	993.66	183.35	7.19	65.07	28.80
*	735.000	35.00	0.00	0.00	990.40	390.00	993.00	0.00	993.67	176.82	7.06	66.05	29.33
	801.000	66.00	0.00	0.00	990.50	390.00	994.16	0.00	995.11	177.47	7.84	49.75	29.28
	801.000	66.00	0.00	0.00	990.50	390.00	994.17	0.00	995.12	176.40	7.82	49.85	29.36
*	882.000	81.00	995.70	994.10	990.50	390.00	996.46	0.00	996.48	0.59	1.24	453.84	505.95
*	882.000	81.00	995.70	994.10	990.50	390.00	996.53	0.00	996.55	0.66	1.32	409.24	480.10
*	897.000	15.00	0.00	0.00	990.60	390.00	996.45	0.00	996.50	2.64	2.35	275.22	239.97
*	897.000	15.00	0.00	0.00	990.60	390.00	996.52	0.00	996.57	2.75	2.42	236.60	235.01
*	898.000	1.00	995.20	994.80	990.60	390.00	996.46	0.00	996.50	10.40	1.78	238.05	120.92
*	898.000	1.00	995.20	994.80	990.60	390.00	996.52	0.00	996.57	11.22	1.87	206.22	116.45
	903.000	5.00	995.20	994.80	990.60	390.00	996.46	0.00	996.50	10.15	1.76	240.45	122.42
	903.000	5.00	995.20	994.80	990.60	390.00	996.52	0.00	996.58	10.95	1.85	208.74	117.85
*	904.000	1.00	0.00	0.00	990.60	390.00	996.47	0.00	996.51	3.42	1.79	278.53	210.86
*	904.000	1.00	0.00	0.00	990.60	390.00	996.54	0.00	996.58	3.61	1.85	239.56	205.22
*	930.000	26.00	0.00	0.00	990.70	390.00	996.50	0.00	996.52	0.74	0.79	434.72	453.56
*	930.000	26.00	0.00	0.00	990.70	390.00	996.58	0.00	996.59	0.76	0.81	410.01	447.65
*	1100.000	170.00	0.00	0.00	991.40	390.00	996.52	0.00	996.54	1.57	1.04	339.77	311.18
*	1100.000	170.00	0.00	0.00	991.40	390.00	996.59	0.00	996.62	1.61	1.06	320.80	307.83

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	1225.000	125.00	0.00	0.00	992.33	390.00	996.54	0.00	996.59	5.89	1.71	220.14	160.70
*	1225.000	125.00	0.00	0.00	992.33	390.00	996.61	0.00	996.67	6.14	1.77	200.64	157.45
*	1350.000	125.00	0.00	0.00	993.25	390.00	996.63	0.00	996.79	32.71	3.31	121.44	68.19
*	1350.000	125.00	0.00	0.00	993.25	390.00	996.71	0.00	996.86	27.00	3.08	127.26	75.06
*	1411.000	61.00	0.00	0.00	993.70	390.00	996.86	0.00	996.92	9.14	1.92	201.22	129.02
*	1411.000	61.00	0.00	0.00	993.70	390.00	996.90	0.00	996.97	8.62	1.89	191.74	132.81
*	1499.000	88.00	997.20	996.70	993.70	390.00	998.11	0.00	998.13	1.16	0.89	427.61	361.49
*	1499.000	88.00	997.20	996.70	993.70	390.00	998.22	0.00	998.24	1.40	0.99	336.49	330.20
*	1550.000	51.00	0.00	0.00	994.20	390.00	998.06	0.00	998.22	52.01	4.71	177.29	54.08
*	1550.000	51.00	0.00	0.00	994.20	390.00	998.17	0.00	998.32	44.28	4.46	180.06	58.61
	1700.000	150.00	0.00	0.00	995.55	390.00	999.05	0.00	999.35	101.70	6.04	135.09	38.67
*	1700.000	150.00	0.00	0.00	995.55	390.00	999.07	0.00	999.45	115.17	6.47	113.15	36.34
*	1883.000	183.00	0.00	0.00	995.60	390.00	1000.26	0.00	1000.51	42.38	4.52	115.97	59.91
*	1883.000	183.00	0.00	0.00	995.60	390.00	1000.37	0.00	1000.60	37.54	4.35	120.88	63.66
*	1889.000	6.00	999.70	1000.10	995.60	390.00	1000.31	0.00	1000.96	250.29	6.48	60.42	24.65
*	1889.000	6.00	999.70	1000.10	995.60	390.00	1000.41	0.00	1000.93	214.08	5.99	79.49	26.66
*	1910.000	21.00	0.00	0.00	995.60	390.00	1001.11	0.00	1001.30	21.44	4.08	124.91	84.22
*	1910.000	21.00	0.00	0.00	995.60	390.00	1001.00	0.00	1001.20	23.48	4.20	121.33	80.49
	1931.000	21.00	0.00	0.00	994.60	390.00	1001.16	0.00	1001.43	28.47	4.32	95.83	73.09
	1931.000	21.00	0.00	0.00	994.60	390.00	1001.06	0.00	1001.34	30.38	4.42	93.70	70.76
*	1967.000	36.00	1005.10	1000.50	994.60	390.00	1001.87	0.00	1002.09	8.86	3.86	110.56	131.06
*	1967.000	36.00	1005.10	1000.50	994.60	390.00	1001.76	0.00	1001.98	9.42	3.94	108.18	127.10
*	2020.000	53.00	0.00	0.00	996.10	390.00	1002.20	0.00	1002.20	0.88	0.92	550.63	416.83
*	2020.000	53.00	0.00	0.00	996.10	390.00	1002.10	0.00	1002.11	1.01	0.98	517.29	387.90
	2090.000	70.00	0.00	0.00	996.50	390.00	1002.20	0.00	1002.21	1.00	0.94	560.80	389.73
	2090.000	70.00	0.00	0.00	996.50	390.00	1002.10	0.00	1002.11	1.18	1.00	513.03	358.39
	2160.000	70.00	0.00	0.00	996.90	390.00	1002.21	0.00	1002.22	1.44	1.06	497.27	324.68
	2160.000	70.00	0.00	0.00	996.90	390.00	1002.11	0.00	1002.12	1.72	1.14	453.32	297.00
*	2210.000	50.00	0.00	0.00	997.10	390.00	1002.21	0.00	1002.24	4.30	2.02	357.18	188.02
*	2210.000	50.00	0.00	0.00	997.10	390.00	1002.11	0.00	1002.15	5.60	2.28	305.60	164.85
*	2211.000	1.00	1000.90	1000.60	997.10	390.00	1002.21	0.00	1002.25	9.35	1.44	252.71	127.56
*	2211.000	1.00	1000.90	1000.60	997.10	390.00	1002.10	0.00	1002.16	15.03	1.98	203.82	100.60
	2268.000	57.00	1000.90	1000.60	997.10	390.00	1002.26	0.00	1002.30	9.70	1.47	239.87	125.25
	2268.000	57.00	1000.90	1000.60	997.10	390.00	1002.19	0.00	1002.25	15.78	1.91	198.79	98.18

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	2269.000	1.00	0.00	0.00	997.10	390.00	1002.26	0.00	1002.31	9.03	2.65	345.78	129.78
	2269.000	1.00	0.00	0.00	997.10	390.00	1002.19	0.00	1002.25	10.77	2.87	312.63	118.81
*	2320.000	51.00	0.00	0.00	997.40	390.00	1002.33	0.00	1002.34	3.95	1.49	437.20	196.75
*	2320.000	51.00	0.00	0.00	997.40	390.00	1002.28	0.00	1002.30	4.55	1.58	398.19	182.89
*	2450.000	130.00	0.00	0.00	998.10	390.00	1002.39	0.00	1002.43	10.31	2.15	291.15	121.47
*	2450.000	130.00	0.00	0.00	998.10	390.00	1002.36	0.00	1002.40	10.91	2.19	285.78	118.08
*	2550.000	100.00	0.00	0.00	998.70	390.00	1002.57	0.00	1002.70	34.76	3.61	154.00	66.15
*	2550.000	100.00	0.00	0.00	998.70	390.00	1002.54	0.00	1002.68	36.14	3.66	152.10	64.87
	2610.000	60.00	0.00	0.00	999.00	390.00	1002.85	0.00	1003.23	64.79	5.23	87.95	48.45
	2610.000	60.00	0.00	0.00	999.00	390.00	1002.82	0.00	1003.22	66.30	5.26	87.26	47.90
	2630.000	20.00	0.00	0.00	999.00	390.00	1002.98	0.00	1003.44	68.09	5.50	74.02	47.26
	2630.000	20.00	0.00	0.00	999.00	390.00	1002.96	0.00	1003.43	69.32	5.53	73.60	46.84
*	2650.000	20.00	0.00	0.00	999.00	390.00	1003.19	0.00	1004.12	198.78	7.72	50.53	27.66
*	2650.000	20.00	0.00	0.00	999.00	390.00	1003.18	0.00	1004.11	200.95	7.75	50.34	27.51
	2670.000	20.00	0.00	0.00	999.00	390.00	1003.89	0.00	1004.56	127.47	6.58	59.29	34.54
	2670.000	20.00	0.00	0.00	999.00	390.00	1003.88	0.00	1004.56	127.83	6.58	59.23	34.49
*	2675.000	5.00	0.00	0.00	999.00	390.00	1004.62	0.00	1004.82	17.44	3.60	118.92	93.40
*	2675.000	5.00	0.00	0.00	999.00	390.00	1004.62	0.00	1004.82	17.47	3.60	118.85	93.31
*	2690.000	15.00	0.00	0.00	999.00	390.00	1004.83	0.00	1004.90	7.70	2.46	225.72	140.57
*	2690.000	15.00	0.00	0.00	999.00	390.00	1004.83	0.00	1004.89	7.71	2.46	225.58	140.44
*	2740.000	50.00	0.00	0.00	997.10	390.00	1004.93	0.00	1004.94	0.44	0.71	935.79	589.90
*	2740.000	50.00	0.00	0.00	997.10	390.00	1004.93	0.00	1004.93	0.46	0.73	892.74	574.79
*	3100.000	360.00	0.00	0.00	1000.20	390.00	1004.96	0.00	1004.99	6.43	1.85	337.46	153.85
*	3100.000	360.00	0.00	0.00	1000.20	390.00	1004.96	0.00	1004.99	6.43	1.85	337.36	153.78
*	3200.000	100.00	0.00	0.00	1001.10	390.00	1005.08	0.00	1005.20	30.23	3.45	160.98	70.93
*	3200.000	100.00	0.00	0.00	1001.10	390.00	1005.08	0.00	1005.20	30.26	3.45	160.93	70.90
	3281.000	81.00	0.00	0.00	1001.40	390.00	1005.42	0.00	1005.74	60.51	4.58	85.21	50.14
	3281.000	81.00	0.00	0.00	1001.40	390.00	1005.42	0.00	1005.74	60.54	4.58	85.19	50.13
*	3322.000	41.00	1005.90	1005.20	1001.40	390.00	1005.87	0.00	1006.13	15.38	4.08	95.70	99.45
*	3322.000	41.00	1006.60	1005.20	1001.40	390.00	1006.01	0.00	1006.25	13.95	3.94	98.89	104.42
*	3355.000	33.00	0.00	0.00	1001.50	390.00	1006.22	0.00	1006.27	6.69	2.03	281.99	150.78
*	3355.000	33.00	0.00	0.00	1001.50	390.00	1006.34	0.00	1006.38	5.99	1.96	292.23	159.36
	3385.000	30.00	0.00	0.00	1001.50	390.00	1006.27	0.00	1006.29	3.86	1.56	405.65	198.40
	3385.000	30.00	0.00	0.00	1001.50	390.00	1006.38	0.00	1006.40	3.84	1.58	384.93	199.15

	SECND	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	3700.000	315.00	0.00	0.00	1002.25	390.00	1006.42	0.00	1006.45	6.47	1.80	325.26	153.38
	3700.000	315.00	0.00	0.00	1002.25	390.00	1006.53	0.00	1006.56	6.39	1.83	307.51	154.30
	4000.000	300.00	0.00	0.00	1003.00	390.00	1006.68	0.00	1006.73	12.78	2.26	255.11	109.11
	4000.000	300.00	0.00	0.00	1003.00	390.00	1006.78	0.00	1006.83	12.68	2.31	236.95	109.54
	4280.000	280.00	0.00	0.00	1003.10	390.00	1007.01	0.00	1007.05	10.76	2.19	261.32	118.90
	4280.000	280.00	0.00	0.00	1003.10	390.00	1007.11	0.00	1007.16	10.71	2.23	241.31	119.17
*	4320.000	40.00	0.00	0.00	1003.10	390.00	1007.07	0.00	1007.14	30.40	2.24	197.71	70.73
*	4320.000	40.00	0.00	0.00	1003.10	390.00	1007.18	0.00	1007.28	41.04	2.63	156.64	60.88
*	4331.000	11.00	0.00	0.00	1003.20	390.00	1007.14	1007.05	1007.76	180.23	6.94	83.27	29.05
*	4331.000	11.00	0.00	0.00	1003.20	390.00	1007.26	0.00	1007.76	151.06	6.42	92.15	31.73
*	4342.000	11.00	0.00	0.00	1003.20	390.00	1007.93	0.00	1008.09	51.62	3.94	163.36	54.28
*	4342.000	11.00	0.00	0.00	1003.20	390.00	1007.84	0.00	1008.03	61.50	4.27	147.83	49.73
*	4390.000	48.00	0.00	0.00	1003.00	390.00	1008.15	0.00	1008.17	1.04	1.14	361.08	382.40
*	4390.000	48.00	0.00	0.00	1003.00	390.00	1008.10	0.00	1008.12	1.09	1.16	350.43	372.95
*	4435.000	45.00	0.00	0.00	1002.90	390.00	1008.16	0.00	1008.46	24.76	4.89	110.22	78.38
*	4435.000	45.00	0.00	0.00	1002.90	390.00	1008.12	0.00	1008.44	26.54	5.03	105.79	75.70
*	4475.000	40.00	0.00	0.00	1003.40	390.00	1008.30	1007.63	1008.93	54.58	6.74	70.61	52.79
*	4475.000	40.00	0.00	0.00	1003.40	390.00	1008.27	1007.56	1008.94	57.98	6.92	67.57	51.22
*	4485.000	10.00	0.00	0.00	1003.70	390.00	1009.18	0.00	1009.22	2.42	1.79	237.67	250.48
*	4485.000	10.00	0.00	0.00	1003.70	390.00	1009.21	0.00	1009.26	2.35	1.77	240.79	254.47
	4500.000	15.00	0.00	0.00	1004.00	390.00	1009.18	0.00	1009.24	3.18	1.97	209.33	218.72
	4500.000	15.00	0.00	0.00	1004.00	390.00	1009.22	0.00	1009.27	3.08	1.95	212.09	222.12
	4560.000	60.00	0.00	0.00	1004.60	390.00	1009.20	0.00	1009.27	4.10	2.02	192.72	192.59
	4560.000	60.00	0.00	0.00	1004.60	390.00	1009.24	0.00	1009.30	3.99	2.01	194.38	195.20
*	4611.000	51.00	0.00	0.00	1004.90	390.00	1009.24	0.00	1009.37	10.38	3.11	137.79	121.05
*	4611.000	51.00	0.00	0.00	1004.90	390.00	1009.27	0.00	1009.40	10.00	3.07	141.46	123.30
	4668.000	57.00	1009.10	1009.10	1004.90	390.00	1009.76	0.00	1009.81	5.44	2.08	306.71	167.19
	4668.000	57.00	1009.10	1009.10	1004.90	390.00	1009.84	0.00	1009.92	9.92	2.56	221.78	123.83
	4720.000	52.00	0.00	0.00	1005.00	390.00	1009.80	0.00	1009.85	9.71	2.25	231.47	125.14
	4720.000	52.00	0.00	0.00	1005.00	390.00	1009.93	0.00	1009.98	9.56	2.25	229.36	126.13
	5050.000	330.00	0.00	0.00	1005.80	390.00	1010.20	0.00	1010.28	15.84	2.65	193.67	97.99
	5050.000	330.00	0.00	0.00	1005.80	390.00	1010.33	0.00	1010.40	15.59	2.67	191.72	98.76
*	5800.000	750.00	0.00	0.00	1006.80	390.00	1010.73	0.00	1010.73	2.99	1.18	707.34	225.58
*	5800.000	750.00	0.00	0.00	1006.80	390.00	1010.84	0.00	1010.85	2.90	1.19	669.12	228.90

	SECND	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	6500.000	700.00	0.00	0.00	1008.70	390.00	1011.24	0.00	1011.36	68.04	3.55	148.03	47.28
*	6500.000	700.00	0.00	0.00	1008.70	390.00	1011.33	0.00	1011.48	68.70	3.71	131.57	47.05
	6630.000	130.00	0.00	0.00	1009.10	390.00	1011.92	0.00	1012.00	35.31	2.86	188.75	65.63
	6630.000	130.00	0.00	0.00	1009.10	390.00	1012.03	0.00	1012.12	35.08	2.97	166.54	65.85

100-YEAR DISCHARGE, NATU

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	0.000	390.00	986.14	0.00	0.00	0.00	33.57	0.00
	0.000	390.00	986.24	0.10	0.00	0.10	31.24	0.00
*	10.000	390.00	986.85	0.00	0.71	0.00	55.37	10.00
	10.000	390.00	986.69	-0.15	0.45	-0.15	32.00	10.00
	120.000	390.00	987.81	0.00	0.96	0.00	53.24	110.00
	120.000	390.00	987.94	0.13	1.24	0.13	42.00	110.00
*	500.000	390.00	990.39	0.00	2.58	0.00	117.63	380.00
	500.000	390.00	990.48	0.09	2.54	0.09	90.00	380.00
*	545.000	390.00	990.59	0.00	0.20	0.00	114.84	45.00
	545.000	390.00	990.72	0.13	0.24	0.13	90.00	45.00
	630.000	390.00	991.62	0.00	1.03	0.00	75.84	85.00
	630.000	390.00	991.69	0.07	0.97	0.07	75.00	85.00
*	700.000	390.00	992.68	0.00	1.06	0.00	43.52	70.00
*	700.000	390.00	992.68	-0.01	0.99	-0.01	37.98	70.00
*	735.000	390.00	992.97	0.00	0.28	0.00	35.89	35.00
*	735.000	390.00	993.00	0.03	0.32	0.03	35.00	35.00
	801.000	390.00	994.16	0.00	1.19	0.00	14.00	66.00
	801.000	390.00	994.17	0.01	1.17	0.01	14.00	66.00
*	882.000	390.00	996.46	0.00	2.31	0.00	237.52	81.00
*	882.000	390.00	996.53	0.07	2.37	0.07	150.00	81.00
*	897.000	390.00	996.45	0.00	-0.02	0.00	233.73	15.00
*	897.000	390.00	996.52	0.07	-0.02	0.07	112.97	15.00
*	898.000	390.00	996.46	0.00	0.01	0.00	233.70	1.00
*	898.000	390.00	996.52	0.06	0.00	0.06	121.40	1.00
	903.000	390.00	996.46	0.00	0.01	0.00	235.50	5.00
	903.000	390.00	996.52	0.06	0.01	0.06	123.75	5.00
*	904.000	390.00	996.47	0.00	0.01	0.00	236.20	1.00
*	904.000	390.00	996.54	0.06	0.01	0.06	114.59	1.00
*	930.000	390.00	996.50	0.00	0.03	0.00	144.57	26.00
*	930.000	390.00	996.58	0.08	0.04	0.08	115.87	26.00
*	1100.000	390.00	996.52	0.00	0.01	0.00	135.75	170.00
*	1100.000	390.00	996.59	0.08	0.01	0.08	109.52	170.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	1225.000	390.00	996.54	0.00	0.02	0.00	125.58	125.00
*	1225.000	390.00	996.61	0.07	0.02	0.07	91.19	125.00
*	1350.000	390.00	996.63	0.00	0.09	0.00	108.52	125.00
*	1350.000	390.00	996.71	0.08	0.10	0.08	95.00	125.00
*	1411.000	390.00	996.86	0.00	0.23	0.00	148.16	61.00
*	1411.000	390.00	996.90	0.04	0.19	0.04	110.00	61.00
*	1499.000	390.00	998.11	0.00	1.26	0.00	210.13	88.00
*	1499.000	390.00	998.22	0.10	1.32	0.10	110.00	88.00
*	1550.000	390.00	998.06	0.00	-0.06	0.00	121.73	51.00
*	1550.000	390.00	998.17	0.12	-0.04	0.12	100.00	51.00
	1700.000	390.00	999.05	0.00	0.99	0.00	112.89	150.00
*	1700.000	390.00	999.07	0.02	0.90	0.02	66.41	150.00
*	1883.000	390.00	1000.26	0.00	1.21	0.00	44.00	183.00
*	1883.000	390.00	1000.37	0.11	1.30	0.11	44.00	183.00
*	1889.000	390.00	1000.31	0.00	0.05	0.00	41.00	6.00
*	1889.000	390.00	1000.41	0.10	0.04	0.10	41.00	6.00
*	1910.000	390.00	1001.11	0.00	0.80	0.00	32.00	21.00
*	1910.000	390.00	1001.00	-0.11	0.59	-0.11	32.00	21.00
	1931.000	390.00	1001.16	0.00	0.05	0.00	20.50	21.00
	1931.000	390.00	1001.06	-0.10	0.06	-0.10	20.43	21.00
*	1967.000	390.00	1001.87	0.00	0.71	0.00	20.97	36.00
*	1967.000	390.00	1001.76	-0.11	0.70	-0.11	20.90	36.00
*	2020.000	390.00	1002.20	0.00	0.32	0.00	128.00	53.00
*	2020.000	390.00	1002.10	-0.10	0.34	-0.10	122.00	53.00
	2090.000	390.00	1002.20	0.00	0.01	0.00	162.87	70.00
	2090.000	390.00	1002.10	-0.10	0.01	-0.10	137.67	70.00
	2160.000	390.00	1002.21	0.00	0.01	0.00	160.06	70.00
	2160.000	390.00	1002.11	-0.10	0.01	-0.10	133.68	70.00
*	2210.000	390.00	1002.21	0.00	0.00	0.00	232.58	50.00
*	2210.000	390.00	1002.11	-0.10	0.00	-0.10	197.91	50.00
*	2211.000	390.00	1002.21	0.00	0.00	0.00	232.58	1.00
*	2211.000	390.00	1002.10	-0.10	-0.01	-0.10	191.60	1.00
	2268.000	390.00	1002.26	0.00	0.05	0.00	203.64	57.00
	2268.000	390.00	1002.19	-0.07	0.09	-0.07	180.57	57.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	2269.000	390.00	1002.26	0.00	0.00	0.00	203.65	1.00
	2269.000	390.00	1002.19	-0.07	0.00	-0.07	189.82	1.00
*	2320.000	390.00	1002.33	0.00	0.07	0.00	154.67	51.00
*	2320.000	390.00	1002.28	-0.05	0.09	-0.05	125.16	51.00
*	2450.000	390.00	1002.39	0.00	0.07	0.00	112.00	130.00
*	2450.000	390.00	1002.36	-0.04	0.08	-0.04	112.00	130.00
*	2550.000	390.00	1002.57	0.00	0.17	0.00	62.00	100.00
*	2550.000	390.00	1002.54	-0.03	0.18	-0.03	62.00	100.00
	2610.000	390.00	1002.85	0.00	0.28	0.00	32.00	60.00
	2610.000	390.00	1002.82	-0.02	0.29	-0.02	32.00	60.00
	2630.000	390.00	1002.98	0.00	0.13	0.00	22.00	20.00
	2630.000	390.00	1002.96	-0.02	0.14	-0.02	22.00	20.00
*	2650.000	390.00	1003.19	0.00	0.22	0.00	12.63	20.00
*	2650.000	390.00	1003.18	-0.02	0.22	-0.02	12.63	20.00
	2670.000	390.00	1003.89	0.00	0.69	0.00	12.65	20.00
	2670.000	390.00	1003.88	0.00	0.70	0.00	12.65	20.00
*	2675.000	390.00	1004.62	0.00	0.73	0.00	24.00	5.00
*	2675.000	390.00	1004.62	0.00	0.74	0.00	24.00	5.00
*	2690.000	390.00	1004.83	0.00	0.21	0.00	54.00	15.00
*	2690.000	390.00	1004.83	0.00	0.21	0.00	54.00	15.00
*	2740.000	390.00	1004.93	0.00	0.10	0.00	193.60	50.00
*	2740.000	390.00	1004.93	0.00	0.10	0.00	160.01	50.00
*	3100.000	390.00	1004.96	0.00	0.03	0.00	110.00	360.00
*	3100.000	390.00	1004.96	0.00	0.03	0.00	110.00	360.00
*	3200.000	390.00	1005.08	0.00	0.12	0.00	62.00	100.00
*	3200.000	390.00	1005.08	0.00	0.12	0.00	62.00	100.00
	3281.000	390.00	1005.42	0.00	0.34	0.00	23.10	81.00
	3281.000	390.00	1005.42	0.00	0.34	0.00	23.10	81.00
*	3322.000	390.00	1005.87	0.00	0.45	0.00	23.10	41.00
*	3322.000	390.00	1006.01	0.14	0.59	0.14	23.10	41.00
*	3355.000	390.00	1006.22	0.00	0.35	0.00	89.00	33.00
*	3355.000	390.00	1006.34	0.12	0.33	0.12	89.00	33.00
	3385.000	390.00	1006.27	0.00	0.05	0.00	139.00	30.00
	3385.000	390.00	1006.38	0.11	0.04	0.11	117.69	30.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	3700.000	390.00	1006.42	0.00	0.15	0.00	143.97	315.00
	3700.000	390.00	1006.53	0.11	0.15	0.11	111.05	315.00
	4000.000	390.00	1006.68	0.00	0.26	0.00	133.58	300.00
	4000.000	390.00	1006.78	0.10	0.25	0.10	98.10	300.00
	4280.000	390.00	1007.01	0.00	0.33	0.00	121.00	280.00
	4280.000	390.00	1007.11	0.10	0.33	0.10	90.07	280.00
*	4320.000	390.00	1007.07	0.00	0.07	0.00	93.24	40.00
*	4320.000	390.00	1007.18	0.11	0.08	0.11	57.25	40.00
*	4331.000	390.00	1007.14	0.00	0.07	0.00	74.72	11.00
*	4331.000	390.00	1007.26	0.12	0.08	0.12	77.27	11.00
*	4342.000	390.00	1007.93	0.00	0.79	0.00	107.55	11.00
*	4342.000	390.00	1007.84	-0.09	0.58	-0.09	97.54	11.00
*	4390.000	390.00	1008.15	0.00	0.21	0.00	127.00	48.00
*	4390.000	390.00	1008.10	-0.04	0.26	-0.04	110.68	48.00
*	4435.000	390.00	1008.16	0.00	0.01	0.00	107.61	45.00
*	4435.000	390.00	1008.12	-0.04	0.01	-0.04	105.63	45.00
*	4475.000	390.00	1008.30	0.00	0.14	0.00	65.95	40.00
*	4475.000	390.00	1008.27	-0.03	0.15	-0.03	60.52	40.00
*	4485.000	390.00	1009.18	0.00	0.88	0.00	85.00	10.00
*	4485.000	390.00	1009.21	0.04	0.95	0.04	85.00	10.00
	4500.000	390.00	1009.18	0.00	0.00	0.00	77.00	15.00
	4500.000	390.00	1009.22	0.04	0.00	0.04	77.00	15.00
	4560.000	390.00	1009.20	0.00	0.02	0.00	47.00	60.00
	4560.000	390.00	1009.24	0.04	0.02	0.04	47.00	60.00
*	4611.000	390.00	1009.24	0.00	0.03	0.00	102.75	51.00
*	4611.000	390.00	1009.27	0.03	0.03	0.03	110.73	51.00
	4668.000	390.00	1009.76	0.00	0.52	0.00	275.14	57.00
	4668.000	390.00	1009.84	0.08	0.57	0.08	157.87	57.00
	4720.000	390.00	1009.80	0.00	0.04	0.00	97.54	52.00
	4720.000	390.00	1009.93	0.13	0.09	0.13	90.10	52.00
	5050.000	390.00	1010.20	0.00	0.40	0.00	90.18	330.00
	5050.000	390.00	1010.33	0.13	0.40	0.13	85.21	330.00
*	5800.000	390.00	1010.73	0.00	0.53	0.00	500.00	750.00
*	5800.000	390.00	1010.84	0.12	0.52	0.12	415.84	750.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	6500.000	390.00	1011.24	0.00	0.51	0.00	135.56	700.00
*	6500.000	390.00	1011.33	0.09	0.49	0.09	87.36	700.00
	6630.000	390.00	1011.92	0.00	0.68	0.00	155.45	130.00
	6630.000	390.00	1012.03	0.11	0.70	0.11	94.00	130.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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WARNING SECNO=     10.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    500.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    545.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    700.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    700.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    735.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    735.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    882.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    882.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    897.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    897.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    898.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    898.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    904.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    904.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    930.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    930.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1100.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1100.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1225.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1225.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1350.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1350.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1411.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1411.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1499.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1499.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1550.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1550.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1700.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1883.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1883.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1889.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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WARNING SECNO=   1889.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1910.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1910.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1967.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1967.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2020.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2020.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2210.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2210.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2211.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2211.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2320.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2320.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2450.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2450.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2550.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2550.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2650.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2650.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2675.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2675.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2690.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2690.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2740.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2740.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3100.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3100.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3200.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3200.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3322.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3322.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3355.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3355.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4320.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4320.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4331.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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WARNING SECNO=   4331.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4342.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4342.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4390.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4390.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4435.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4435.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4475.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4475.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4485.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4485.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4611.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4611.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   5800.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5800.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   6500.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   6500.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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FLOODWAY DATA, 100-YEAR DISCHARGE, NATU
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
0.000	31.	56.	7.0	986.2	986.1	0.1
10.000	32.	67.	5.8	986.6	986.8	-0.2
120.000	42.	81.	4.8	987.9	987.8	0.1
500.000	90.	107.	3.6	990.5	990.4	0.1
545.000	90.	87.	4.5	990.7	990.6	0.1
630.000	75.	86.	4.5	991.7	991.6	0.1
700.000	50.	96.	4.1	992.7	992.7	0.0
735.000	35.	66.	5.9	993.0	993.0	0.0
801.000	14.	50.	7.8	994.2	994.2	0.0
882.000	150.	409.	1.0	996.6	996.5	0.1
897.000	113.	237.	1.6	996.5	996.4	0.1
898.000	121.	206.	1.9	996.6	996.5	0.1
903.000	124.	209.	1.9	996.6	996.5	0.1
904.000	115.	240.	1.6	996.6	996.5	0.1
930.000	116.	410.	1.0	996.6	996.5	0.1
1100.000	110.	321.	1.2	996.6	996.5	0.1
1225.000	91.	201.	1.9	996.6	996.5	0.1
1350.000	95.	127.	3.1	996.7	996.6	0.1
1411.000	110.	192.	2.0	996.9	996.9	0.0
1499.000	110.	336.	1.2	998.2	998.1	0.1
1550.000	100.	180.	2.2	998.2	998.1	0.1
1700.000	66.	113.	3.4	999.0	999.0	0.0
1883.000	44.	121.	3.2	1000.4	1000.3	0.1
1889.000	41.	79.	4.9	1000.4	1000.3	0.1
1910.000	32.	121.	3.2	1001.0	1001.1	-0.1
1931.000	20.	94.	4.2	1001.1	1001.2	-0.1
1967.000	21.	108.	3.6	1001.8	1001.9	-0.1
2020.000	122.	517.	0.8	1002.1	1002.2	-0.1
2090.000	138.	513.	0.8	1002.1	1002.2	-0.1
2160.000	134.	453.	0.9	1002.1	1002.2	-0.1
2210.000	198.	306.	1.3	1002.1	1002.2	-0.1
2211.000	192.	204.	1.9	1002.1	1002.2	-0.1
2268.000	181.	199.	2.0	1002.2	1002.3	-0.1
2269.000	190.	313.	1.2	1002.2	1002.3	-0.1
2320.000	125.	398.	1.0	1002.3	1002.3	0.0
2450.000	112.	286.	1.4	1002.4	1002.4	0.0
2550.000	62.	152.	2.6	1002.6	1002.6	0.0
2610.000	32.	87.	4.5	1002.8	1002.8	0.0
2630.000	22.	74.	5.3	1003.0	1003.0	0.0
2650.000	13.	50.	7.7	1003.2	1003.2	0.0
2670.000	13.	59.	6.6	1003.9	1003.9	0.0
2675.000	24.	119.	3.3	1004.6	1004.6	0.0

FLOODWAY DATA, 100-YEAR DISCHARGE, NATU
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
2690.000	54.	226.	1.7	1004.8	1004.8	0.0
2740.000	160.	893.	0.4	1004.9	1004.9	0.0
3100.000	110.	337.	1.2	1005.0	1005.0	0.0
3200.000	62.	161.	2.4	1005.1	1005.1	0.0
3281.000	23.	85.	4.6	1005.4	1005.4	0.0
3322.000	23.	99.	3.9	1006.0	1005.9	0.1
3355.000	89.	292.	1.3	1006.3	1006.2	0.1
3385.000	118.	385.	1.0	1006.4	1006.3	0.1
3700.000	111.	308.	1.3	1006.5	1006.4	0.1
4000.000	98.	237.	1.6	1006.8	1006.7	0.1
4280.000	90.	241.	1.6	1007.1	1007.0	0.1
4320.000	77.	157.	2.5	1007.2	1007.1	0.1
4331.000	107.	92.	4.2	1007.2	1007.1	0.1
4342.000	120.	148.	2.6	1007.8	1007.9	-0.1
4390.000	125.	350.	1.1	1008.1	1008.1	0.0
4435.000	106.	106.	3.7	1008.2	1008.2	0.0
4475.000	84.	68.	5.8	1008.3	1008.3	0.0
4485.000	85.	241.	1.6	1009.2	1009.2	0.0
4500.000	77.	212.	1.8	1009.2	1009.2	0.0
4560.000	47.	194.	2.0	1009.2	1009.2	0.0
4611.000	175.	141.	2.8	1009.2	1009.2	0.0
4668.000	175.	222.	1.8	1009.9	1009.8	0.1
4720.000	90.	229.	1.7	1009.9	1009.8	0.1
5050.000	90.	192.	2.0	1010.3	1010.2	0.1
5800.000	416.	669.	0.6	1010.8	1010.7	0.1
6500.000	87.	132.	3.0	1011.3	1011.2	0.1
6630.000	94.	167.	2.3	1012.0	1011.9	0.1

00BREAK00

1) COUNTY: OSCEOLA

2) STUDY NAME: CITY OF EVART

3) WATERCOURSE: TWIN CREEK

4) DOCUMENT TYPE: 500YR SUMMARY

00BREAK00

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T1      CITY OF EVART, MI, FIS
T2      TWIN CREEK
T3      500-YEAR DISCHARGE

J1  ICHECK    INQ      NINV     IDIR     STRT     METRIC   HVINS    Q        WSEL     FQ
                 3                                                          984.3

J2  NPROF     IPLOT    PRFVS    XSECV    XSECH    FN       ALLDC    IBW      CHNIM    ITRACE
     15                 -1
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       EL MIN    SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*PROF 2


CCHV=    0.300 CEHV=    0.500
*SECNO 0.000
3720 CRITICAL DEPTH ASSUMED
                CROSS SECTION A MOVED D/S TO CONFLUENCE WITH THE MUSKEGON R.
    0.000      3.48    986.58    986.58    984.30    987.40      0.81      0.00      0.00    986.00
    500.0      10.9     488.9       0.2       3.4      66.9       0.2       0.0       0.0    986.40
     0.00      3.16      7.31      1.37     0.030     0.045     0.030     0.000    983.10     66.76
 0.018812        0.        0.        0.         0        22         0      0.00     47.05    113.81

*SECNO 10.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.62

3685 20 TRIALS ATTEMPTED WSEL,CWSEL
   10.000      4.03    987.23    986.68      0.00    987.63      0.40      0.11      0.13    986.10
    500.0      50.2     444.1       5.6      16.4      84.4       2.6       0.0       0.0    986.50
     0.00      3.06      5.26      2.13     0.030     0.045     0.030     0.000    983.20     48.18
 0.007163       10.       10.       10.        21         5         0      0.00     71.09    119.27

*SECNO 120.000
                CROSS SECTION A
  120.000      3.88    988.08      0.00      0.00    988.56      0.48      0.89      0.04    987.10
    500.0      37.1     459.3       3.6      12.0      79.8       1.7       0.3       0.2    987.50
     0.01      3.08      5.76      2.09     0.030     0.045     0.030     0.000    984.20     50.62
 0.009222      110.      110.      110.         3         0         0      0.00     67.22    117.84

*SECNO 500.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.56

3470 ENCROACHMENT STATIONS=      170.0     500.0  TYPE=      1  TARGET=     -170.000
                CROSS SECTION B
  500.000      2.92    990.62      0.00      0.00    990.79      0.17      2.13      0.09    990.00
    500.0       0.8     184.9     314.3       0.6      51.5      97.8       1.3       1.0    988.30
     0.04      1.35      3.59      3.21     0.030     0.045     0.030     0.000    987.70    247.95
 0.003775      380.      380.      380.         4         0         0      0.00    119.94    367.90
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 545.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.68

3470 ENCROACHMENT STATIONS=      170.0     500.0  TYPE=      1  TARGET=     -170.000
   545.000      2.62    990.79      0.00      0.00    991.09      0.30      0.24      0.06    990.47
     500.0       0.2     222.0     277.8       0.2      45.7      69.8       1.5       1.1    988.77
      0.04      1.29      4.86      3.98     0.030     0.045     0.030     0.000    988.17    248.92
  0.008110       45.       45.       45.         2         0         0      0.00    116.96    365.87

CCHV=    0.500 CEHV=    1.000
*SECNO 630.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      170.0     325.0  TYPE=      1  TARGET=      155.000
                CROSS SECTION B MOVED U/S
   630.000      2.77    991.84    991.84      0.00    992.50      0.66      0.98      0.36    991.37
     500.0       0.4     362.6     137.0       0.4      48.6      48.6       1.7       1.3    989.67
      0.04      1.04      7.46      2.82     0.070     0.045     0.070     0.000    989.07    248.43
  0.017549       85.       85.       85.         2         8         0      0.00     76.57    325.00

*SECNO 700.000

3265 DIVIDED FLOW

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.83

                ABANDON STRUCTURE
   700.000      3.58    992.98      0.00      0.00    993.29      0.31      0.61      0.17    990.30
     500.0      14.5     485.5       0.0       8.2     107.3       0.1       1.8       1.4    990.00
      0.05      1.76      4.52      0.18     0.070     0.045     0.070     0.000    989.40     54.86
  0.005239       70.       70.       70.         2         0         0      0.00     44.25    111.08

*SECNO 735.000

3301 HV CHANGED MORE THAN HVINS
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	GLOB	GCH	GROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.53

3470 ENCROACHMENT STATIONS= 170.0 285.0 TYPE= 1 TARGET= 115.000
CROSS SECTION B MOVED U/S

735.000	2.89	993.29	0.00	0.00	994.11	0.82	0.31	0.51	992.70
500.0	0.7	401.3	98.0	0.6	51.0	25.2	1.9	1.4	991.00
0.05	1.24	7.86	3.88	0.070	0.045	0.070	0.000	990.40	248.03
0.018306	35.	35.	35.	2	0	0	0.00	36.97	285.00

*SECNO 801.000

3470 ENCROACHMENT STATIONS= 250.0 264.0 TYPE= 1 TARGET= 14.000

801.000	4.09	994.59	0.00	0.00	995.84	1.25	1.30	0.43	990.70
500.0	0.0	500.0	0.0	0.0	55.7	0.0	2.0	1.5	100000.00
0.05	0.00	8.97	0.00	0.000	0.045	0.000	0.000	990.50	250.00
0.021085	66.	66.	66.	2	0	0	0.00	14.00	264.00

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	4.25	2.80	0.00	6.70	0.00	21.30	0.00	990.50	990.50

*SECNO 882.000
3280 CROSS SECTION 882.00 EXTENDED 0.22 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 15.87

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1030.95	994.71	0.00	382.	118.	21.	24.	994.10	995.70	299.

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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3470 ENCROACHMENT STATIONS=        0.0     425.0  TYPE=      1  TARGET=      424.999
                U/S FACE OF MAIN ST.
   882.000      6.11    996.61      0.00      0.00    996.63      0.02      0.79      0.00    990.70
     500.0     266.4     126.3     107.3     261.4      84.3     145.2       2.5       1.7    990.70
      0.07      1.02      1.50      0.74     0.030     0.030     0.030     0.000    990.50    133.55
  0.000084       81.       81.       81.         1         0         9      0.00    263.39    396.94


CCHV=    0.300 CEHV=    0.500
*SECNO 897.000
3280 CROSS SECTION    897.00 EXTENDED      0.19 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.49


3470 ENCROACHMENT STATIONS=        0.0     425.0  TYPE=      1  TARGET=      424.999
   897.000      5.99    996.59      0.00      0.00    996.65      0.06      0.00      0.02    992.00
     500.0     121.3     185.4     193.3     112.1      67.2     130.7       2.7       1.8    990.60
      0.08      1.08      2.76      1.48     0.030     0.030     0.030     0.000    990.60    135.64
  0.000349       15.       15.       15.         2         0         0      0.00    258.51    394.15


*SECNO 898.000
3280 CROSS SECTION    898.00 EXTENDED      0.20 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.54


3370 NORMAL BRIDGE, NRD=  17 MIN ELTRD=   995.20 MAX ELLC=   994.80


3470 ENCROACHMENT STATIONS=        0.0     425.0  TYPE=      1  TARGET=      424.999
   898.000      6.00    996.60      0.00      0.00    996.66      0.05      0.00      0.00    992.00
     500.0     181.7     103.9     214.4     100.2      52.8     121.4       2.7       1.8    990.60
      0.08      1.81      1.97      1.77     0.030     0.030     0.030     0.000    990.60    135.22
  0.001205        1.        1.        1.         1         0         0    -37.13    259.49    394.71


*SECNO 903.000
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

3280 CROSS SECTION    903.00 EXTENDED      0.21 FEET

3370 NORMAL BRIDGE, NRD=  17 MIN ELTRD=   995.20 MAX ELLC=   994.80

3470 ENCROACHMENT STATIONS=        0.0     425.0  TYPE=      1  TARGET=      424.999
   903.000      6.01    996.61      0.00      0.00    996.66      0.05      0.01      0.00    992.00
     500.0     182.5     103.1     214.5     101.4      53.0     122.8       2.7       1.9    990.60
      0.08      1.80      1.95      1.75     0.030     0.030     0.030     0.000    990.60    134.42
  0.001175        5.        5.        5.         0         0         0    -37.13    261.34    395.77

*SECNO 904.000
3280 CROSS SECTION    904.00 EXTENDED      0.21 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.64

3470 ENCROACHMENT STATIONS=        0.0     425.0  TYPE=      1  TARGET=      424.999
   904.000      6.02    996.62      0.00      0.00    996.66      0.04      0.00      0.00    992.00
     500.0     139.9     139.5     220.6     114.5      67.5     133.5       2.7       1.9    990.60
      0.08      1.22      2.07      1.65     0.030     0.045     0.030     0.000    990.60    134.08
  0.000439        1.        1.        1.         0         0         0      0.00    262.14    396.23

*SECNO 930.000
3280 CROSS SECTION    930.00 EXTENDED      2.25 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.05

                CROSS SECTION C MOVED D/S
   930.000      5.96    996.66      0.00      0.00    996.68      0.02      0.00      0.01    992.50
     500.0     321.1      57.6     121.3     273.2      60.3     123.6       2.9       2.0    992.80
      0.08      1.18      0.96      0.98    0 030     0.045     0.030     0.000    990.70      0.00
  0.000104       26.       26.       26.         1         0         0      0.00    146.92    146.92

*SECNO 1100.000
3280 CROSS SECTION   1100.00 EXTENDED      1.58 FEET
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.70

CROSS SECTION C

1100.000	5.28	996.68	0.00	0.00	996.71	0.03	0.02	0.01	993.20
500.0	325.9	64.9	109.3	220.7	52.2	88.6	4.5	2.6	993.50
0.12	1.48	1.24	1.23	0.030	0.045	0.030	0.000	991.40	0.00
0.000214	170.	170.	170.	2	0	0	0.00	137.52	137.52

*SECNO 1225.000
3280 CROSS SECTION 1225.00 EXTENDED 0.67 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.54

1225.000	4.37	996.70	0.00	0.00	996.77	0.07	0.05	0.02	994.13
500.0	327.6	81.4	90.9	149.7	41.3	50.0	5.4	2.9	994.43
0.13	2.19	1.97	1.82	0.030	0.045	0.030	0.000	992.33	0.00
0.000736	125.	125.	125.	0	0	0	0.00	127.41	127.41

*SECNO 1350.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.46

CROSS SECTION C MOVED U/S

1350.000	3.56	996.81	0.00	0.00	997.01	0.20	0.17	0.06	995.05
500.0	319.8	113.3	66.9	87.1	31.6	23.5	6.0	3.3	995.35
0.14	3.67	3.58	2.85	0.030	0.045	0.030	0.000	993.25	2.76
0.003464	125.	125.	125.	2	0	0	0.00	115.11	117.88

*SECNO 1411.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.88

1411.000	3.38	997.08	0.00	0.00	997.15	0.07	0.10	0.04	994.80
500.0	319.8	75.0	105.2	148.2	35.7	50.9	6.2	3.5	994.80
0.15	2.16	2.10	2.07	0.030	0.040	0.030	0.000	993.70	166.39
0.000980	61.	61.	61.	2	0	0	0.00	158.91	325.30

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	GLOB	GCH	GROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	4.25	3.00	0.00	12.00	0.00	28.86	0.00	993.70	993.70

*SECNO 1499.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.53

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1016.89	997.15	0.00	378.	124.	29.	36.	996.70	997.20	218.

U/S FACE OF PINE ST-NINETH ST. BRIDGE

1499.000	4.58	998.28	0.00	0.00	998.30	0.02	1.15	0.00	994.80
500.0	329.2	53.3	117.5	306.8	50.8	106.3	6.9	3.9	994.80
0.17	1.07	1.05	1.11	0.030	0.040	0.030	0.000	993.70	120.34
0.000154	88.	88.	88.	1	0	7	0.00	218.45	338.79

*SECNO 1550.000
3280 CROSS SECTION 1550.00 EXTENDED 0.30 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.15

CROSS SECTION C MOVED U/S

1550.000	4.00	998.20	0.00	0.00	998.43	0.22	0.02	0.10	996.00
500.0	237.9	202.9	59.3	121.4	36.9	37.1	7.3	4.1	996.30
0.18	1.96	5.49	1.60	0.090	0.045	0.090	0.000	994.20	0.00
0.006624	51.	51.	51.	2	0	0	0.00	123.38	123.38

CCHV= 0.300 CEHV= 0.500
*SECNO 1700.000
3280 CROSS SECTION 1700.00 EXTENDED 0.09 FEET

CROSS SECTION C MOVED U/S

1700.000	3.79	999.34	0.00	0.00	999.65	0.31	1.18	0.04	997.35
500.0	230.6	216.5	53.0	105.1	34.4	30.4	7.9	4.5	997.65
0.19	2.19	6.29	1.74	0.090	0.045	0.090	0.000	995.55	0.00
0.009538	150.	150.	150.	3	0	0	0.00	121.05	121.05

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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 1883.000

3470 ENCROACHMENT STATIONS=        6.0      50.0  TYPE=      1  TARGET=       44.000
  1883.000      4.97   1000.57      0.00      0.00   1000.91      0.34      1.24      0.02    998.50
     500.0      19.6     373.1     107.3      14.5      71.0      43.9       8.6       4.8    995.60
      0.20      1.36      5.26      2.45     0.090     0.045     0.090     0.000    995.60      6.00
  0.005060      183.      183.      183.         2         0         0      0.00     44.00     50.00

CCHV=    0.500 CEHV=    1.000

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED
SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     0.00      1.81      3.00      0.00     21.00      0.00     61.85      0.00    995.60    995.60

*SECNO 1889.000

6070,LOW FLOW BY NORMAL BRIDGE

EGPRS=   1002.403  EGLWC=   1000.908  ELLC=   1000.100  PCWSE=   1000.566  ELTRD=    999.700

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.35

3370 NORMAL BRIDGE, NRD=  13 MIN ELTRD=   999.70 MAX ELLC=  1000.10

3470 ENCROACHMENT STATIONS=        7.0      48 0  TYPE=      1  TARGET=       41.000
                U/S FACE OF FOOT BRIDGE
  1889.000      5.03   1000.63    999.86      0.00   1001.70      1.07      0.07      0.73    998.50
     500.0       0.0     499.9       0.1       0.0      60.2       0.2       8.6       4.8    995.60
      0.20      0.00      8.30      0.45     0.000     0.045     0.090     0.000    995.60      7.00
  0.041139        6.        6.        6.         4        17         0    -66.15     41.00     48.00

CCHV=    0.500 CEHV=    1.000
*SECNO 1910.000

3301 HV CHANGED MORE THAN HVINS
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.76

3470 ENCROACHMENT STATIONS= 68.0 100.0 TYPE= 1 TARGET= 32.000
CROSS SECTION C MOVED U/S

1910.000	6.44	1002.04	0.00	0.00	1002.24	0.20	0.10	0.43	997.40
500.0	97.0	280.7	122.2	46.4	66.2	41.9	8.6	4.8	997.70
0.20	2.09	4.24	2.92	0.075	0.045	0.045	0.000	995.60	68.00
0.001819	21.	21.	21.	3	0	0	0.00	32.00	100.00

*SECNO 1931.000

3470 ENCROACHMENT STATIONS= 250.0 272.0 TYPE= 1 TARGET= 22.000

1931.000	7.49	1002.09	0.00	0.00	1002.40	0.31	0.05	0.11	996.50
500.0	0.0	446.7	53.3	0.0	96.3	18.8	8.7	4.9	994.60
0.20	0.00	4.64	2.84	0.000	0.045	0.045	0.000	994.60	250.00
0.002774	21.	21.	21.	2	0	0	0.00	21.12	271.12

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	1.89	3.00	0.00	14.00	0.00	69.40	0.00	994.60	994.60

*SECNO 1967.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.98

PRESSURE FLOW

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1003.61	1002.42	0.00	0.	500.	69.	83.	1000.50	1005.10	0.

3470 ENCROACHMENT STATIONS= 250.0 272.0 TYPE= 1 TARGET= 22.000
U/S FACE OF RR

1967.000	8.79	1003.39	0.00	0.00	1003.61	0.21	1.21	0.00	996.50
500.0	0.0	453.4	46.6	0.0	117.3	25.9	8.8	4.9	994.60
0.21	0.00	3.86	1.80	0.000	0.030	0.040	0.000	994.60	250.00
0.000709	36.	36.	36.	2	0	0	0.00	22.00	272.00

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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 2020.000
3280 CROSS SECTION   2020.00 EXTENDED     13.21 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.62

3470 ENCROACHMENT STATIONS=      196.0     324.0  TYPE=      1  TARGET=      128.000
                CROSS SECTION D MOVED D/S
  2020.000      7.61   1003.71      0.00      0.00   1003.72      0.01      0.01      0.10    997.60
     500.0    187.6     116.0     196.3     269.8     135.1     339.9       9.3       5.0    997.90
      0.23     0.70      0.86      0.58     0.045     0.045     0.060     0.000    996.10    196.00
  0.000054      53.       53.       53.         2         0         0      0.00    128.00    324.00

CCHV=    0.300 CEHV=    0.500
*SECNO 2090.000
3280 CROSS SECTION   2090.00 EXTENDED     12.82 FEET

                CROSS SECTION D MOVED D/S
  2090.000      7.22   1003.72      0.00      0.00   1003.72      0.01      0.00      0.00    998.00
     500.0    203.5     102.8     193.7     337.4     127.2     354.1      10.6       5.2    998.30
      0.26     0.60      0.81      0.55     0.045     0.045     0.060     0.000    996.50    145.20
  0.000052      70.       70.       70.         2         0         0      0.00    184.80    330.00

*SECNO 2160.000
3280 CROSS SECTION   2160.00 EXTENDED     12.42 FEET

                CROSS SECTION D MOVED D/S
  2160.000      6.82   1003.72      0.00      0.00   1003.73      0.01      0.00      0.00    998.40
     500.0    195.9     105.7     198.3     298.2     119.3     330.3      11.9       5.5    998.70
      0.29     0.66      0.89      0.60     0.045     0.045     0.060     0.000    996.90    156.52
  0.000068      70.       70.       70.         0         0         0      0.00    173.48    330.00

*SECNO 2210.000

3470 ENCROACHMENT STATIONS=       42.0     425.0  TYPE=      1  TARGET=      383.000
  2210.000      6.63   1003.73      0.00      0.00   1003.73      0.01      0.00      0.00    997.30
     500.0    365.7      75.1      59.2     567.2      65.8     101.2      12.7       5.8    997.10
      0.31     0.64      1.14      0.58     0.045     0.045     0.060     0.000    997.10     42.00
  0.000097      50.       50.       50.         0         0         0      0.00    274.74    316.74
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 2211.000

3370 NORMAL BRIDGE, NRD=  16 MIN ELTRD=  1000.90 MAX ELLC=  1000.60


3470 ENCROACHMENT STATIONS=        42.0      425.0  TYPE=       1  TARGET=       383.000
  2211.000      6.62   1003.72      0.00      0.00   1003.73      0.01      0.00      0.00    997.30
     500.0     434.9      27.4      37.7     508.6      47.3      72.5      12.7       5.8    997.10
      0.31      0.86      0.58      0.52     0.030     0.030     0.030     0.000    997.10     42.00
  0.000091        1.        1.        1.         0         0         0   -106.09    274.76    316.76


*SECNO 2268.000

3370 NORMAL BRIDGE, NRD=  16 MIN ELTRD=  1000.90 MAX ELLC=  1000.60


3470 ENCROACHMENT STATIONS=        71.0      425.0  TYPE=       1  TARGET=       354.000
                U/S FACE OAK ST.
  2268.000      6.63   1003.73      0.00      0.00   1003.74      0.01      0.01      0.00    997.30
     500.0     427.4      30.5      42.1     444.9      47.3      72.7      13.5       6.1    997.10
      0.32      0.96      0.64      0.58     0.030     0.030     0.030     0.000    997.10     71.00
  0.000112       57.       57.       57.         0         0         0   -106.09    245.91    316.91


*SECNO 2269.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.64


3470 ENCROACHMENT STATIONS=        71.0      425.0  TYPE=       1  TARGET=       354.000
  2269.000      6.63   1003.73      0.00      0.00   1003.74      0.02      0.00      0.00    997.30
     500.0     311.9     113.5      74.6     503.5      65.9     101.5      13.5       6.1    997.10
      0.32      0.62      1.72      0.73     0.080     0.050     0.080     0.000    997.10     71.00
  0.000272        1.        1.        1.         0         0         0      0.00    245.88    316.88


*SECNO 2320.000
3280 CROSS SECTION   2320.00 EXTENDED      5.04 FEET

                CROSS SECTION D MOVED D/S
  2320.000      6.34   1003.74      0.00      0.00   1003.76      0.01      0.01      0.00    998.90
     500.0     146.6     138.5     214.9     254.8     109.6     301.2      14.3       6.4    999.20
      0.34      0.58      1.26      0.71     0.080     0.050     0.080     0.000    997.40    162.59
  0.000191       51.       51.       51.         0         0         0      0.00    167.41    330.00
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 2450.000
3280 CROSS SECTION   2450.00 EXTENDED      4.37 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.65

3470 ENCROACHMENT STATIONS=      204.0     316.0  TYPE=      1  TARGET=      112.000
                CROSS SECTION D MOVED D/S
  2450.000      5.67   1003.77      0.00      0.00   1003.80      0.03      0.04      0.01    999.60
     500.0     128.1     172.6     199.3     148.2      96.3     200.2      16.0       6.8    999.90
      0.37      0.86      1.79      1.00     0.080     0.050     0.080     0.000    998.10    204.00
  0.000457      130.      130.      130.         0         0         0      0.00    112.00    316.00

CCHV=    0.500 CEHV=    1.000
*SECNO 2550.000
3280 CROSS SECTION   2550.00 EXTENDED      3.15 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.55

3470 ENCROACHMENT STATIONS=      229.0     291.0  TYPE=      1  TARGET=       62.000
  2550.000      5.15   1003.85      0.00      0.00   1003.94      0.09      0.08      0.07   1000.20
     500.0     104.8     259.7     135.5      67.8      85.8      79.8      16.7       7.0   1000.50
      0.38      1.55      3.03      1.70     0.080     0.050     0.080     0.000    998.70    229.00
  0.001519      100.      100.      100.         2         0         0      0.00     62.00    291.00

*SECNO 2610.000
3280 CROSS SECTION   2610.00 EXTENDED      0.49 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.63

3470 ENCROACHMENT STATIONS=      226.0     258.0  TYPE=      1  TARGET=       32.000
                CROSS SECTION OF ABANDON STRUCTURE, MODIFIED
  2610.000      4.99   1003.99      0.00      0.00   1004.31      0.33      0.14      0.23   1001.00
     500.0      30.9     438.7      30.4      17.2      90.3      17.0      17.0       7.0   1001.00
      0.39      1.80      4.86      1.79     0.080     0.050     0.080     0.000    999.00    226.00
  0.003798       60.       60.       60.         2         0         0      0.00     32.00    258.00
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 2630.000
3280 CROSS SECTION   2630.00 EXTENDED      0.57 FEET

3470 ENCROACHMENT STATIONS=      231.0     253.0  TYPE=      1  TARGET=      22.000
  2630.000      5.07   1004.07      0.00      0.00   1004.51      0.44      0.08      0.11   1001.00
     500.0       3.2     493.7       3.2       3.0      91.9       3.0      17.0       7.0   1001.00
      0.39      1.04      5.37      1.04     0.080     0.050     0.080     0.000    999.00    231.00
  0.004527       20.       20.       20.         2         0         0      0.00     22.00    253.00

*SECNO 2650.000
3280 CROSS SECTION   2650.00 EXTENDED      0.73 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.51

3470 ENCROACHMENT STATIONS=      217.0     270.0  TYPE=      1  TARGET=      53.000
  2650.000      5.23   1004.23      0.00      0.00   1005.19      0.96      0.16      0.52   1005.30
     500.0       0.0     500.0       0.0       0.0      63.6       0.0      17.1       7.1   1005.50
      0.39      0.00      7.86      0.00     0.000     0.050     0.000     0.000    999.00    237.42
  0.017291       20.       20.       20.         2         0         0      0.00     12.66    250.08

*SECNO 2670.000

3265 DIVIDED FLOW

3280 CROSS SECTION   2670.00 EXTENDED      1.31 FEET

3470 ENCROACHMENT STATIONS=      217.0     270.0  TYPE=      1  TARGET=      53.000
                U/S FACE OF ABANDON STRUCTURE
  2670.000      5.81   1004.81      0.00      0.00   1005.58      0.77      0.30      0.09   1005.30
     500.0       0.0     500.0       0.0       0.1      70.9       0.0      17.1       7.1   1005.50
      0.39      0.02      7.05      0.00     0.080     0.050     0.000     0.000    999.00    217.00
  0.012859       20.       20.       20.         3         0         0      0.00     14.11    250.09
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

*SECNO 2675.000
3280 CROSS SECTION   2675.00 EXTENDED      2.15 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  2.85

3470 ENCROACHMENT STATIONS=      230.0     254.0  TYPE=      1  TARGET=      24.000
  2675.000      6.65   1005.65      0.00      0.00   1005.87      0.22      0.02      0.27   1001.00
     500.0       8.5     483.0       8.5       9.2     125.1       9.2      17.1       7.1   1001.00
      0.39      0.92      3.86      0.93     0.080     0.050     0.080     0.000    999.00    230.00
  0.001580        5.        5.        5.         3         0         0      0.00     24.00    254.00

*SECNO 2690.000
3280 CROSS SECTION   2690.00 EXTENDED      2.39 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.56

3470 ENCROACHMENT STATIONS=      215.0     269.0  TYPE=      1  TARGET=      54.000
                CROSS SECTION OF ABANDON STRUCTURE, MODIFIED
  2690.000      6.89   1005.89      0.00      0.00   1005.96      0.07      0.01      0.08   1001.00
     500.0      86.8     329.4      83.8      77.5     129.9      75.6      17.2       7.1   1001.00
      0.39      1.12      2.54      1.11     0.080     0.050     0.080     0.000    999.00    215.00
  0.000647       15.       15.       15.         2         0         0      0.00     54.00    269.00

*SECNO 2740.000
3280 CROSS SECTION   2740.00 EXTENDED      7.60 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  4.01

  2740.000      8.90   1006.00      0.00      0.00   1006.00      0.00      0.01      0.03    998.60
     500.0     188.4     120.3     191.2     530.8     160.8     454.7      18.0       7.2    998.90
      0.42      0.36      0.75      0.42     0.080     0.050     0.080     0.000    997.10    127.54
  0.000040       50.       50.       50.         2         0         0      0.00    202.46    330.00
```

```
 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

CCHV=    0.300 CEHV=    0.500
*SECNO 3100.000
3280 CROSS SECTION   3100.00 EXTENDED      4.52 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.31

3470 ENCROACHMENT STATIONS=      205.0     315.0  TYPE=      1  TARGET=      110.000
  3100.000      5.82   1006.02      0.00      0.00   1006.04      0.03      0.03      0.01   1001.70
     500.0     130.0     173.5     196.5     152.4      99.2     202.3      24.6       8.5   1002.00
      0.50      0.85      1.75      0.97     0.080     0.050     0.080     0.000   1000.20    205.00
  0.000418      360.      360.      360.         2         0         0      0.00    110.00    315.00

CCHV=    0.500 CEHV=    1.000
*SECNO 3200.000
3280 CROSS SECTION   3200.00 EXTENDED      0.59 FEET

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.49

3470 ENCROACHMENT STATIONS=      229.0     291.0  TYPE=      1  TARGET=       62.000
                CROSS SECTION D MOVED D/S
  3200.000      4.99   1006.09      0.00      0.00   1006.20      0.10      0.08      0.08   1002.60
     500.0     103.4     261.3     135.3      64.5      82.7      76.6      25.4       8.7   1002.90
      0.51      1.60      3.16      1.77     0.080     0.050     0.080     0.000   1001.10    229.00
  0.001740      100.      100.      100.         2         0         0      0.00     62.00    291.00

CCHV=    0.500 CEHV=    1.000
*SECNO 3281.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.58

3470 ENCROACHMENT STATIONS=      250.0     273.1  TYPE=      1  TARGET=       23.100
  3281.000      4.92   1006.32      0.00      0.00   1006.66      0.34      0.23      0.24   1001.80
     500.0       0.0     500.0       0.0       0.0     106.1       0.0      25.7       8.8 100000.00
      0.52      0.00      4.71      0.00     0.000     0.050     0.000     0.000   1001.40    250.00
  0.005172       81.       81.       81.         2         0         0      0.00     23.10    273.10
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	0.00	1.90	3.00	0.00	13.00	0.00	73.40	0.00	1001.40	1001.40

*SECNO 3322.000
6870 D.S. ENERGY OF 1006.66 IS HIGHER THAN COMPUTED ENERGY OF 1006.57

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.67

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1007.69	1006.66	0.00	284.	216.	73.	49.	1005.20	1005.90	367.

3470 ENCROACHMENT STATIONS= 250.0 273.1 TYPE= 1 TARGET= 23.100
U/S FACE US-10, 7TH ST. BRIDGE

3322.000	4.92	1006.32	0.00	1005.87	1006.66	0.34	0.00	0.00	1001.80
500.0	0.0	500.0	0.0	0.0	106.1	0.0	25.8	8.8	100000.00
0.52	0.00	4.71	0.00	0.000	0.030	0.000	0.000	1001.40	250.00
0.001860	41.	41.	41.	2	0	5	0.00	23.10	273.10

CCHV= 0.500 CEHV= 1.000
*SECNO 3355.000
3280 CROSS SECTION 3355.00 EXTENDED 5.49 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.68

3470 ENCROACHMENT STATIONS= 216.0 305.0 TYPE= 1 TARGET= 89.000

3355.000	5.29	1006.79	0.00	1006.22	1006.85	0.05	0.03	0.15	1003.00
500.0	103.9	295.3	100.8	105.4	133.5	94.1	26.0	8.9	1003.20
0.53	0.99	2.21	1.07	0.080	0.045	0.080	0.000	1001.50	216.00
0.000656	33.	33.	33.	2	0	0	0.00	89.00	305.00

```
 SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
 Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
 TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
 SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

*SECNO 3385.000
3280 CROSS SECTION   3385.00 EXTENDED      5.54 FEET

3470 ENCROACHMENT STATIONS=      191.0      330.0  TYPE=      1  TARGET=      139.000
                CROSS SECTION D MOVED D/S
  3385.000      5.35   1006.85      0.00   1006.27   1006.87      0.02      0.01      0.01   1003.00
     500.0    107.8     225.1     167.1     154.9     134.9     196.1      26.3       8.9   1003.20
      0.53     0.70      1.67      0.85     0.080     0.045     0.080     0.000   1001.50    191.00
  0.000368      30.       30.       30.         1         0         0      0.00    139.00    330.00

CCHV=    0.300 CEHV=    0.500
*SECNO 3700.000
3280 CROSS SECTION   3700.00 EXTENDED      3.44 FEET

  3700.000      4.74   1006.99      0.00   1006.42   1007.02      0.03      0.14      0.00   1003.75
     500.0    103.2     216.3     180.6     125.1     116.2     166.6      29.5      10.0   1003.95
      0.60     0.82      1.86      1.08     0.070     0.045     0.070     0.000   1002.25    178.06
  0.000559     315.      315.      315.         2         0         0      0.00    151.94    330.00

*SECNO 4000.000
3280 CROSS SECTION   4000.00 EXTENDED      2.90 FEET

                CROSS SECTION D
  4000.000      4.20   1007.20      0.00   1006.68   1007.25      0.05      0.22      0.01   1004.50
     500.0     86.8     227.4     185.8      88.6      99.5     140.3      32.0      11.0   1004.70
      0.65     0.98      2.28      1.32     0.070     0.045     0.070     0.000   1003.00    185.72
  0.001034     300.      300.      300.         2         0         0      0.00    144.28    330.00

*SECNO 4280.000
3280 CROSS SECTION   4280.00 EXTENDED      3.08 FEET

3470 ENCROACHMENT STATIONS=      200.0      321.0  TYPE=      1  TARGET=      121.000
                CROSS SECTION D MOVED U/S
  4280.000      4.38   1007.48      0.00   1007.01   1007.53      0.05      0.28      0.00   1004.60
     500.0     96.7     242.4     160.9      92.3     105.1     121.4      34.1      11.9   1004.80
      0.69     1.05      2.31      1.33     0.070     0.045     0.070     0.000   1003.10    200.00
  0.000979     280.      280.      280.         2         0         0      0.00    121.00    321.00
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

CCHV=    0.500 CEHV=    1.000
*SECNO 4320.000

3265 DIVIDED FLOW

3280 CROSS SECTION   4320.00 EXTENDED      1.84 FEET


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.60


3470 ENCROACHMENT STATIONS=      204.0     317.0  TYPE=      1  TARGET=      113.000
  4320.000      4.44   1007.54      0.00   1007.07   1007.61      0.07      0.06      0.02   1004.60
     500.0     165.8      86.1     248.1      91.5      38.6     111.3      34.4      12.0   1004.80
      0.70      1.81      2.23      2.23     0.070     0.045     0.070     0.000   1003.10    204.00
  0.002738       40.       40.       40.         2         0         0      0.00     93.28    317.00


*SECNO 4331.000

3265 DIVIDED FLOW


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.43


3470 ENCROACHMENT STATIONS=       90.0     240.0  TYPE=      1  TARGET=      150.000
                STRUCTURE AT D/S END OF PARK
  4331.000      4.40   1007.60      0.00   1007.14   1008.08      0.48      0.06      0.41   1003.30
     500.0     60.2     333.7     106.1      22.8      50.6      50.2      34.4      12.0   1009.60
      0.70      2.64      6.59      2.11     0.070     0.045     0.070     0.000   1003.20     90.00
  0.015137       11.       11.       11.         2         0         0      0.00     97.53    210.02


*SECNO 4342.000

3265 DIVIDED FLOW


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  1.58


3470 ENCROACHMENT STATIONS=       80.0     210.0  TYPE=      1  TARGET=      130.000
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  SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS      L-BANK ELEV
  Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA        R-BANK ELEV
  TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN      SSTA
  SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID     ENDST

4342.000      4.96    1008.16       0.00    1007.93    1008.33       0.17       0.10       0.15    1003.30
   500.0     82.2      246.5      171.3       41.4       57.1       88.8       34.4       12.0    1009.60
    0.70      1.98      4.31       1.93      0.070      0.045      0.070      0.000    1003.20      80.00
0.006033      11.        11.        11.          5          0          0       0.00     107.57     210.00

CCHV=    0.500 CEHV=    1.000
*SECNO 4390.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  6.62

3470 ENCROACHMENT STATIONS=       80.0     215.0  TYPE=      1  TARGET=      135.000
                POND U/S OF STRUCTURE
4390.000      5.40    1008.40       0.00    1008.15    1008.42       0.03       0.02       0.07    1007.20
   500.0     24.5      473.3        2.3       37.4      348.1        9.1       34.8       12.1    1004.20
    0.71      0.65      1.36       0.25      0.030      0.035      0.030      0.000    1003.00      80.00
0.000138      48.        48.        48.          2          0          0       0.00     135.00     215.00

*SECNO 4435.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  0.23

4435.000      5.51    1008.41       0.00    1008.16    1008.72       0.31       0.02       0.28    1007.50
   500.0    137.0      339.0       24.0       57.3       65.0       16.7       35.0       12.3    1003.90
    0.71      2.39      5.22       1.44      0.030      0.035      0.030      0.000    1002.90      43.55
0.002634      45.        45.        45.          2          0          0       0.00     119.70     163.25

CCHV=    0.500 CEHV=    1.000
*SECNO 4475.000

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=       75.0     175.0  TYPE=      1  TARGET=      100.000
                STRUCTURE IN PARK
4475.000      5.24    1008.64    1008.64    1008.30    1009.25       0.61       0.15       0.30    1008.30
   500.0    100.5      374.7       24.8       29.5       53.6       13.9       35.2       12.4    1004.10
    0.71      3.41      6.99       1.79      0.030      0.035      0.030      0.000    1003.40      75.00
0.005331      40.        40.        40.          2         11          0       0.00      89.63     167.83
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	EL MIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= 0.500 CEHV= 1.000
*SECNO 4485.000
3280 CROSS SECTION 4485.00 EXTENDED 0.37 FEET

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.13

3470 ENCROACHMENT STATIONS= 100.0 185.0 TYPE= 1 TARGET= 85.000

4485.000	5.77	1009.47	0.00	1009.18	1009.53	0.06	0.01	0.27	1005.60
500.0	0.0	383.7	116.3	0.0	183.0	78.9	35.2	12.4	1005.60
0.71	0.00	2.10	1.47	0.000	0.035	0.030	0.000	1003.70	100.00
0.000313	10.	10.	10.	3	0	0	0.00	85.00	185.00

*SECNO 4500.000
3280 CROSS SECTION 4500.00 EXTENDED 0.08 FEET

3470 ENCROACHMENT STATIONS= 100.0 177.0 TYPE= 1 TARGET= 77.000
POND U/S OF STRUCTURE

4500.000	5.48	1009.48	0.00	1009.18	1009.55	0.08	0.01	0.02	1005.90
500.0	0.0	399.5	100.5	0.0	172.6	59.2	35.3	12.4	1005.90
0.72	0.00	2.31	1.70	0.000	0.035	0.030	0.000	1004.00	100.00
0.000408	15.	15.	15.	2	0	0	0.00	77.00	177.00

*SECNO 4560.000

3470 ENCROACHMENT STATIONS= 102.0 149.0 TYPE= 1 TARGET= 47.000
POND U/S OF STRUCTURE

4560.000	4.90	1009.50	0.00	1009.20	1009.59	0.09	0.03	0.02	1006.10
500.0	0.0	500.0	0.0	0.0	206.7	0.0	35.6	12.5	100000.00
0.72	0.00	2.42	0.00	0.000	0.035	0.000	0.000	1004.60	102.00
0.000541	60.	60.	60.	0	0	0	0.00	47.00	149.00

*SECNO 4611.000

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	EL.MIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.68

3470 ENCROACHMENT STATIONS= 250.0 850.0 TYPE= 1 TARGET= 600.000

4611.000	4.64	1009.54	0.00	1009.24	1009.69	0.15	0.04	0.06	100000.00
500.0	0.0	381.8	118.2	0.0	111.1	74.9	35.8	12.7	1005.90
0.73	0.00	3.44	1.58	0.000	0.035	0.030	0.000	1004.90	250.00
0.001166	51.	51.	51.	1	0	0	0.00	202.99	487.08

SPECIAL BRIDGE

5070, VARIABLE ELCHU OR ELCHD ON SB CARD NOT SPECIFIED

SB XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
0.00	2.30	3.00	0.00	12.00	0.00	52.20	0.00	1004.90	1004.90

*SECNO 4668.000

3265 DIVIDED FLOW

PRESSURE AND WEIR FLOW, Weir Submergence Based on TRAPEZOIDAL Shape

EGPRS	EGLWC	H3	QWEIR	QPR	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
1012.82	1009.69	0.00	314.	188.	52.	50.	1009.10	1009.10	226.

U/S FACE OF 5TH ST.

4668.000	5.04	1009.94	0.00	1009.76	1010.01	0.07	0.31	0.00	1005.90
500.0	52.4	346.8	100.7	54.4	143.6	161.4	36.2	13.0	1005.90
0.74	0.96	2.42	0.62	0.070	0.045	0.060	0.000	1004.90	215.39
0.000697	57.	57.	57.	2	0	5	0.00	300.85	528.46

*SECNO 4720.000
3280 CROSS SECTION 4720.00 EXTENDED 4.19 FEET

CROSS SECTION D MOVED U/S

4720.000	4.99	1009.99	0.00	1009.80	1010.07	0.08	0.05	0.01	1009.10
500.0	1.9	260.3	237.9	3.5	96.7	150.0	36.5	13.2	1008.00
0.74	0.54	2.69	1.59	0.070	0.045	0.060	0.000	1005.00	243.64
0.001287	52.	52.	52.	0	0	0	0.00	99.36	343.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 5050.000

3265 DIVIDED FLOW

3280 CROSS SECTION 5050.00 EXTENDED 3.89 FEET

CROSS SECTION E

5050.000	4.69	1010.49	0.00	1010.20	1010.59	0.10	0.50	0.02	1009.90
500.0	0.7	267.2	232.1	1.7	88.6	130.5	38.3	14.0	1008.80
0.78	0.44	3.02	1.78	0.070	0.045	0.060	0.000	1005.80	244.69
0.001816	330.	330.	330.	2	0	0	0.00	95.88	343.00

CCHV= 0.300 CEHV= 0.500
*SECNO 5800.000
3280 CROSS SECTION 5800.00 EXTENDED 1.93 FEET

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.60

CROSS SECTION F

5800.000	4.23	1011.03	0.00	1010.73	1011.04	0.01	0.42	0.03	1008.00
500.0	235.1	71.0	193.9	440.2	59.7	360.1	47.6	19.1	1008.80
1.11	0.53	1.19	0.54	0.070	0.045	0.060	0.000	1006.80	0.00
0.000269	750.	750.	750.	3	0	0	0.00	500.00	500.00

*SECNO 6500.000

3265 DIVIDED FLOW

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 0.21

CROSS SECTION G

6500.000	2.78	1011.48	0.00	1011.24	1011.62	0.14	0.52	0.06	1009.50
500.0	76.5	189.9	233.6	38.1	50.5	95.0	56.0	24.3	1010.90
1.18	2.01	3.76	2.46	0.070	0.045	0.060	0.000	1008.70	162.62
0.006249	700.	700.	700.	2	0	0	0.00	153.81	317.10

*SECNO 6630.000
CROSS SECTION G MOVED U/S, TO U/S CORPORATE LIMIT

SECND	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	GLOB	GCH	GROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
6630.000	3.05	1012.15	0.00	1011.92	1012.24	0.09	0.61	0.01	1009.90
500.0	78.6	181.8	239.6	46.8	58.0	119.8	56.6	24.8	1011.30
1.19	1.68	3.14	2.00	0.070	0.045	0.060	0.000	1009.10	160.47
0.003609	130.	130.	130.	2	0	0	0.00	162.02	322.49

THIS RUN EXECUTED 05AUG91 16:53:52

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*************************************************
  HEC2 RELEASE DATED SEP 88 UPDATED JUN  1990

  ERROR CORR -  01,02,03,04
  MODIFICATION -
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100-YEAR DISCHARGE

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	0.000	0.00	0.00	0.00	983.10	390.00	986.14	986.14	986.98	249.24	7.38	53.00	24.70
*	0.000	0.00	0.00	0.00	983.10	500.00	986.58	986.58	987.40	188.12	7.31	70.50	36.45
*	10.000	10.00	0.00	0.00	983.20	390.00	986.85	0.00	987.25	84.51	5.16	79.22	42.42
*	10.000	10.00	0.00	0.00	983.20	500.00	987.23	986.68	987.63	71.63	5.26	103.44	59.08
	120.000	110.00	0.00	0.00	984.20	390.00	987.81	0.00	988.23	91.93	5.31	76.64	40.68
	120.000	110.00	0.00	0.00	984.20	500.00	988.08	0.00	988.56	92.22	5.76	93.55	52.07
*	500.000	380.00	0.00	0.00	987.70	390.00	990.39	0.00	990.55	40.95	3.52	123.38	60.94
*	500.000	380.00	0.00	0.00	987.70	500.00	990.62	0.00	990.79	37.75	3.59	149.87	81.38
*	545.000	45.00	0.00	0.00	988.17	390.00	990.59	0.00	990.88	92.33	4.87	91.94	40.59
*	545.000	45.00	0.00	0.00	988.17	500.00	990.79	0.00	991.09	81.10	4.86	115.65	55.52
	630.000	85.00	0.00	0.00	989.07	390.00	991.62	991.61	992.20	167.11	6.82	80.71	30.17
*	630.000	85.00	0.00	0.00	989.07	500.00	991.84	991.84	992.50	175.49	7.46	97.58	37.74
*	700.000	70.00	0.00	0.00	989.40	390.00	992.69	0.00	992.92	45.53	3.96	102.71	57.80
*	700.000	70.00	0.00	0.00	989.40	500.00	992.98	0.00	993.29	52.39	4.52	115.68	69.08
*	735.000	35.00	0.00	0.00	990.40	390.00	992.97	0.00	993.66	183.32	7.19	65.07	28.80
*	735.000	35.00	0.00	0.00	990.40	500.00	993.29	0.00	994.11	183.06	7.86	76.84	36.95
	801.000	66.00	0.00	0.00	990.50	390.00	994.16	0.00	995.11	177.47	7.84	49.75	29.28
	801.000	66.00	0.00	0.00	990.50	500.00	994.59	0.00	995.84	210.85	8.97	55.72	34.43
*	882.000	81.00	995.70	994.10	990.50	390.00	996.46	0.00	996.48	0.59	1.24	453.84	505.95
*	882.000	81.00	995.70	994.10	990.50	500.00	996.61	0.00	996.63	0.84	1.50	490.87	546.62
*	897.000	15.00	0.00	0.00	990.60	390.00	996.45	0.00	996.50	2.64	2.35	275.22	239.97
*	897.000	15.00	0.00	0.00	990.60	500.00	996.59	0.00	996.65	3.49	2.76	310.07	267.58

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	898.000	1.00	995.20	994.80	990.60	390.00	996.46	0.00	996.50	10.40	1.78	238.05	120.92
*	898.000	1.00	995.20	994.80	990.60	500.00	996.60	0.00	996.66	12.05	1.97	274.38	144.06
	903.000	5.00	995.20	994.80	990.60	390.00	996.46	0.00	996.50	10.15	1.76	240.45	122.42
	903.000	5.00	995.20	994.80	990.60	500.00	996.61	0.00	996.66	11.75	1.95	277.14	145.86
*	904.000	1.00	0.00	0.00	990.60	390.00	996.47	0.00	996.51	3.42	1.79	278.53	210.86
*	904.000	1.00	0.00	0.00	990.60	500.00	996.62	0.00	996.66	4.39	2.07	315.48	238.60
*	930.000	26.00	0.00	0.00	990.70	390.00	996.50	0.00	996.52	0.74	0.79	434.72	453.56
*	930.000	26.00	0.00	0.00	990.70	500.00	996.66	0.00	996.68	1.04	0.76	457.04	489.45
*	1100.000	170.00	0.00	0.00	991.40	390.00	996.52	0.00	996.54	1.57	1.04	339.77	311.18
*	1100.000	170.00	0.00	0.00	991.40	500.00	996.68	0.00	996.71	2.14	1.24	361.54	342.10
*	1225.000	125.00	0.00	0.00	992.33	390.00	996.54	0.00	996.59	5.89	1.71	220.14	160.70
*	1225.000	125.00	0.00	0.00	992.33	500.00	996.70	0.00	996.77	7.36	1.97	240.98	184.28
*	1350.000	125.00	0.00	0.00	993.25	390.00	996.63	0.00	996.79	32.71	3.31	121.44	68.19
*	1350.000	125.00	0.00	0.00	993.25	500.00	996.81	0.00	997.01	34.64	3.58	142.27	84.95
*	1411.000	61.00	0.00	0.00	993.70	390.00	996.86	0.00	996.92	9.14	1.92	201.22	129.02
*	1411.000	61.00	0.00	0.00	993.70	500.00	997.08	0.00	997.15	9.80	2.10	234.86	159.70
*	1499.000	88.00	997.20	996.70	993.70	390.00	998.11	0.00	998.13	1.16	0.89	427.61	361.47
*	1499.000	88.00	997.20	996.70	993.70	500.00	998.28	0.00	998.30	1.54	1.05	463.94	403.56
*	1550.000	51.00	0.00	0.00	994.20	390.00	998.06	0.00	998.22	52.01	4.71	177.29	54.08
*	1550.000	51.00	0.00	0.00	994.20	500.00	998.20	0.00	998.43	66.24	5.49	195.49	61.43
	1700.000	150.00	0.00	0.00	995.55	390.00	999.05	0.00	999.35	101.70	6.04	135.09	38.67
	1700.000	150.00	0.00	0.00	995.55	500.00	999.34	0.00	999.65	95.38	6.29	169.89	51.20
*	1883.000	183.00	0.00	0.00	995.60	390.00	1000.26	0.00	1000.51	42.38	4.52	115.77	59.91
	1883.000	183.00	0.00	0.00	995.60	500.00	1000.57	0.00	1000.91	50.60	5.26	129.30	70.79
*	1889.000	6.00	999.70	1000.10	995.60	390.00	1000.31	0.00	1000.96	250.29	6.48	60.42	24.65
*	1889.000	6.00	999.70	1000.10	995.60	500.00	1000.63	999.86	1001.70	411.39	8.30	60.42	24.65
*	1910.000	21.00	0.00	0.00	995.60	390.00	1001.11	0.00	1001.30	21.44	4.08	124.91	84.22
*	1910.000	21.00	0.00	0.00	995.60	500.00	1002.04	0.00	1002.24	18.19	4.24	154.43	117.24
	1931.000	21.00	0.00	0.00	994.60	390.00	1001.16	0.00	1001.43	28.47	4.32	95.83	73.09
	1931.000	21.00	0.00	0.00	994.60	500.00	1002.09	0.00	1002.40	27.74	4.64	115.05	94.94
*	1967.000	36.00	1005.10	1000.50	994.60	390.00	1001.87	0.00	1002.09	8.86	3.86	110.56	131.06
*	1967.000	36.00	1005.10	1000.50	994.60	500.00	1003.39	0.00	1003.61	7.09	3.86	143.27	187.78
*	2020.000	53.00	0.00	0.00	996.10	390.00	1002.20	0.00	1002.20	0.88	0.92	550.63	416.83
*	2020.000	53.00	0.00	0.00	996.10	500.00	1003.71	0.00	1003.72	0.54	0.86	744.81	679.36

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	2090.000	70.00	0.00	0.00	996.50	390.00	1002.20	0.00	1002.21	1.00	0.94	560.80	389.73
	2090.000	70.00	0.00	0.00	996.50	500.00	1003.72	0.00	1003.72	0.52	0.81	818.73	673.92
	2160.000	70.00	0.00	0.00	996.90	390.00	1002.21	0.00	1002.22	1.44	1.06	497.27	324.68
	2160.000	70.00	0.00	0.00	996.90	500.00	1003.72	0.00	1003.73	0.68	0.89	747.74	605.95
*	2210.000	50.00	0.00	0.00	997.10	390.00	1002.21	0.00	1002.24	4.30	2.02	357.18	188.02
	2210.000	50.00	0.00	0.00	997.10	500.00	1003.73	0.00	1003.73	0.97	1.14	734.23	508.01
*	2211.000	1.00	1000.90	1000.60	997.10	390.00	1002.21	0.00	1002.25	9.35	1.44	252.71	127.56
	2211.000	1.00	1000.90	1000.60	997.10	500.00	1003.72	0.00	1003.73	0.91	0.58	628.32	524.56
	2268.000	57.00	1000.90	1000.60	997.10	390.00	1002.26	0.00	1002.30	9.70	1.47	239.87	125.25
	2268.000	57.00	1000.90	1000.60	997.10	500.00	1003.73	0.00	1003.74	1.12	0.64	564.94	471.45
	2269.000	1.00	0.00	0.00	997.10	390.00	1002.26	0.00	1002.31	9.03	2.65	345.78	129.78
*	2269.000	1.00	0.00	0.00	997.10	500.00	1003.73	0.00	1003.74	2.72	1.72	670.82	302.99
*	2320.000	51.00	0.00	0.00	997.40	390.00	1002.33	0.00	1002.34	3.95	1.49	437.20	196.25
	2320.000	51.00	0.00	0.00	997.40	500.00	1003.74	0.00	1003.76	1.91	1.26	665.66	361.45
*	2450.000	130.00	0.00	0.00	998.10	390.00	1002.39	0.00	1002.43	10.31	2.15	291.15	121.47
*	2450.000	130.00	0.00	0.00	998.10	500.00	1003.77	0.00	1003.80	4.57	1.79	414.70	234.00
*	2550.000	100.00	0.00	0.00	998.70	390.00	1002.57	0.00	1002.70	34.76	3.61	154.00	66.15
*	2550.000	100.00	0.00	0.00	998.70	500.00	1003.85	0.00	1003.94	15.19	3.03	233.49	128.29
	2610.000	60.00	0.00	0.00	999.00	390.00	1002.85	0.00	1003.23	64.79	5.23	87.95	48.45
*	2610.000	60.00	0.00	0.00	999.00	500.00	1003.99	0.00	1004.31	37.98	4.86	124.46	81.13
	2630.000	20.00	0.00	0.00	999.00	390.00	1002.98	0.00	1003.44	68.09	5.50	74.02	47.26
	2630.000	20.00	0.00	0.00	999.00	500.00	1004.07	0.00	1004.51	45.27	5.37	98.01	74.31
*	2650.000	20.00	0.00	0.00	999.00	390.00	1003.19	0.00	1004.12	198.78	7.72	50.53	27.66
*	2650.000	20.00	0.00	0.00	999.00	500.00	1004.23	0.00	1005.19	172.91	7.86	63.59	38.02
	2670.000	20.00	0.00	0.00	999.00	390.00	1003.89	0.00	1004.56	127.47	6.58	59.29	34.54
	2670.000	20.00	0.00	0.00	999.00	500.00	1004.81	0.00	1005.58	128.59	7.05	70.98	44.09
*	2675.000	5.00	0.00	0.00	999.00	390.00	1004.62	0.00	1004.82	17.44	3.60	118.92	93.40
*	2675.000	5.00	0.00	0.00	999.00	500.00	1005.65	0.00	1005.87	15.80	3.86	143.46	125.81
*	2690.000	15.00	0.00	0.00	999.00	390.00	1004.83	0.00	1004.90	7.70	2.46	225.72	140.57
*	2690.000	15.00	0.00	0.00	999.00	500.00	1005.89	0.00	1005.96	6.47	2.54	282.94	196.50
*	2740.000	50.00	0.00	0.00	997.10	390.00	1004.93	0.00	1004.94	0.44	0.71	935.79	589.90
*	2740.000	50.00	0.00	0.00	997.10	500.00	1006.00	0.00	1006.00	0.40	0.75	1146.28	787.84
*	3100.000	360.00	0.00	0.00	1000.20	390.00	1004.96	0.00	1004.99	6.43	1.85	337.46	153.85
*	3100.000	360.00	0.00	0.00	1000.20	500.00	1006.02	0.00	1006.04	4.18	1.75	453.94	244.47

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	3200.000	100.00	0.00	0.00	1001.10	390.00	1005.08	0.00	1005.20	30.23	3.45	160.98	70.93
*	3200.000	100.00	0.00	0.00	1001.10	500.00	1006.09	0.00	1006.20	17.40	3.16	223.84	119.88
	3281.000	81.00	0.00	0.00	1001.40	390.00	1005.42	0.00	1005.74	60.51	4.58	85.21	50.14
*	3281.000	81.00	0.00	0.00	1001.40	500.00	1006.32	0.00	1006.66	51.72	4.71	106.08	69.53
*	3322.000	41.00	1005.90	1005.20	1001.40	390.00	1005.87	0.00	1006.13	15.38	4.08	95.70	99.45
*	3322.000	41.00	1005.90	1005.20	1001.40	500.00	1006.32	0.00	1006.66	18.60	4.71	106.13	115.95
*	3355.000	33.00	0.00	0.00	1001.50	390.00	1006.22	0.00	1006.27	6.69	2.03	281.99	150.78
*	3355.000	33.00	0.00	0.00	1001.50	500.00	1006.79	0.00	1006.85	6.56	2.21	332.95	195.28
	3385.000	30.00	0.00	0.00	1001.50	390.00	1006.27	0.00	1006.29	3.86	1.56	405.65	198.40
	3385.000	30.00	0.00	0.00	1001.50	500.00	1006.85	0.00	1006.87	3.68	1.67	485.93	260.72
	3700.000	315.00	0.00	0.00	1002.25	390.00	1006.42	0.00	1006.45	6.47	1.80	325.26	153.38
	3700.000	315.00	0.00	0.00	1002.25	500.00	1006.99	0.00	1007.02	5.59	1.86	407.84	211.53
	4000.000	300.00	0.00	0.00	1003.00	390.00	1006.68	0.00	1006.73	12.78	2.26	255.11	109.11
	4000.000	300.00	0.00	0.00	1003.00	500.00	1007.20	0.00	1007.25	10.34	2.28	328.44	155.50
	4280.000	280.00	0.00	0.00	1003.10	390.00	1007.01	0.00	1007.05	10.76	2.19	261.32	118.90
	4280.000	280.00	0.00	0.00	1003.10	500.00	1007.48	0.00	1007.53	9.79	2.31	318.78	159.78
*	4320.000	40.00	0.00	0.00	1003.10	390.00	1007.07	0.00	1007.14	30.40	2.24	197.71	70.73
*	4320.000	40.00	0.00	0.00	1003.10	500.00	1007.54	0.00	1007.61	27.38	2.23	241.36	95.56
*	4331.000	11.00	0.00	0.00	1003.20	390.00	1007.14	1007.05	1007.76	180.23	6.94	83.27	29.05
*	4331.000	11.00	0.00	0.00	1003.20	500.00	1007.60	0.00	1008.08	151.37	6.59	123.66	40.64
*	4342.000	11.00	0.00	0.00	1003.20	390.00	1007.93	0.00	1008.09	51.62	3.94	163.36	54.28
*	4342.000	11.00	0.00	0.00	1003.20	500.00	1008.16	0.00	1008.33	60.33	4.31	187.35	64.37
*	4390.000	48.00	0.00	0.00	1003.00	390.00	1008.15	0.00	1008.17	1.04	1.14	361.08	382.10
*	4390.000	48.00	0.00	0.00	1003.00	500.00	1008.40	0.00	1008.42	1.38	1.36	394.55	426.08
*	4435.000	45.00	0.00	0.00	1002.90	390.00	1008.16	0.00	1008.46	24.76	4.89	110.22	78.38
*	4435.000	45.00	0.00	0.00	1002.90	500.00	1008.41	0.00	1008.72	26.34	5.22	138.97	97.43
*	4475.000	40.00	0.00	0.00	1003.40	390.00	1008.30	1007.63	1008.93	54.58	6.74	70.61	52.79
*	4475.000	40.00	0.00	0.00	1003.40	500.00	1008.64	1008.64	1009.25	53.31	6.99	96.98	68.48
*	4485.000	10.00	0.00	0.00	1003.70	390.00	1009.18	0.00	1009.22	2.42	1.79	237.67	250.48
*	4485.000	10.00	0.00	0.00	1003.70	500.00	1009.47	0.00	1009.53	3.13	2.10	261.86	282.60
	4500.000	15.00	0.00	0.00	1004.00	390.00	1009.18	0.00	1009.24	3.18	1.97	209.33	218.72
	4500.000	15.00	0.00	0.00	1004.00	500.00	1009.48	0.00	1009.55	4.08	2.31	231.89	247.64
	4560.000	60.00	0.00	0.00	1004.60	390.00	1009.20	0.00	1009.27	4.10	2.02	192.72	192.59
	4560.000	60.00	0.00	0.00	1004.60	500.00	1009.50	0.00	1009.59	5.41	2.42	206.72	214.87

	SECND	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	4611.000	51.00	0.00	0.00	1004.90	390.00	1009.24	0.00	1009.37	10.38	3.11	137.79	121.05
*	4611.000	51.00	0.00	0.00	1004.90	500.00	1009.54	0.00	1009.69	11.66	3.44	185.98	146.43
	4668.000	57.00	1009.10	1009.10	1004.90	390.00	1009.76	0.00	1009.81	5.44	2.08	306.71	167.19
	4668.000	57.00	1009.10	1009.10	1004.90	500.00	1009.94	0.00	1010.01	6.97	2.42	359.31	189.41
	4720.000	52.00	0.00	0.00	1005.00	390.00	1009.80	0.00	1009.85	9.71	2.25	231.47	125.14
	4720.000	52.00	0.00	0.00	1005.00	500.00	1009.99	0.00	1010.07	12.87	2.69	250.22	139.36
	5050.000	330.00	0.00	0.00	1005.80	390.00	1010.20	0.00	1010.28	15.84	2.65	193.67	97.99
	5050.000	330.00	0.00	0.00	1005.80	500.00	1010.49	0.00	1010.59	18.16	3.02	220.80	117.33
*	5800.000	750.00	0.00	0.00	1006.80	390.00	1010.73	0.00	1010.73	2.99	1.18	707.34	225.58
*	5800.000	750.00	0.00	0.00	1006.80	500.00	1011.03	0.00	1011.04	2.69	1.19	859.98	304.70
*	6500.000	700.00	0.00	0.00	1008.70	390.00	1011.24	0.00	1011.36	68.04	3.55	148.03	47.28
*	6500.000	700.00	0.00	0.00	1008.70	500.00	1011.48	0.00	1011.62	62.49	3.76	183.62	63.25
	6630.000	130.00	0.00	0.00	1009.10	390.00	1011.92	0.00	1012.00	35.31	2.86	188.75	65.69
	6630.000	130.00	0.00	0.00	1009.10	500.00	1012.15	0.00	1012.24	36.09	3.14	224.52	83.29

100-YEAR DISCHARGE

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	0.000	390.00	986.14	0.00	0.00	1.84	33.47	0.00
*	0.000	500.00	986.58	0.45	0.00	2.28	47.05	0.00
*	10.000	390.00	986.85	0.00	0.71	0.00	55.55	10.00
*	10.000	500.00	987.23	0.38	0.65	0.00	71.09	10.00
	120.000	390.00	987.81	0.00	0.96	0.00	53.18	110.00
	120.000	500.00	988.08	0.27	0.85	0.00	67.22	110.00
*	500.000	390.00	990.39	0.00	2.58	0.00	117.64	380.00
*	500.000	500.00	990.62	0.22	2.54	0.00	119.94	380.00
*	545.000	390.00	990.59	0.00	0.20	0.00	114.84	45.00
*	545.000	500.00	990.79	0.20	0.18	0.00	116.96	45.00
	630.000	390.00	991.62	0.00	1.03	0.00	75.84	85.00
*	630.000	500.00	991.84	0.22	1.05	0.00	76.57	85.00
*	700.000	390.00	992.69	0.00	1.06	0.00	43.52	70.00
*	700.000	500.00	992.98	0.30	1.14	0.00	44.25	70.00
*	735.000	390.00	992.97	0.00	0.28	0.00	35.90	35.00
*	735.000	500.00	993.29	0.32	0.31	0.00	36.97	35.00
	801.000	390.00	994.16	0.00	1.19	0.00	14.00	66.00
	801.000	500.00	994.59	0.43	1.30	0.00	14.00	66.00
*	882.000	390.00	996.46	0.00	2.31	0.00	237.52	81.00
*	882.000	500.00	996.61	0.14	2.02	0.00	263.39	81.00
*	897.000	390.00	996.45	0.00	-0.02	0.00	233.73	15.00
*	897.000	500.00	996.59	0.14	-0.02	0.00	258.51	15.00
*	898.000	390.00	996.46	0.00	0.01	0.00	233.70	1.00
*	898.000	500.00	996.60	0.15	0.01	0.00	259.49	1.00
	903.000	390.00	996.46	0.00	0.01	0.00	235.50	5.00
	903.000	500.00	996.61	0.15	0.01	0.00	261.34	5.00
*	904.000	390.00	996.47	0.00	0.01	0.00	236.20	1.00
*	904.000	500.00	996.62	0.15	0.01	0.00	262.14	1.00
*	930.000	390.00	996.50	0.00	0.03	0.00	144.57	26.00
*	930.000	500.00	996.66	0.15	0.04	0.00	146.92	26.00
*	1100.000	390.00	996.52	0.00	0.01	0.00	135.75	170.00
*	1100.000	500.00	996.68	0.16	0.02	0.00	137.52	170.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	1225.000	390.00	996.54	0.00	0.02	0.00	125.58	125.00
*	1225.000	500.00	996.70	0.17	0.03	0.00	127.41	125.00
*	1350.000	390.00	996.63	0.00	0.09	0.00	108.52	125.00
*	1350.000	500.00	996.81	0.19	0.11	0.00	115.11	125.00
*	1411.000	390.00	996.86	0.00	0.23	0.00	148.16	61.00
*	1411.000	500.00	997.08	0.22	0.26	0.00	158.91	61.00
*	1499.000	390.00	998.11	0.00	1.26	0.00	210.13	88.00
*	1499.000	500.00	998.28	0.17	1.21	0.00	218.45	88.00
*	1550.000	390.00	998.06	0.00	-0.06	0.00	121.73	51.00
*	1550.000	500.00	998.20	0.15	-0.08	0.00	123.38	51.00
	1700.000	390.00	999.05	0.00	0.99	0.00	112.89	150.00
	1700.000	500.00	999.34	0.30	1.14	0.00	121.05	150.00
*	1883.000	390.00	1000.26	0.00	1.21	0.00	44.00	183.00
	1883.000	500.00	1000.57	0.31	1.22	0.00	44.00	183.00
*	1889.000	390.00	1000.31	0.00	0.05	0.00	41.00	6.00
*	1889.000	500.00	1000.63	0.32	0.07	0.00	41.00	6.00
*	1910.000	390.00	1001.11	0.00	0.80	0.00	32.00	21.00
*	1910.000	500.00	1002.04	0.93	1.41	0.00	32.00	21.00
	1931.000	390.00	1001.16	0.00	0.05	0.00	20.50	21.00
	1931.000	500.00	1002.09	0.92	0.05	0.00	21.12	21.00
*	1967.000	390.00	1001.87	0.00	0.71	0.00	20.97	36.00
*	1967.000	500.00	1003.39	1.52	1.31	0.00	22.00	36.00
*	2020.000	390.00	1002.20	0.00	0.32	0.00	128.00	53.00
*	2020.000	500.00	1003.71	1.52	0.32	0.00	128.00	53.00
	2090.000	390.00	1002.20	0.00	0.01	0.00	162.87	70.00
	2090.000	500.00	1003.72	1.52	0.01	0.00	184.80	70.00
	2160.000	390.00	1002.21	0.00	0.01	0.00	160.06	70.00
	2160.000	500.00	1003.72	1.51	0.00	0.00	173.48	70.00
*	2210.000	390.00	1002.21	0.00	0.00	0.00	232.58	50.00
	2210.000	500.00	1003.73	1.51	0.00	0.00	274.74	50.00
*	2211.000	390.00	1002.21	0.00	0.00	0.00	232.58	1.00
	2211.000	500.00	1003.72	1.52	0.00	0.00	274.76	1.00
	2268.000	390.00	1002.26	0.00	0.05	0.00	203.64	57.00
	2268.000	500.00	1003.73	1.47	0.00	0.00	245.91	57.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	2269.000	390.00	1002.26	0.00	0.00	0.00	203.65	1.00
*	2269.000	500.00	1003.73	1.47	0.00	0.00	245.88	1.00
*	2320.000	390.00	1002.33	0.00	0.07	0.00	154.67	51.00
	2320.000	500.00	1003.74	1.42	0.02	0.00	167.41	51.00
*	2450.000	390.00	1002.39	0.00	0.07	0.00	112.00	130.00
*	2450.000	500.00	1003.77	1.38	0.03	0.00	112.00	130.00
*	2550.000	390.00	1002.57	0.00	0.17	0.00	62.00	100.00
*	2550.000	500.00	1003.85	1.28	0.08	0.00	62.00	100.00
	2610.000	390.00	1002.85	0.00	0.28	0.00	32.00	60.00
*	2610.000	500.00	1003.99	1.14	0.14	0.00	32.00	60.00
	2630.000	390.00	1002.98	0.00	0.13	0.00	22.00	20.00
	2630.000	500.00	1004.07	1.09	0.08	0.00	22.00	20.00
*	2650.000	390.00	1003.19	0.00	0.22	0.00	12.63	20.00
*	2650.000	500.00	1004.23	1.03	0.16	0.00	12.66	20.00
	2670.000	390.00	1003.89	0.00	0.69	0.00	12.65	20.00
	2670.000	500.00	1004.81	0.92	0.58	0.00	14.11	20.00
*	2675.000	390.00	1004.62	0.00	0.73	0.00	24.00	5.00
*	2675.000	500.00	1005.65	1.02	0.84	0.00	24.00	5.00
*	2690.000	390.00	1004.83	0.00	0.21	0.00	54.00	15.00
*	2690.000	500.00	1005.89	1.06	0.24	0.00	54.00	15.00
*	2740.000	390.00	1004.93	0.00	0.10	0.00	193.60	50.00
*	2740.000	500.00	1006.00	1.06	0.11	0.00	202.46	50.00
*	3100.000	390.00	1004.96	0.00	0.03	0.00	110.00	360.00
*	3100.000	500.00	1006.02	1.06	0.02	0.00	110.00	360.00
*	3200.000	390.00	1005.08	0.00	0.12	0.00	62.00	100.00
*	3200.000	500.00	1006.09	1.01	0.08	0.00	62.00	100.00
	3281.000	390.00	1005.42	0.00	0.34	0.00	23.10	81.00
*	3281.000	500.00	1006.32	0.90	0.23	0.00	23.10	81.00
*	3322.000	390.00	1005.87	0.00	0.45	0.00	23.10	41.00
*	3322.000	500.00	1006.32	0.45	0.00	0.45	23.10	41.00
*	3355.000	390.00	1006.22	0.00	0.35	0.00	89.00	33.00
*	3355.000	500.00	1006.79	0.57	0.47	0.57	89.00	33.00
	3385.000	390.00	1006.27	0.00	0.05	0.00	139.00	30.00
	3385.000	500.00	1006.85	0.58	0.05	0.58	139.00	30.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	3700.000	390.00	1006.42	0.00	0.15	0.00	143.97	315.00
	3700.000	500.00	1006.99	0.57	0.14	0.57	151.94	315.00
	4000.000	390.00	1006.68	0.00	0.26	0.00	133.58	300.00
	4000.000	500.00	1007.20	0.52	0.21	0.52	144.28	300.00
	4280.000	390.00	1007.01	0.00	0.33	0.00	121.00	280.00
	4280.000	500.00	1007.48	0.47	0.28	0.47	121.00	280.00
*	4320.000	390.00	1007.07	0.00	0.07	0.00	93.24	40.00
*	4320.000	500.00	1007.54	0.47	0.06	0.47	93.28	40.00
*	4331.000	390.00	1007.14	0.00	0.07	0.00	74.72	11.00
*	4331.000	500.00	1007.60	0.46	0.06	0.46	97.53	11.00
*	4342.000	390.00	1007.93	0.00	0.79	0.00	107.55	11.00
*	4342.000	500.00	1008.16	0.22	0.56	0.22	107.57	11.00
*	4390.000	390.00	1008.15	0.00	0.21	0.00	127.00	48.00
*	4390.000	500.00	1008.40	0.25	0.24	0.25	135.00	48.00
*	4435.000	390.00	1008.16	0.00	0.01	0.00	107.61	45.00
*	4435.000	500.00	1008.41	0.25	0.02	0.25	119.70	45.00
*	4475.000	390.00	1008.30	0.00	0.14	0.00	65.95	40.00
*	4475.000	500.00	1008.64	0.34	0.23	0.34	89.63	40.00
*	4485.000	390.00	1009.18	0.00	0.88	0.00	85.00	10.00
*	4485.000	500.00	1009.47	0.29	0.83	0.29	85.00	10.00
	4500.000	390.00	1009.18	0.00	0.00	0.00	77.00	15.00
	4500.000	500.00	1009.48	0.29	0.01	0.29	77.00	15.00
	4560.000	390.00	1009.20	0.00	0.02	0.00	47.00	60.00
	4560.000	500.00	1009.50	0.30	0.03	0.30	47.00	60.00
*	4611.000	390.00	1009.24	0.00	0.03	0.00	102.75	51.00
*	4611.000	500.00	1009.54	0.31	0.04	0.31	202.99	51.00
	4668.000	390.00	1009.76	0.00	0.52	0.00	275.14	57.00
	4668.000	500.00	1009.94	0.18	0.40	0.18	300.85	57.00
	4720.000	390.00	1009.80	0.00	0.04	0.00	97.54	52.00
	4720.000	500.00	1009.99	0.19	0.05	0.19	99.36	52.00
	5050.000	390.00	1010.20	0.00	0.40	0.00	90.18	330.00
	5050.000	500.00	1010.49	0.29	0.50	0.29	95.88	330.00
*	5800.000	390.00	1010.73	0.00	0.53	0.00	500.00	750.00
*	5800.000	500.00	1011.03	0.30	0.54	0.30	500.00	750.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	6500.000	390.00	1011.24	0.00	0.51	0.00	135.56	700.00
*	6500.000	500.00	1011.48	0.24	0.45	0.24	153.81	700.00
	6630.000	390.00	1011.92	0.00	0.68	0.00	155.45	130.00
	6630.000	500.00	1012.15	0.23	0.66	0.23	162.02	130.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=      0.000  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      0.000  PROFILE=  2  CRITICAL DEPTH ASSUMED

WARNING SECNO=     10.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=     10.000  PROFILE=  2  20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO=     10.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    500.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    500.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    545.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    545.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=    630.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=    630.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=    700.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    700.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    735.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    735.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    882.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    882.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    897.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    897.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    898.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    898.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    904.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    904.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=    930.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=    930.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1100.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1100.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1225.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1225.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1350.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1350.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1411.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1411.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1499.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1499.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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WARNING SECNO=   1550.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1550.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1883.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1889.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1889.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1910.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1910.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   1967.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   1967.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2020.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2020.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2210.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2211.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2269.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2320.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2450.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2450.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2550.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2550.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2610.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2650.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2650.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2675.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2675.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2690.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2690.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   2740.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   2740.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3100.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3100.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3200.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3200.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3281.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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WARNING SECNO=   3322.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3322.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   3355.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   3355.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4320.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4320.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4331.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4331.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4342.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4342.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4390.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4390.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4435.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4435.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4475.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO=   4475.000  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   4475.000  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=   4485.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4485.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   4611.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   4611.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   5800.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   5800.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=   6500.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=   6500.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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00BREAK00

1) COUNTY: OSCEOLA

2) STUDY NAME: CITY OF EVART

3) WATERCOURSE: TWIN CREEK

4) DOCUMENT TYPE: REPORT

00BREAK00

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
BOX 1027
DETROIT, MICHIGAN 48231-1027

IN REPLY REFER TO
Great Lakes Hydraulics and Hydrology Branch

15 JUL 1991

RECEIVED

JUL 16 1991

NATURAL RESOURCES
LAND & WATER MGMT.

Mr. Bruce Menerey, P.E.
Technical Programs
Land and Water Management Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

Dear Mr. Menerey:

Submitted for your review and approval is a copy of the hydraulic calculations for the City of Evart, Michigan LMMP Flood Insurance Study. Enclosed are the HEC-2 100- and 500-year unencroached and encroached runs, a work map showing the flood plains and floodway and a brief write-up dealing with items that will assist the review process.

If you have any questions regarding the enclosed data, please contact Mr. Bruce Holbrook or Mr. David Schweiger at (313) 226-4886.

Sincerely,

David L. Schweiger
for R. Wilshaw, P.E.
Chief, Great Lakes H&H Branch

Enclosures

City of Evart, Michigan FIS
Limited Map Maintenance Program
Hydraulic Computation Background Information

This study covers Twin Creek from its confluence with the Muskegon River to the upstream Corporate Limit. Only the 100- and 500-year floods are being modeled with discharges as previously approved by the Michigan Department of Natural Resources.

Manning's "n" values were obtained for the study during a site visit. Input data to the HEC-2 model was obtained by field survey conducted as part of this study.

The starting water surface elevation at the downstream study limit was began using the normal water surface elevation of the Muskegon River. This resulted in critical depth at the mouth of Twin Creek. Considering the steep slope and channel geometry of Twin Creek at the mouth, this seemed to be a reasonable answer.

For the encroached run the starting water surface elevations were based on the 100-year natural profile run results.

Enclosed for your information are HEC-2 output for the 100- and 500-year profiles, an encroached run and a work map for Twin Creek.

Planning Division
Plan Formulation Branch

Mr. Daniel Elliott, City Manager
City of Ivart
101 North Main
Ivart, Michigan 48601

Dear Mr. Elliott:

This is in regard to the Detroit District's participation in the development of revisions for the flood insurance study for the City of Ivart, for the Federal Emergency Management Agency.

Enclosed for your review and comment are copies of the revised pages and appropriate map. A coordination meeting, arranged with you, has been scheduled for Monday, July 22, 1991, at 10:30 am, in your office to discuss the content of the revisions, with special emphasis on the floodway delineation map. The Michigan Department of Natural Resources (MDNR) has also received the technical portions of this study.

My staff is looking forward to meeting with you, and Mr. Bruce Hemerey, MDNR, on July 22. If you have any questions, please contact Mr. Joe Manigliata, program manager, Flood Plain Management Services, at (313) 226-5779.

Sincerely,

William W. Willis, P.E.
Chief, Planning Division

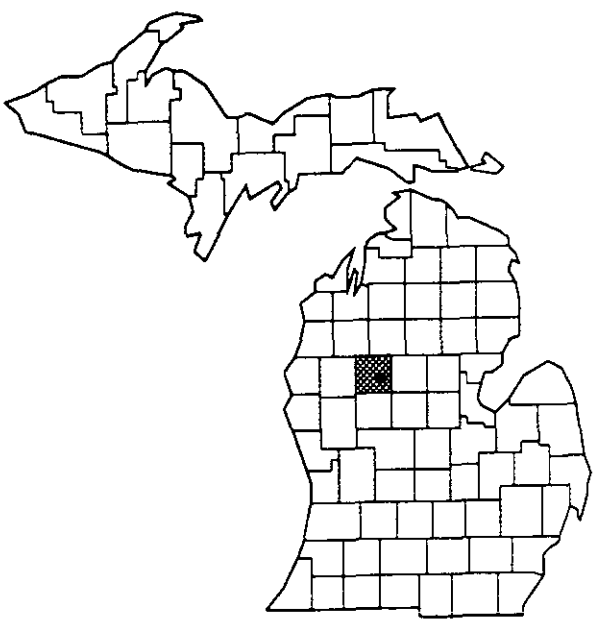
Enclosures

Copy Furnished:

Mr. Bruce Hemerey, MDNR, Land & Water Management Division
P.O. Box 30028, Lansing, Michigan 48909

FLOOD INSURANCE STUDY

CITY OF EVART, MICHIGAN
OSCEOLA COUNTY



PRELIMINARY

REVISED

Federal Emergency Management Agency

COMMUNITY NUMBER -260327

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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Flood Profiles

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Muskegon River	Panel 03P

Flood Insurance Rate Map

FLOOD INSURANCE STUDY

CITY OF EVART,
OSCEOLA COUNTY,
MICHIGAN

1.0 INTRODUCTION

This Flood Insurance Study revises and updates the previously effective Flood Insurance Rate Map for the City of Evart, Osceola County, Michigan (Reference 1). This information will be used by the community to update existing floodplain regulations as part of the regular phase of the National Flood Insurance Program. The information will also be used by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

2.0 ACKNOWLEDGMENTS

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

The hydrologic and hydraulic analyses for this study were performed by the U.S. Army Corps of Engineers (COE), Detroit District, under the Limited Map Maintenance Program, Contract Number EMW-90-E-3286. The Federal Emergency Management Agency (FEMA) reviewed and accepted these data for purposes of this revision.

3.0 COORDINATION

On , the results of this Flood Insurance Study were reviewed and accepted at a final coordination meeting attended by representatives of the Study Contractor, Federal Emergency Management Agency (FEMA), and the community.

4.0 SCOPE

Flooding caused by overflow of Twin Creek was studied in detail.

Flooding caused by overflow of the Muskegon River from Main Street to about 2,000 feet upstream of Main Street was studied in detail.

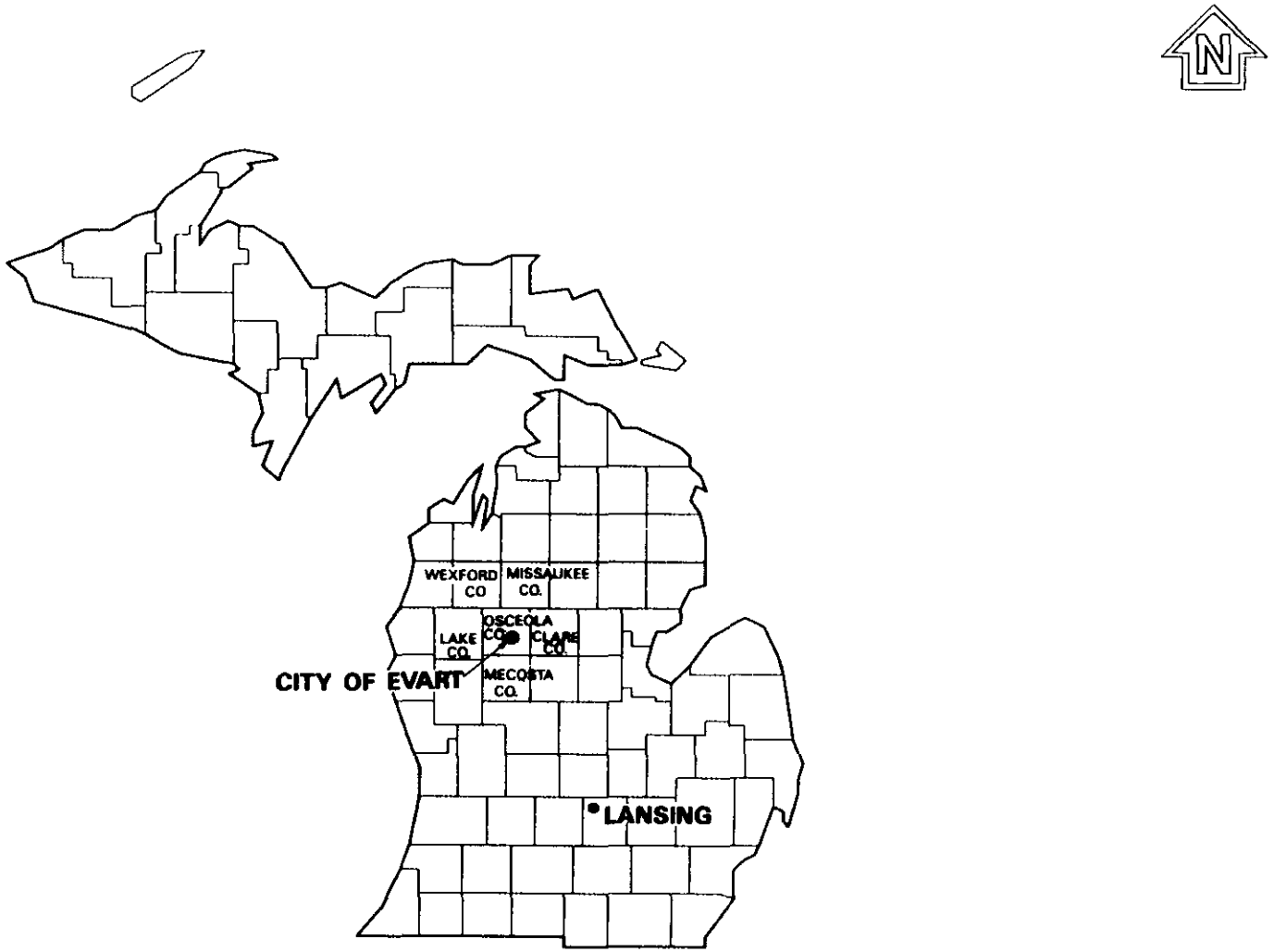


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF EVART, MI
(OSCEOLA CO.)

VICINITY MAP

5.0 HYDROLOGIC AND HYDRAULIC ANALYSES

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and the flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than one year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (one-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each riverine flooding source studied in detail affecting the community.

The first step in determining the discharges for Twin Creek was to delineate the basin boundary on the U.S. Geological Survey Evart Quadrangle (Reference 2) to determine the drainage area. It should be noted that the area draining into Whitmore Lake is not included. Then, regression equations (Reference 3) were used to determined the 10-, 25-, 50-, and 100-year discharges. The 500-year discharge was obtained by extrapolation. Twin Creek is ungaged, while the Muskegon River in the City of Evart is gaged.

The gage analysis for the Muskegon River at Evart used the published period of record, 1934-1989. The HECWRC computer program (Reference 4), which is based on the criteria described in the U.S. Water Resources Council Bulletin 17B, Guidelines for Determining Flood Flow Frequency (Reference 5), was used to determine the existing relationship. A generalized skew of -0.12, taken from the U.S. Army Corps of Engineers Detroit District's generalized skew study, was applied. A value for the mean square error of the generalized skew was developed by examining gages for drainage areas with a similar soil type in the general area of the gage. The mean square error was computed based on the difference between the station skew and the generalized skew. The differences were squared and the summed squared values for all included stations were determined, along with the mean of the squared values. The mean square error of the generalized skew

was computed to be 0.15. This analysis was done to determine the backwater effects on Twin Creek.

Peak discharge-drainage area relationships for the 100- and 500-year floods of each flooding source studied in detail in the community are shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ MILES)	PEAK DISCHARGE (CFS) ~~10~~-YEAR 100	~~100~~-YEAR 500
TWIN CREEK at mouth	12.54	390	500
MUSKEGON RIVER about 0.4 mile north of Main Street bridge	14.50 1450	9,530	11,500

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

All bridges, culverts and other structures were surveyed to obtain elevation and structural geometry data.

Water-surface elevations of the 100- and 500-year floods on Twin Creek were computed using the COE HEC-2 step-backwater computer program (Reference 6).

Roughness coefficients (Manning's "n" values) used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the stream and floodplain areas. Values varied from 0.33 to 0.05 in the channel and from 0.03 to 0.09 in the overbank areas.

The starting water-surface elevation at the mouth on Twin Creek was based on the normal water-surface elevation of the Muskegon River. This resulted in critical depth at the mouth of Twin Creek.

Flood Profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles and on the Flood Insurance Rate Map.

For each stream studied in detail, the 100- and 500-year floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were

interpolated using topographic maps enlarged to a scale of 1:6000, with a contour interval of 3 meters (Reference 2).

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

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the map.

6.0 FLOODWAYS

Encroachment on floodplains, such as structures and fill, reduces the flood-carrying capacity, increases the flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. In Michigan though, under Michigan Act 245, Public Acts of 1929, as amended by Act 167, Public Acts of 1968 (Reference 7), encroachment in the floodplain is limited to that which will cause only an insignificant increase in flood heights. Thus, at the recommendation of the Michigan Department of Natural Resources, Land and Water Resources Division, a floodway having no more than a 0.1-foot surcharge has been delineated for this study. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the floodplain and adjusted as necessary to account for the effects of existing development and to provide functional and manageable floodways. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations were tabulated for selected cross sections and are shown in Table 2, Floodway Data. The computed floodways are shown on the Flood Insurance Rate Map. In cases where the floodway and the 100-year floodplain boundaries are either close together or collinear, only the floodway boundaries is shown.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
TWIN CREEK								
A	120	42	81	4.8	992.1	987.8[2]	987 9	0.1
B	500	90	107	3.6	992.1	990.4[2]	990.5	0.1
C	1100	110	321	1.2	996.5	996.5	996.6	0.1
D	4000	98	237	1.6	1006.7	1006.7	1006.8	0 1
E	5050	90	192	2.0	1010.2	1010.2	1010.3	0.1
F	5800	416	669	0.6	1010.7	1010.7	1010.8	0.1
G	6500	87	132	3.0	1011.2	1011.2	1011 3	0.1

[1]FEET ABOVE MOUTH
[2]ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM MUSKEGON RIVER

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF EVART, MI
(OSCEOLA CO.)

FLOODWAY DATA

TWIN CREEK

The area between the floodway and the 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than the state's allowable surcharge at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 2.

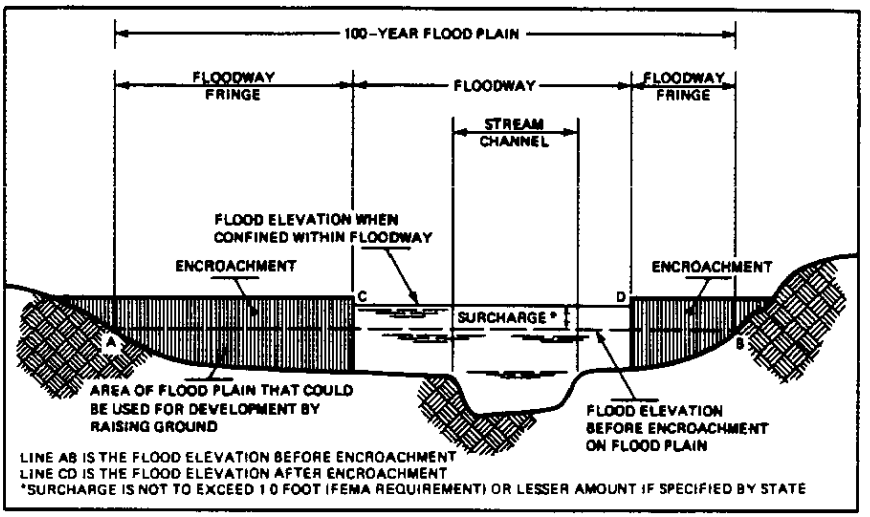


FIGURE 2 - Floodway Schematic

7.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 100-year floodplain, areas of 100-year flooding where average depths are less than one foot, areas of 100-year flooding where the contributing drainage area is less than one square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

8.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 6.0 and, for cases involving 100-year floodplains studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols the 100- and 500-year floodplains, the floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

9.0 OTHER STUDIES

The previously printed Flood Insurance Rate Maps for the Townships of Evart and Osceola, Michigan, (References 8 and 9) agree with this revision.

This Flood Insurance Study supersedes the previously printed Flood Insurance Rate Map for the City of Evart (Reference 1).

10.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, 175 West Jackson Boulevard, 4th Floor, Chicago, Illinois 60604-2698.

Future revisions may be made that do not result in the republishing of this Flood Insurance Study report. To ensure that any user is aware of all revisions, it is advisable to contact the map repository of flood hazard data located in the community.

11.0 REFERENCES AND BIBLIOGRAPHY

1. Federal Emergency Management Agency, Flood Insurance Rate Map, City of Evart, Michigan, February 1988.

2. U.S. Geological Survey, Topographic Maps, Scale 1:25000, enlarged to 1:6000, Contour Interval 3 meters: City of Evart, Michigan, 1983.

3. ----------, Regression Equations for Michigan, Statistical Models for Estimating Flow Characteristics, April 1991.

4. U.S. Army Corps of Engineers, Hydrologic Engineering Center, Flood Flow Frequency Analysis, Computer Program 723-X6-L7550, Davis, California, December 1983, with updates.

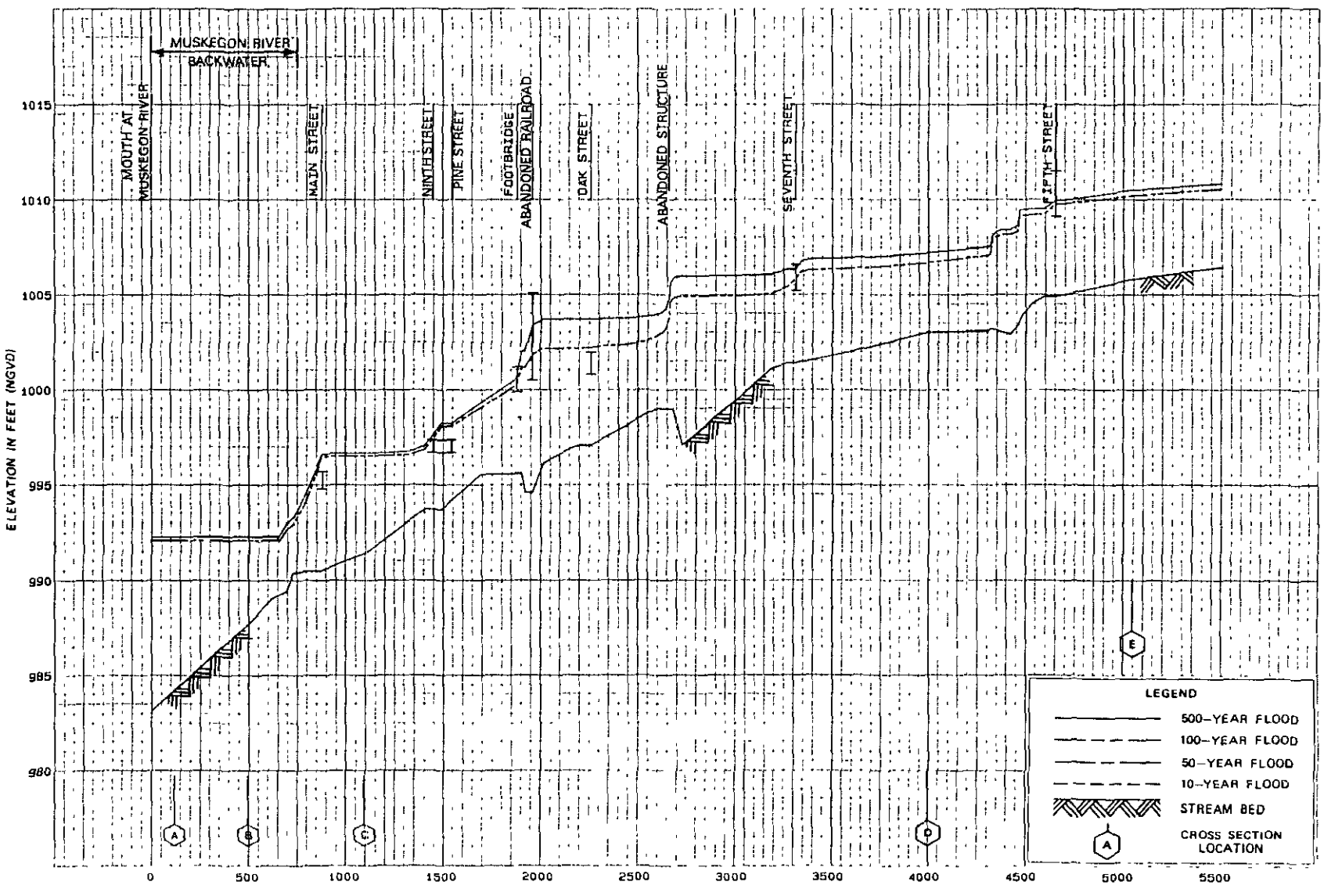
5. U.S. Department of the Interior, Geological Survey, Interagency Advisory Committee on Water Data, Office of Water Data Coordination, Hydrology Subcommittee, Bulletin No. 17B, Guidelines for Determining Flood Flow Frequency, September 1981, revised March 1982.

6. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water Surface Profiles, Computer Program, Davis, California, September 1988, updated June 1990.

7. State of Michigan, Floodplain Control Act of 1968, Act 245, P.A. 1929 as amended by Act 167, P.A. 1968, Michigan Water Resources Commission, Lansing, Michigan, 1968.

8. Federal Emergency Management Agency, Flood Insurance Rate Map, Township of Evart, Michigan, September 1988.

9. ----------, Flood Insurance Rate Map, Township of Osceola, Michigan, September 1988.



FLOOD PROFILES

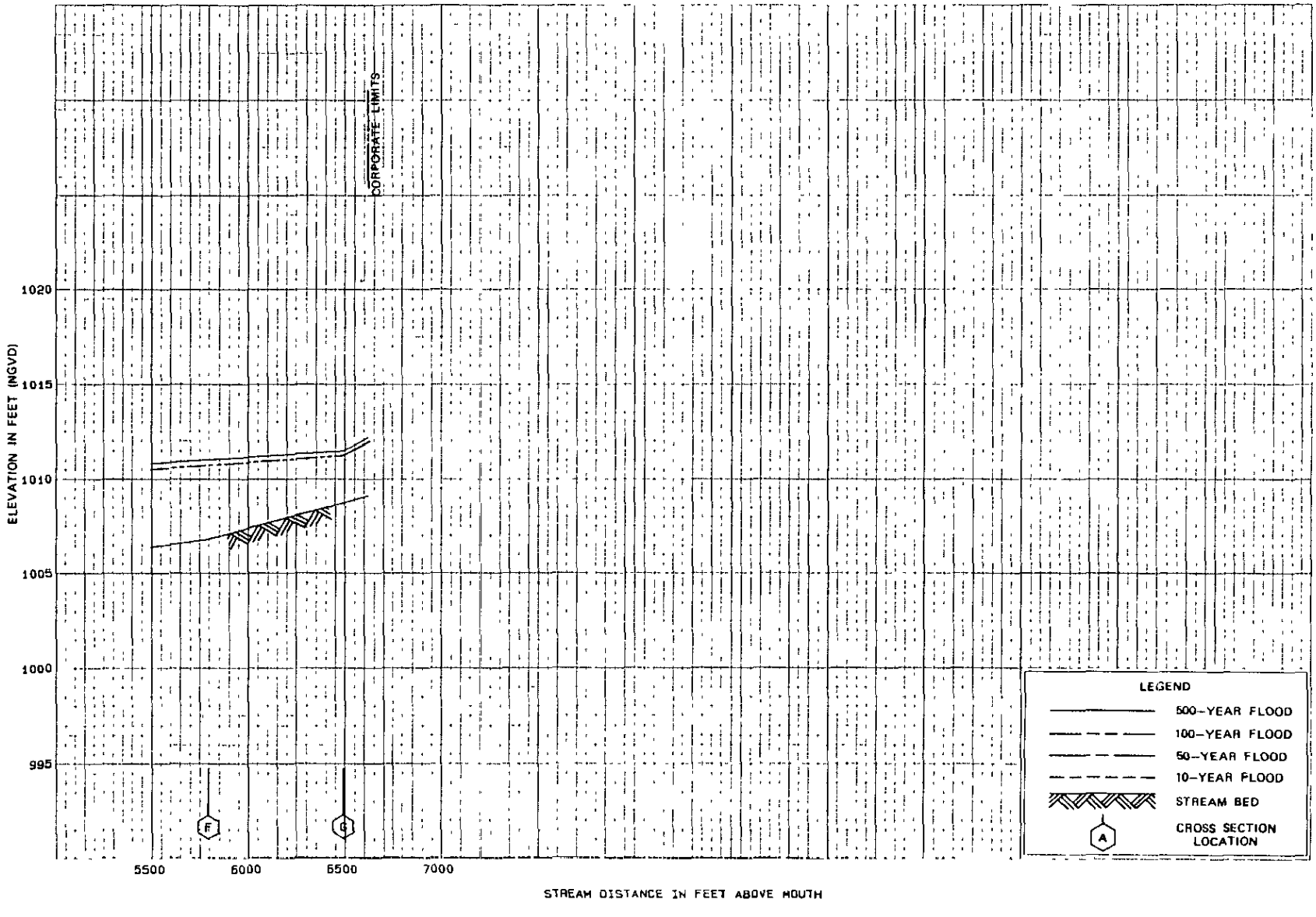
TWIN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF EVART, MI

(OSCEOLA CO.)

01P



FLOOD PROFILES

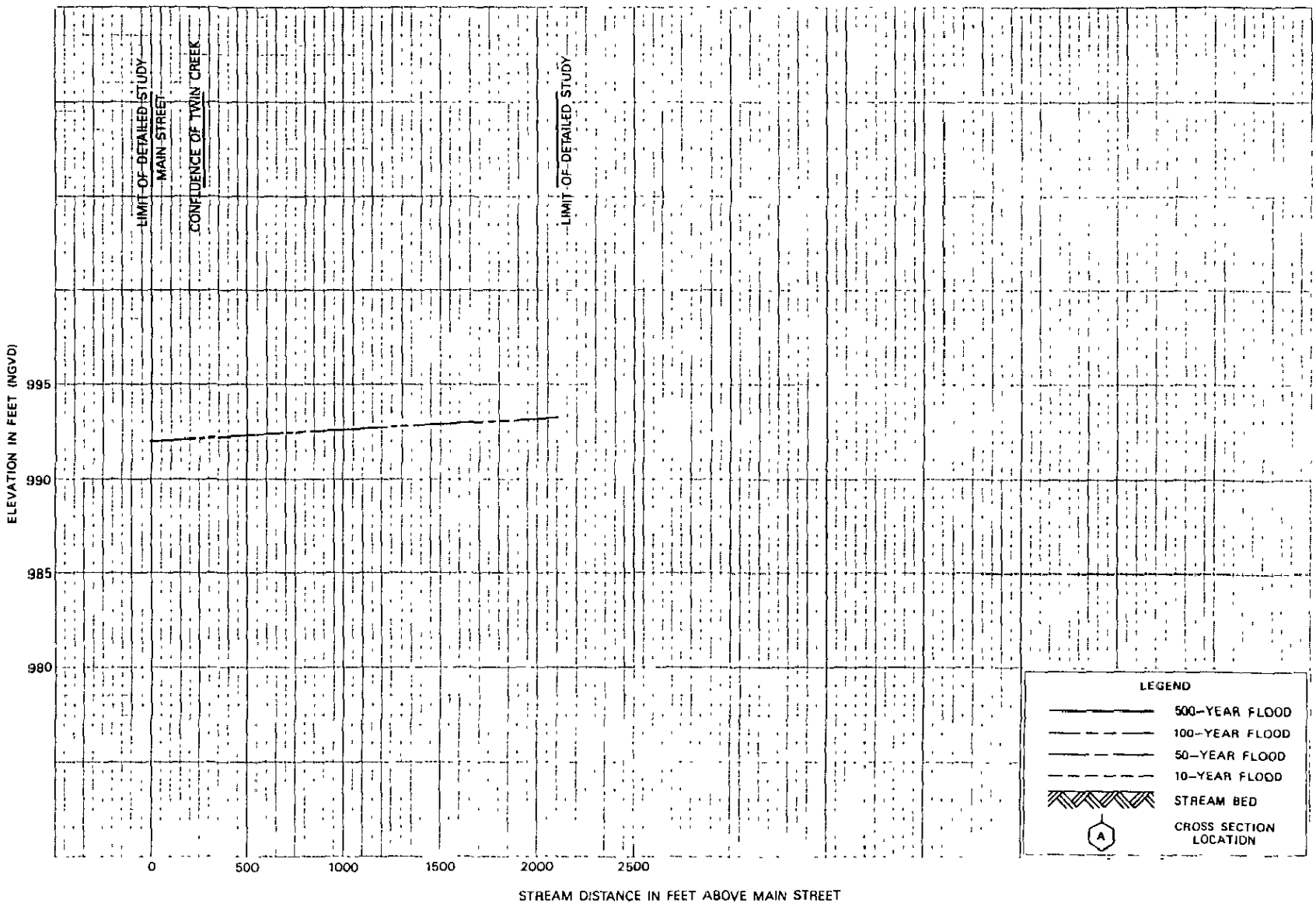
TWIN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF EVART, MI

(OSCEOLA CO.)

02P



FLOOD PROFILES

MUSKEGON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF EVART, MI
(OSCEOLA CO)

03P

US ARMY CORPS OF ENGINEERS-
DETROIT DISTRICT - SURVEY SECTION

PROJECT: FLOOD INSURANCE STUDY -
(TWIN CREEK) EVART, MICH.
(8) VALLEY SECTIONS
(6) BRIDGES
(1) WALKBRIDGE
(2) SIDEWALK BRIDGES
(1) DAM

CREW: M. CLINCY
T. ROZNOWSKI
R. HARRIS

DONE: 29 OCT. - 1 NOV. 1990

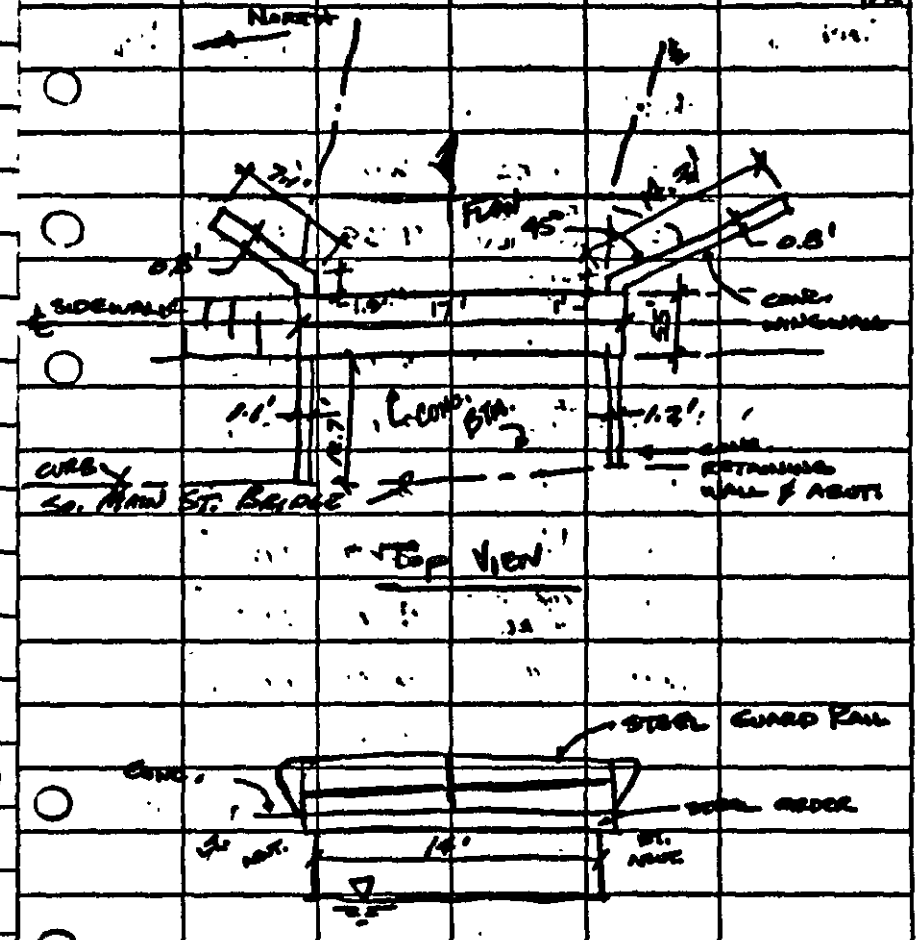
EQUIPM'T: GEODIMETER 440 &
ZEISS (LEVEL)

RECEIVED
AUG 19 1991
NATURAL RESOURCES
LAND & WATER MGMT.

SIDEWALK BRIDGE

12.7' D/S OF SO. MAIN ST. BRIDGE — 29 OCT. 90 — 50

BM-3				996.27	Refer 89 4+10
	4.06	1000.33			
	DIST	DESC.	ROD	ELEV.	
	0'R	Top of Rt. Abut.	5.35	994.98	
	"	Top of Rt. Abut.	9.68	990.68	(conc.)
	"	L/S	6.17	994.16	
	7'L	℄ of creek	9.81	990.52	(conc.)
	14'L	L/S	6.22	994.11	
	"	Top of Lt. Abut	9.60	990.73	(conc.)
	"	Top of Lt. Abut.	9.12	995.21	
	14'L	W/S	9.3	991.0	
	0'R	W/S	9.3	991.0	
			✓ 4.06	996.27	



$XKOR = \frac{1 + k_E + 29.1 n^2 L}{R^{1/3}}$

1.74

A = 47.6
W.P. = 34.8
R = 1.37

14
994.1 990.7
990.7
3.4

So. Main St. Bridge #48

29 Oct. 90

48/26

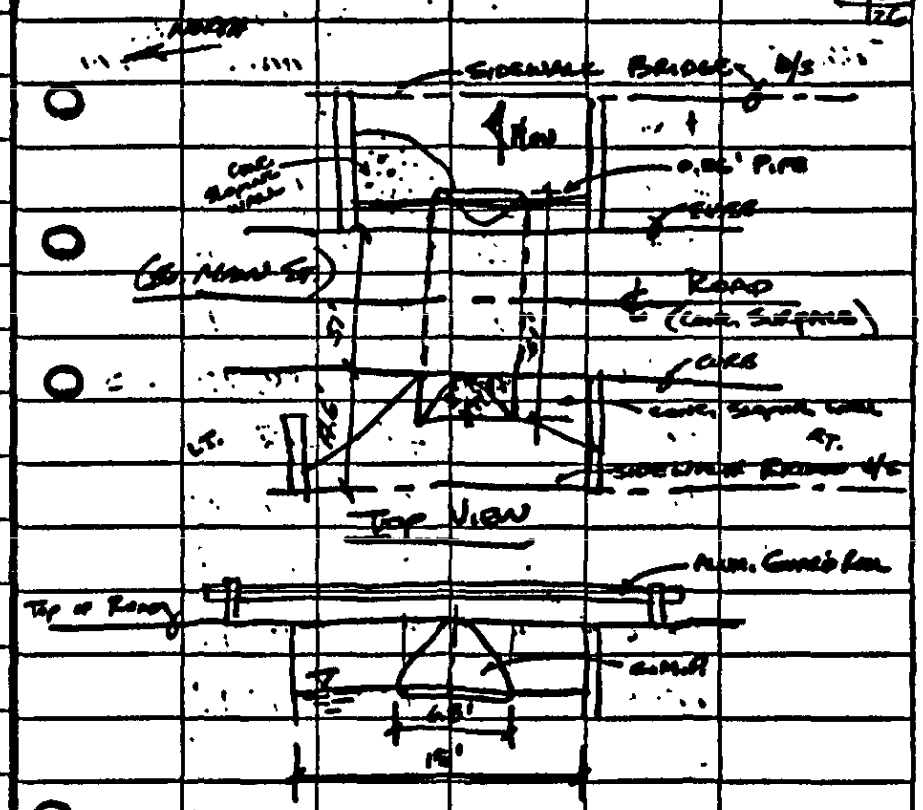
Ref. Pg. 4 up

TBM-3 996.27

3.95 1000.20

DIST.	DESC.	ROD	ELEV.
0	BTM of CURV.	9.38	990.82
3.4' L	W/S	8.0	992.2
"	EDGE of PIPE	8.70	991.50
3.4' R	EDGE of PIPE	8.74	991.46
"	W/S	8.0	992.2
0	U/S	5.27	994.93
5' R	Top of WALL	4.95	995.25
10' L	"	5.18	995.02

NL 10/30/90



U/S Face Looking D/S

6 8FT x 4.11

ROAD SECTION (SO. MAIN STREET) — 29 OCT. '70 — 78/127

BM-3				996.27	REAR, #10
	4.06	1000.33			
	DIST.	DESC.	ROD	ELEV.	
	0	℄ CULV. over Rd	4.67	995.66	
	25'L	℄ of ROAD	4.42	995.91	(ASPHALT SURFACE)
	50'L	"	4.43	995.90	
	75'L	"	4.30	996.03	
	100'L	"	3.90	996.43	
	125'L	"	3.55	996.78	
	150'L	"	3.20	997.13	
	175'L	"	2.91	997.42	
	200'L	"	2.45	997.88	
	225'L	"	1.88	998.45	
	250'L	"	1.41	998.92	
	25'R	"	4.69	995.64	
	50'R	"	4.57	995.76	
	75'R	"	4.39	995.94	
	100'R	"	4.17	996.16	
	125'R	"	3.93	996.40	

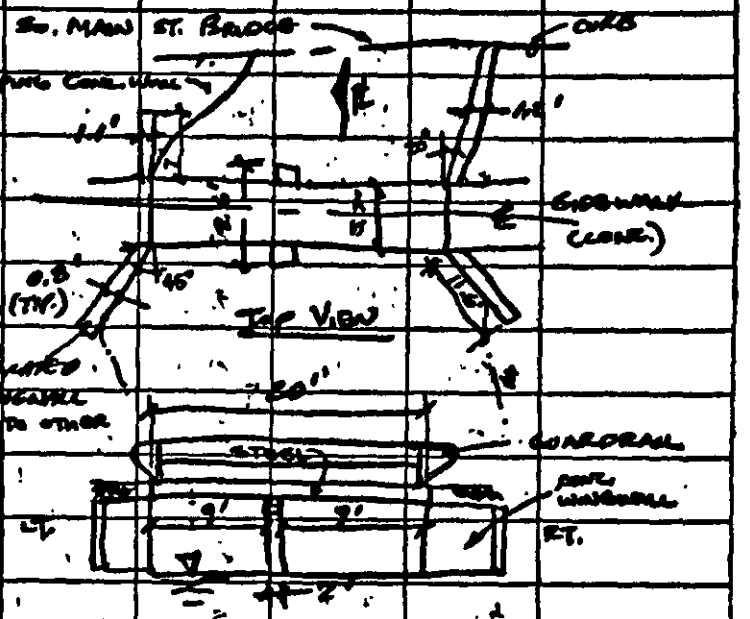
DIST	DESC.	ROD	ELEV.	
150'R	℄ of ROAD	3.62	996.71	(ASPHALT SURFACE)
175'R	"	3.46	996.87	
200'R	"	3.57	996.82	
225'R	"	3.69	996.64	
280'R	"	3.98	996.35	
	ck	4.06	996.27	
NORTH				
			℄ SIDEWALK	
4'				
			℄ MAIN ST.	
4'				
			℄ SIDEWALK	

Sidewalk Ripple

BM-3		TBM 3		996.27	PG 4 of 10
	3.93	1000.20			
	DIST.	DESC.	ROD	ELEV.	
	0'R	Top of Rt. Abut.	4.98 5.0	995.22	
	"	Toe of Rt. Abut.	8.4	991.8	(Sand)
	"	W/S	8.0	992.2	
	0'R	E/S	5.57	994.63	
	5'L	Btm of Creek	9.5	990.7	
	9'L	E/S	5.44	994.76	
	"	Face of Pier	9.6	990.6	
	11'L	"	9.5	990.9	
	"	E/S	5.44	994.76	
	15'L	Btm of Creek	8.5	991.7	
	20'L	W/S	8.0	992.2	
	"	Toe of Lt. Abut	8.2	992.0	
	"	E/S	5.45	994.75	
	"	Top of Lt. Abut.	4.86	995.34	
		BM	3.92	996.28	NL 10/18

146' u/s of So. Main St. Bridge

29 Oct. '50 — 700/28



U/S Pipe Looking D/S

SECTION 5B - RD. SECTION — NINTH & PINE STREETS INTERSECTION — 30 OCT. 90 — 10(B)/31

TBM - 2A — 996.8[15] — PER RE. C&G

570 — 1002.5[1]

DIST.	DESC.	ROD.	ELEV.		DIST.	DESC.	ROD.	ELEV.	
0	℄ OF INTERS.	5.14	997.39[7]		150'S	E. EDGE OF ROAD	5.12	997.41[39]	PINE ST.
25 N	℄ OF ROAD	5.28	997.24[2]	PINE ST	175'S	"	4.97	997.64[59]	
50 N	"	5.36	997.18[6]		200'S	"	4.70	997.81[1]	
75N	"	5.24	997.29[7]		225'S	"	4.54	997.97[7]	
100N	"	5.09	997.44[21]	(ASPHALT SURFACE)	250'S	"	4.33	998.25[18]	
125N	"	4.69	997.84[2]		25'E	℄ OF ROAD	5.34	997.17[7]	19TH ST.
150N	"	4.23	998.30[28]		50'E	"	5.51	997.02[0]	
175N	"	3.63	998.90[88]		75'E	"	5.56	996.97[5]	
200N	"	2.93	999.60[58]		100'E	"	5.37	997.16[4]	(ASPHALT SURFACE)
225N	"	2.25	1000.28[6]		125'E	"	5.33	997.21[18]	
250'N	"	1.69	1000.84[12]		150'E	"	5.42	997.44[09]	
25S	E. EDGE OF ROAD	5.81	997.22[0]		175'E	"	5.43	997.08[6]	
50'S	"	5.46	997.07[5]		200'E	"	5.43	997.10[08]	
75S	"	5.45	997.08[6]		225'E	"	5.51	997.02[0]	
100'S	"	5.37	997.16[4]		250'E	"	5.46	997.07[52]	
125'S	"	5.21	997.32[11]		25W	"	5.05	997.98[6]	

SECTION 5B - ROAD SECTION (CONTD)

30 OCT. 90 7/32

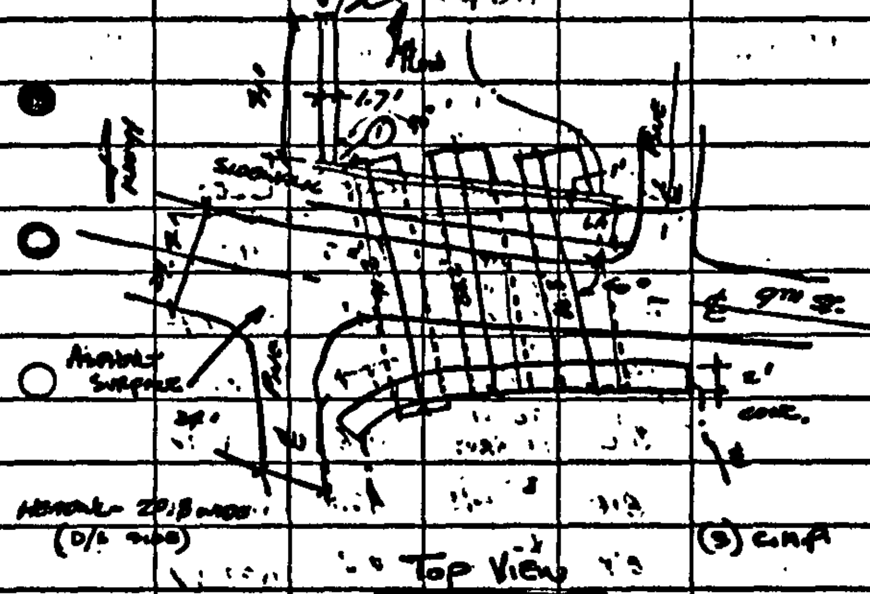
1002.58

DIST.	DESC.	ROD	ELEV.	
50'W	℄ OF ROAD	5.13	997.38	92TH ST.
75'W	"	5.13	997.38	
100'W	"	4.90	997.61	
125'W	"	4.59	997.92	
150'W	"	4.20	998.31	
175'W	"	3.72	998.79	
200'W	"	3.13	999.38	
225'W	"	2.59	999.92	
250'W	"	2.01	1000.50	

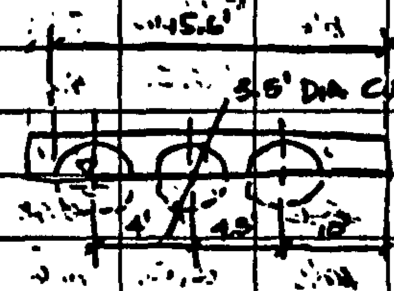
ME 10/40

SECTION 5B - NINTH ST./PINE ST. BRIDGE ... 30 OCT '90 TSS

		1002.57			
	DIST.	DESC.	ROD	ELEV.	
	0	℄ of (Lt.) Pipe	8.83	993.70 (.68) ✓	(Btm) Rock
	4.5'R	℄ of (Rt) Pipe	8.81	993.72 (0) ✓	(Btm)
	10'R	Top of Headwall	5.61	996.92 (0) ✓	
	"	Toe of Headwall	7.8	994.7 ✓	
	11'R	℄ ¢ W/S	7.5	995.0 ✓	
	4'L	℄ of (Lt.) Pipe	8.7	993.8 ✓	Sand (Btm)
	5.6'L	Edge of Pipe @ Curve	8.2	994.3 ✓	
	10'L	℄ ¢ W/S	7.5	995.0 ✓	@ End of Curve
	"	Top of Headwall	5.56	996.97 ✓	
	0	U/S	5.63	996.90 (.88) ✓	
	4.5'R	"	5.68	996.85 (3) ✓	
	4'L	U/S	5.61	996.92 (0) ✓	
		CK	5.69	996.84 (2) ✓	
TBM-2A	5.42	1002.25 (3)		996.83 (1) ✓	
	①	Top of Retaining Wall @ Headwall	5.54	996.71 (.69) ✓	
	①	Toe of Retaining Wall @ Headwall	8.1	994.2 ✓	
996.83	②	Top of Ret. Wall	6.20	996.05 ✓	
	②	Toe " "	9.2	993.0	MC 10190'



Top View
(Angle Exaggerated) - of Pine St. North

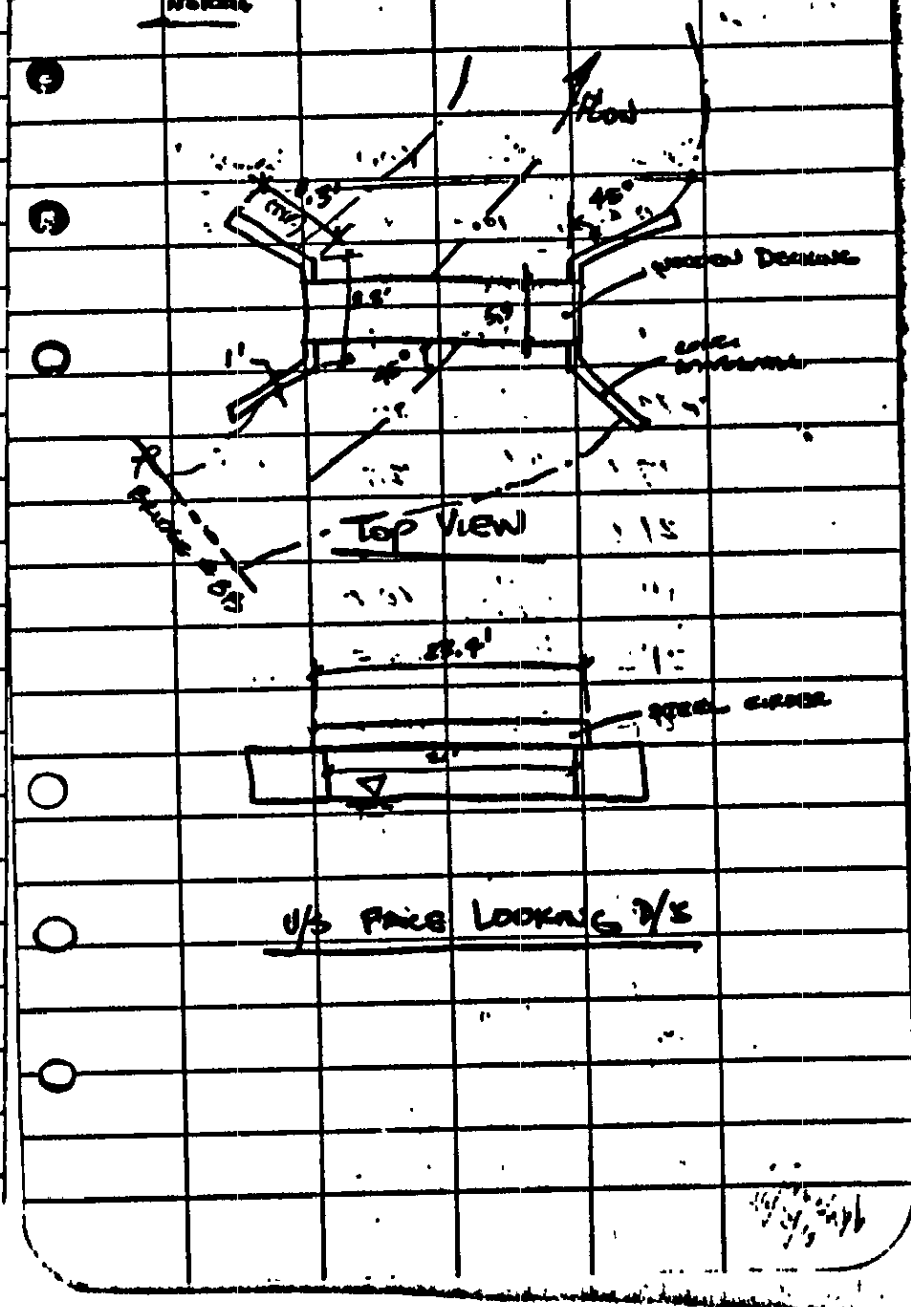


U/S Face Looking D/S

WALKBRIDGE #7B (RD. SECTION)

TBM-31				1005.18	
	5157	1010.75			
	DIST.	DESC.	ROD	ELEV.	
	9'R	OVER RT. REINF.	9.5	1001.3	
	146.5'R	EDGE OF ROAD	7.11	1003.64	
	140'R	CLE	7.5	1003.5	
	130'R	"	7.6	1003.0	
	120'R	"	9.1	1001.7	
	110'R	"	9.9	1000.9	
	100'R	"	10.3	1000.5	
	90'R	"	10.5	1000.3	
	80'R	"	10.7	1000.1	
	70'R	"	10.6	1000.2	
	60'R	"	10.7	1000.1	
	50'R	"	11.0	999.8	
46.5	40'R	"	11.0	999.8	
	30'R	"	11.1	999.7	
	20'R	"	10.8	1000.0	
	10'R	"	10.6	1000.2	
	0'L	[illegible]	9.57	1001.18	
	38'L	Toe Slope	10.0	1000.8	

30 Oct 90 - T37



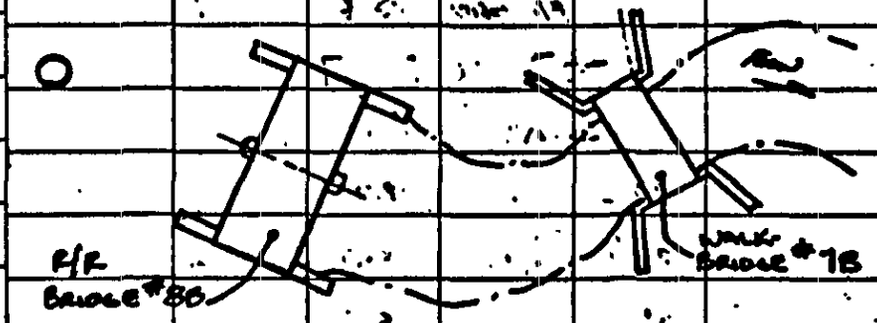
WALK BRIDGE #7B (BRIDGE DATA)

H.I.
1010.78

DIST.	DESC.	ROD	ELEV.
0'R	TOP OF RT. ABUT.	10.32	1000.43
"	TOE OF RT. ABUT.	15.2	995.6
"	W/S	12.7	998.1
10.5'L	℄ OF CREEK	13.6	997.2
17'L	W/S	12.7	998.1 ~~998.5~~
21'L	TOE OF LT. ABUT.	12.3	998.5
"	TOP OF LT. ABUT.	10.19	1000.96
21'L	W/S	10.80	999.95
0'R	W/S	10.69	1000.06

detaining 11/5/80

80 ET. 90 — 38



FOR DIMENSION SEE PAGES 37 & 40

RAILROAD BRIDGE #68

TW-3A

		H.I. 1010.8			PG. 37			H.I. 1010.8			
	DIST.	DESC.	ROD	ELEV.			DIST.	DESC.	ROD	ELEV.	
VOID	~~0'L~~	~~OVER LT. ABUT.~~	~~5.5~~				125'R	E OF R/R GRADE	5.1	1008.7	
	25'L	E OF R/R GRADE	5.3	1005.5	(NO TRACKS)		150'R	"	5.1	1008.7	
	50'L	"	5.3	1005.5			175'R	"	4.7	1006.1	
	75'L	"	5.0	1005.8			200'R	"	4.2	1006.6	
	100'L	"	4.9	1005.9	GRADE SURFACE		225'R	"	4.2	1006.6	
	125'L	"	5.0	1005.8			250'R	"	3.8	1007.0	
	150'L	"	5.0	1005.8							
	175'L	"	5.0	1005.8							
	200'L	"	4.8	1006.0							
	225'L	"	4.6	1006.2							
	250'L	"	4.7	1006.1							
	0'R	OVER PT. ABUT.	5.5	1005.3							
	25'R	E OF R/R GRADE	5.7	1005.1							
	50'R	"	5.6	1005.2							
	75'R	"	5.4	1005.4							
	100'R	"	5.2	1005.6							

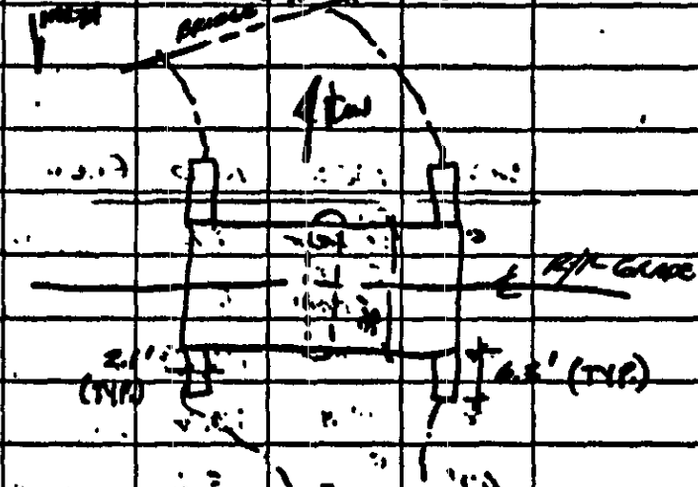
Published 11/5/90

R/R BRIDGE #8B — 30 OCT '90 — 40

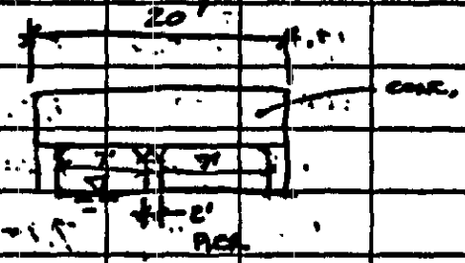
1010.35

PG 37

DIST	DESC.	ROD	ELEV.
0'L	Top of Lt. Abut	8.70	1002.05
"	Toe of Lt. Abut	14.55	996.15
"	U/S	10.29	1000.46
"	W/S	12.5	998.3
4'R	Btm Creek	13.8	997.0
7'R	Face of Rock	14.5	996.3
8'R	"	15.0	995.8
13'R	Btm of Creek	15.0	995.8
16'R	Toe of Rt. Abut	16.2	994.6
"	Top of Rt. Abut	8.60	1002.15
"	U/S	10.29	1000.46
"	W/S	12.6	998.2
2'L	Top of Hdwl	6.81	1003.94
22'R	"	6.81	1003.94
	CL	5.57	1005.18



Top View



U/S. FACE LOOKING D/S

4½"x14'
W.P. = 46
A = 63
R = 1.3695
~~AKOR~~ = 15 = 0.110
R^4/3

VJ Hoffman 11/6/90

	SECTION #9B		(ROAD DAM)		OAK ST. BRIDGE			30 OCT. '90 — 41
TEM-3A			1005.18	ROD RE. 6 FT				
	3.49	1009.17						
	DIST.	DESC.	ROD	ELEV.	DIST.	DESC.	ROD	ELEV.
	0'	OVER (℄) CT. CLV.	7.21	1001.96	125'R	℄ OF ROAD	3.13	1006.04 OAK ST.
	25'L	℄ OF ROAD	7.59	1001.58 OAK ST.	150'R	"	1.82	1007.35
	50'L	"	7.82	1001.35	175'R	"	0.90	1008.27
	75'L	"	8.04	1001.13	200'R	"	1.07	1008.10
	100'L	"	8.28	1000.89 (ASPHALT SURFACE)	225'R	"	1.27	1007.90
	125'L	"	8.24	1000.93	250'R	"	1.24	1007.93
	150'L	"	8.00	1001.17				
	175'L	"	7.84	1001.33				
	200'L	"	7.55	1001.62				
	225'L	"	7.39	1001.78				
	250'L	"	7.15	1002.02				
	0'	OVER (℄) RT. CLV.	7.22	1001.95				
	25'R	"	6.70	1002.47				
	50'R	"	6.11	1003.06				
	75'R	"	5.51	1003.80				
	100'R	"	4.46	1004.76				
AK 11/5/90				10/90	✓ Extra 11/6/90			

SECTION #98 - OAK ST. BRIDGE

30 OCT. '90 #42

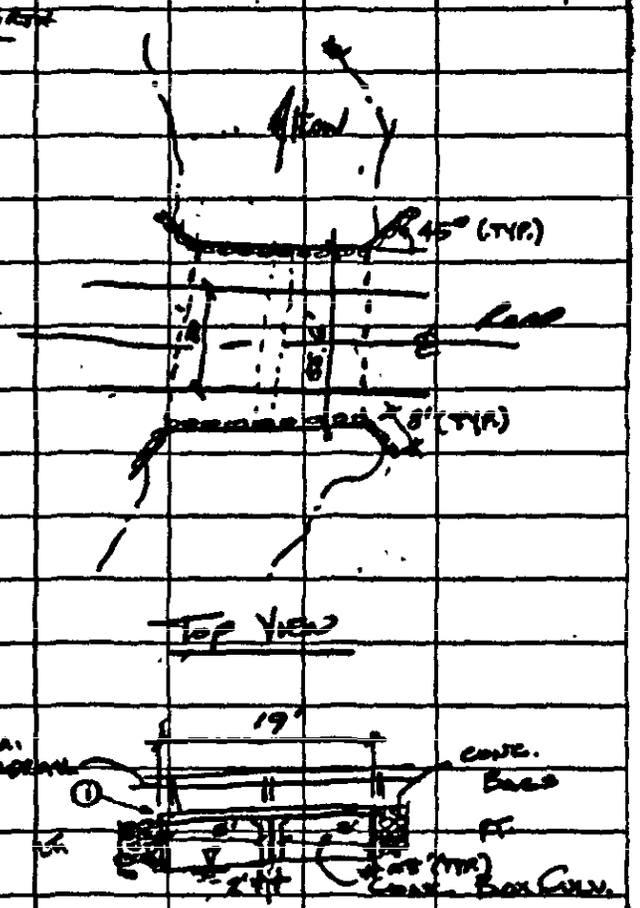
Hi

1009.17

PG 4

	DIST.	DESC.	ROD.	ELEV.	
①	0'L	TOP OF LT. CURV.	7.89	1001.28	(LT. EDGE)
	"	TOE OF LT. CURV.	11.9	997.3	(LT. EDGE)
	4'R	BTM OF CREEK	12.1	997.1	
	0'L	W/S	10.9	998.3	
	9'R	℄ OF (1) CURV.	12.1	997.1	
	14'R	BTM OF CREEK	11.8	997.4	
	18'R	TOE OF RT. CURVE	11.4	997.9	(RT. EDGE)
	"	TOP OF RT. CURV.	7.81	1001.06	
	"	W/S	10.9	998.3	
	18'R	U/S	8.42	1000.85	
	10'R	"	8.51	1000.66	
	9'R	"	8.54	1000.63	
	0'L	U/S	8.58	1000.59	
		CK	3.99	1005.18	

11/5/90



TBM - 5A				1005.59	REF. PG. 6/12
	5.44	101/03			
	DIST.	DESC.	ROD	ELEV.	
	0'L	OVER CT. ABUT.	4.36	1006.67	US-10 & 7TH ST.
	25'L	℄ OF ROAD	4.55	1006.48	
	50'L	"	4.80	1006.23	
	75'L	"	5.01	1006.02	
	100'L	"	5.04	1005.99	
	125'L	"	5.04	1005.99	CONC. SURFACE
	150'L	"	5.21	1005.82	
	175'L	"	5.16	1005.87	
	200'L	"	5.15	1005.88	
	225'L	"	5.14	1005.89	
	250'L	"	5.14	1005.89	
	231'R	OVER PT. ABUT.	4.42	1006.61	
	50'R	℄ OF ROAD	4.65	1006.38	
	75'R	"	4.69	1006.34	
	100'R	"	4.64	1006.39	
	125'R	"	4.58	1006.45	
			TR 11.05	10/90	

US-10 / SEVENTH ST. — 30 OCT. 90 — 1/45

	DIST.	DESC.	ROD	ELEV.
	150'R	℄ OF ROAD	4.55	1006.48 US-10 7TH ST.
	175'R	"	4.64	1006.69
	200'R	"	4.31	1006.72
	225'R	"	4.30	1006.73
	250'R	"	4.39	1006.64
			TR 11.05	10/90

SECTION #11B (US-19) SEVENTH ST.

BRIDGE

30 OCT. 90 — 96

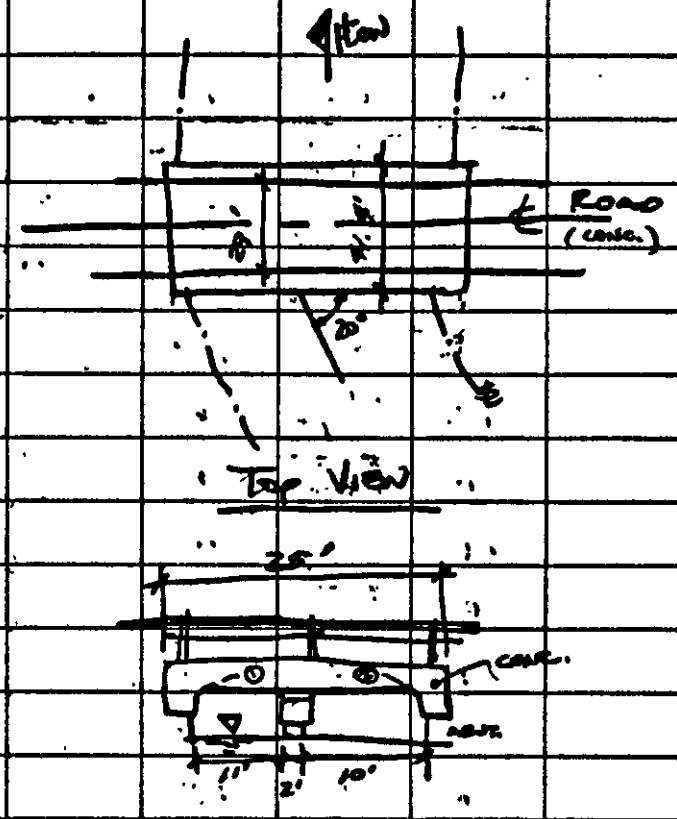
TP

1011.03

PG 45

	DIST.	DESC.	ROD	ELEV.	
	dR	TOP OF RT. ABUT	7.98	1003.05	
	"	TOE OF RT. ABUT.	9.2	1001.8	(FACE)
	"	℄ ⅊ w/s	9.1	1001.9	
②	dR	⅊	5.83	1005.20	
	5'L	BTM OF CREEK	9.6	1001.4	
	11'L	FACE OF PIER	9.0	1002.0	
	13'L	"	9.0	1002.0	
	18'L	BTM OF CREEK	9.3	1001.7	
①	23'L	⅊	5.83	1005.20	
	"	℄ ⅊ w/s	9.1	1001.9	
	"	TOE OF LT. ABUT.	9.4	1001.6	
	23'L	TOP OF LT. ABUT.	7.15	1003.88	

NORTH



D/S FACE LOOKING D/S

SECTION # 15B (ROAD DATA)

TBM-7A				1010.42	REF. PL. 7/15
	11.47	1021.89			
	DIST.	DESC.	ROD	ELEV.	
CONC. BOX CULVERT	0'L	OVER CL ROAD	7.96	1011.93	5TH ST
	25'L	℄ OF ROAD	7.28	1012.61	
	50'L	"	8.65	1013.24	
	75'L	"	7.99	1013.90	
	100'L	"	5.18	1016.71	(ASPHALT SURFACE)
	125'L	"	3.96	1017.93	
	150'L	"	3.01	1018.88	
	175'L	"	2.45	1019.44	
	200'L	"	2.12	1019.77	
	225'L	"	1.93	1019.96	
	250'L	"	1.68	1020.21	
TBM-7A				1010.42	REF. PL. 7/15
	5.14	H.I. 1015.56			
	12'R	OVER HOUSE EX. GRAT.	4.08	1011.48	
	25'R	℄ OF ROAD	4.77	1010.79	
		TR	11-90		

FIFTH ST. 30 OCT 1990

H.I. 1015.56

DIST.	DESC.	ROD	ELEV.
50'R	℄ OF ROAD	5.32	1010.24
75'R	"	6.06	1009.50
100'R	"	6.30	1009.26
125'R	"	6.41	1009.15
150'R	"	6.50	1009.06
175'R	"	6.33	1009.23
200'R	"	6.21	1009.35
225'R	"	6.10	1009.46
250'R	"	6.00	1009.56
		TR	

SECTION #13B (5TH ST. BRIDGE)

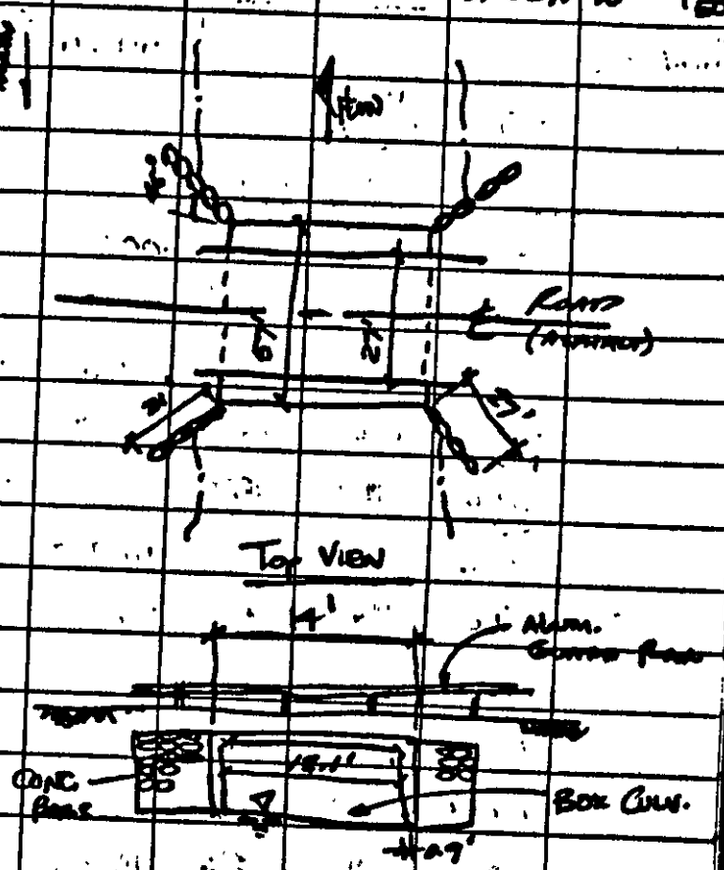
TAM-7A

1010.42 REF. PL, TP15

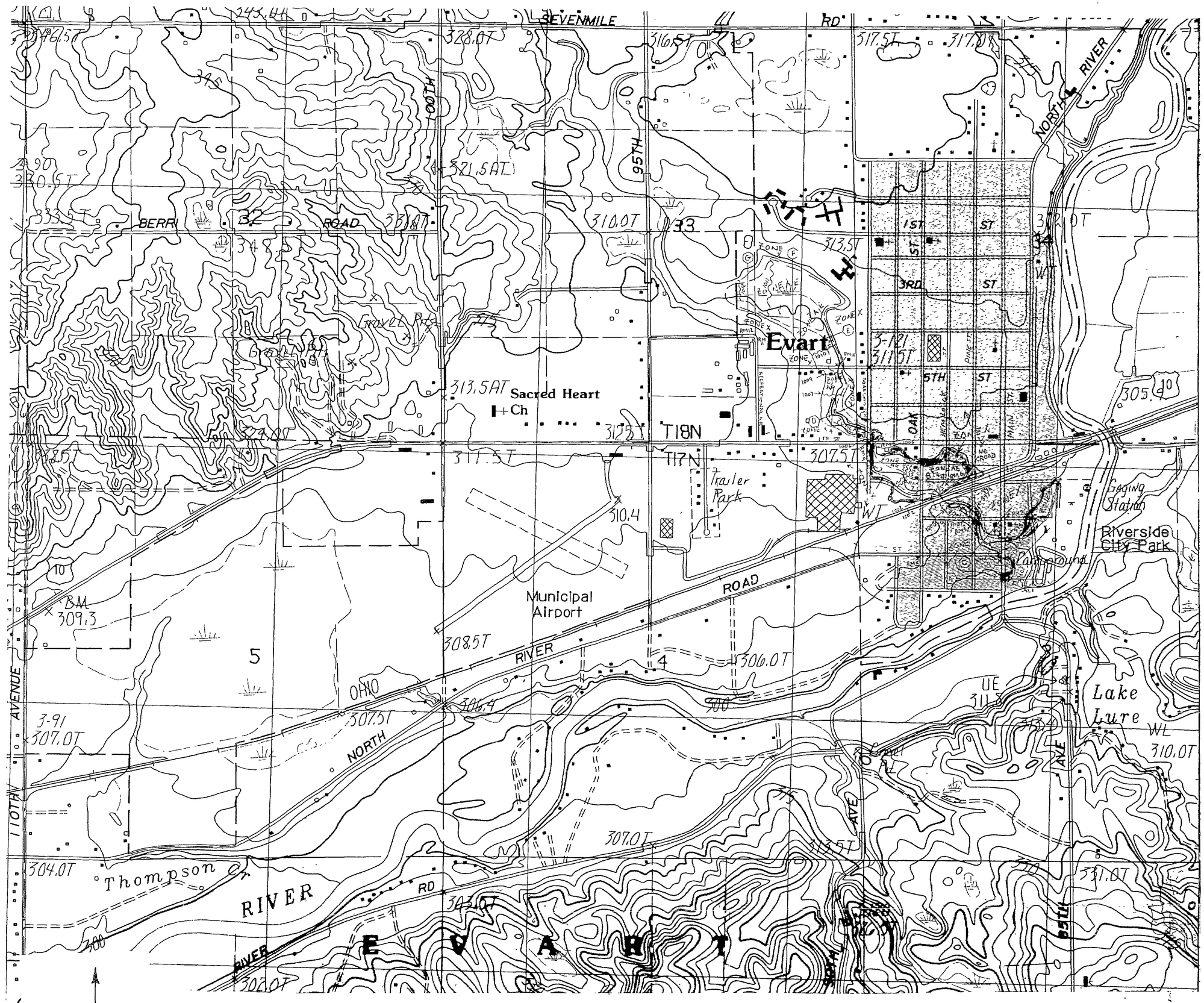
4.93 1015.36

DIST.	DESC.	ROD	ELEV.	
0'R	TOP OF HANDRAIL	4.92	1010.43	@ PIER
"	TOE OF HANDRAIL	10.2	1005.2	(ROCK)
"	W/S	9.1	1006.3	
6'L	℄ OF CREEK	10.5	1004.9	(ROCK)
12'L	TOE OF HANDRAIL	10.4	1005.0	
"	TOP OF HANDRAIL	4.85	1010.52	
"	W/S	9.1	1006.3	
0'R	L/S	0.94	1009.41	
12'L	L/S	5.88	1009.47	
	O/L	4.93	1010.42	
		TR ✓ 15.41		

31.00'.90 ±60



U/S FACE LOOKING D/S



NORTH

1 .5 0 KILOMETERS 1 2

1000 0 METERS 1000 2000

1 .5 0 1

MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

FEET

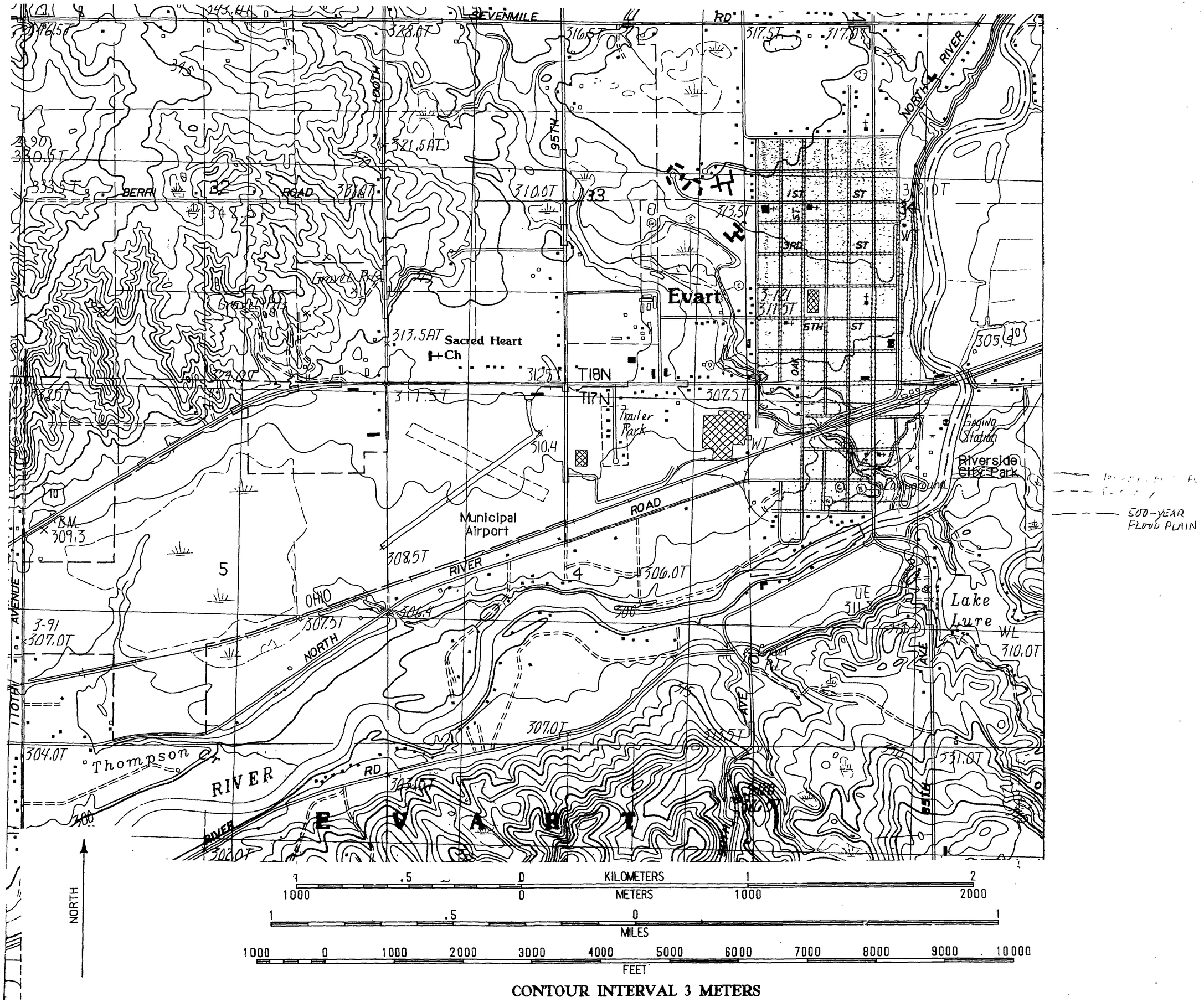
CONTOUR INTERVAL 3 METERS

LEGEND

- 500-YEAR FLOOD
- 100-YEAR FLOOD
- FLOODWAY
- DISTANCE IN THOUSANDS OF FEET ABOVE STUDY LIMIT
- CROSS SECTION
- CORPORATE LIMIT
- RM2 X — ELEVATION REFERENCE MARK
- ZONE AE — ZONE DESIGNATION
- 100Z — BASE FLOOD ELEVATION

FLOOD INSURANCE STUDY WORK MAP
CITY OF EVART, MICHIGAN

RECEIVED
AUG 16 1991
NATURAL RESOURCES
LAND & WATER MGMT.



CONTOUR INTERVAL 3 METERS

00BREAK00

1) COUNTY: OSCEOLA

2) STUDY NAME: VILLAGE OF HERSEY

3) WATERCOURSE: HERSEY RIVER

4) DOCUMENT TYPE: 100YR ENCROACHED

00BREAK00

```
*************************************************

T1 VILLAGE OF HERSEY,MI. FIS
T2 100-YEAR FLOOD - ENCROACHED CONDITION
T3      HERSEY RIVER

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0.        3.        0.        0.   0.000000    0.00      0.0       0.     960.600    0.000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    15.000    0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

1
 26 MAY 89    14:56:58                                                                          PAGE   13

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *PROF 2

 IHLEQ = 1.  THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF
 PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH.  SEE DOCUMENTATION FOR
 DETAILS.

 CCHV=   0.100 CEHV=   0.300
 *SECNO 0.000
  2800 NAT Q1=   3129.32  WSEL=    960.50  ENC Q1=   3176.99  WSEL=    960.60  RATIO= -0.0152
  NAT Q1=   3177.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    960 60

 3470 ENCROACHMENT STATIONS=     395 0     610.0  TYPE=     4  TARGET=       0.000
          CONFLUENCE MUSKEGON RIVER AT STA. 18+50
     0 00     15.50   960.60     0.00    960.50   960.63     0.03      0.00      0 00   963.90
    2160.       0.     2160       0.        0.     1516.      0.        0.        0.     968.00
     0.00     0.00     1.43     0.00     0.000     0.030    0.000    0 000    945.10   415.19
  0.000046      0.       0.       0.         0         0        0     0.00    170.58   585.76
0
 *SECNO 400.000
  2800 NAT Q1=   2128.80  WSEL=    960.53  ENC Q1=   2128.80  WSEL=    960.63  RATIO=  0.0000
  NAT Q1=   2850.  RATIOS LOB,CH,ROB=  0.3015  0.2432  0.4552  WSEL=    960.63

 3470 ENCROACHMENT STATIONS=     337.5     644.4  TYPE=     4  TARGET=       0.253
    400.00     9.73   960.63     0.00    960.53   960.66     0 03      0.03      0.00   954.50
     2160.     494.     700.     966.      420.     341.     922.       15.        2.     955.00
      0.08     1 17     2.05     1.05     0.040    0.030    0.040    0.000    950.90   337.48
  0.000102     400.     400.     400.         0        0        0     0.00    306.89   644.37
0
 *SECNO 550.000
  2800 NAT Q1=    740 66  WSEL=    960.45  ENC Q1=    740.66  WSEL=    960.55  RATIO=  0.0000
  NAT Q1=    849.  RATIOS LOB,CH,ROB=  0.0362  0.6495  0.3143  WSEL=    960.55

 3470 ENCROACHMENT STATIONS=     400.0     539.7  TYPE=     4  TARGET=       0 127
    550.00     7.24   960.54     0.00    960.45   960.80     0.26      0.07      0.07   959.50
     2160.       0.     1603.    557.        0.     349.     243.       19.        3.     957.00
      0.09     0.00     4.60     2.30     0.000    0.030    0.040    0.000    953.30   400.00
  0.000871     150.     150.     150.         2        0        0     0.00    139.69   539.69
0
 *SECNO 725.000
1
 26 MAY 89    14.56:58                                                                          PAGE   14
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 2800 NAT Q1=     378.52  WSEL=     960.52  ENC Q1=     378.52  WSEL=     960.62  RATIO=  0.0000
 NAT Q1=     397.   RATIOS LOB,CH,ROB=  0.0003  0.8046  0.1951  WSEL=     960.62

3470 ENCROACHMENT STATIONS=     500 0     622.4  TYPE=     4  TARGET=       0.045
         FIELD SECTION #5-VALLEY SECTION
   725.00      5.29    960.59      0.00    960.52    961.31      0.72      0.37      0.14    960.50
    2160.        0.     1824.      336.        0.      250.      110.       21.        3.    958.10
     0.10      0.00      7.29      3.05     0.000     0.030     0.040     0.000    955.30    500.00
 0.003344      175.      175.      175.         2         0         0      0.00    122.37    622.37
0
 *SECNO 1000.000
 2800 NAT Q1=     269.43  WSEL=     961.56  ENC Q1=     274.40  WSEL=     961.66  RATIO= -0.0185
 NAT Q1=     286.   RATIOS LOB,CH,ROB=  0.0000  0.9582  0.0418  WSEL=     961.66

3470 ENCROACHMENT STATIONS=     550.0     640.0  TYPE=     4  TARGET=       0.042
  1000.00      5.86    961.66      0.00    961.56    962.67      1.01      1.27      0.09    962.00
    2160.        0.     2160.        0.        0.      268.        0.       22.        4.    960.00
     0.11      0.00      8.07      0.00     0.000     0.030     0.000     0.000    955.80    550.93
 0.006401      275.      275.      275.         2         0         0      0.00     89.07    640.00
0
 *SECNO 1500.000

3470 ENCROACHMENT STATIONS=    1240.0    1310.0  TYPE=     1  TARGET=      70.000
  1500.00      7.84    964.04      0.00    963.96    965.28      1.24      2.54      0.07    963.50
    2160.       11.     2050.       99.        7.      225.       25.       26.        5.    961.10
     0.12      1 47      9 12      3.93     0.040     0.030     0.040     0.000    956.20   1240.00
 0.004221      500.      500.      500.         2         0         0      0.00     70.00   1310.00
0
 *SECNO 1750 000
 2800 NAT Q1=     416.98  WSEL=     965.19  ENC Q1=     416.98  WSEL=     965.29  RATIO=  0.0000
 NAT Q1=     437.   RATIOS LOB,CH,ROB=  0 0184  0.8909  0.0908  WSEL=     965.29

3470 ENCROACHMENT STATIONS=    1250.0    1318.4  TYPE=     4  TARGET=       0.046
  1750 00      8.60    965.30      0.00    965.19    966.15      0.85      0.83      0.04    964.30
    2160.        0.     2015.      145.        0.      265.       44.       27.        5.    962.30
     0.13      0.00      7.60      3.27     0.000     0.030     0.040     0.000    956.70   1250.00
 0.002737      250.      250.      250.         3         0         0      0.00     68.42   1318.42
0
1
 26 MAY 89     14:56:58                                                                          PAGE    15

   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 2000.000
 2800 NAT Q1=     660.92  WSEL=     966.13  ENC Q1=     660.92  WSEL=     966.23  RATIO=  0.0000
 NAT Q1=     760.   RATIOS LOB,CH,ROB=  0.1374  0.6138  0.2488  WSEL=     966.23

3301 HV CHANGED MORE THAN HVINS

3470 ENCROACHMENT STATIONS=     981.2    1278.8  TYPE=     4  TARGET=       0.131
  2000.00      9 28    966 28      0.00    966.13    966.58      0.30      0 37      0.05    965.30
    2160       190      1512.      458.       171.      298.      185.       30.        7.    962 50
```

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      0.15      1.11      5.07      2.48     0.040     0.030     0 040     0.000    957.00    981.18
  0.001024      250.      250.      250.         3         0         0      0.00    297.65   1278.83
0
 *SECNO 2400.000
  2800 NAT Q1=     623.72  WSEL=     966.52  ENC Q1=     623 72  WSEL=     966.62  RATIO=  0.0000
  NAT Q1=     645.  RATIOS LOB,CH,ROB=  0.0000  0.9457  0.0543  WSEL=     966.62

 3470 ENCROACHMENT STATIONS=      500.0      590.3  TYPE=      4  TARGET=        0.033
   2400.00      8.64    966.64      0.00    966.52    967.05      0.41      0.44      0.03    968.90
     2160.        0.     2113.       47.        0.      407.       27.       35.        8.    964.80
      0.17      0.00      5.20      1.75     0.000     0.030     0.040     0.000    958.00    502.09
  0.001182      400.      400.      400.         2         0         0      0.00     88.17    590.26
0
 *SECNO 2800.000
  2800 NAT Q1=     736.77  WSEL=     967.01  ENC Q1=     736.77  WSEL=     967.11  RATIO=  0.0000
  NAT Q1=     761.  RATIOS LOB,CH,ROB=  0.0000  0.9199  0.0801  WSEL=     967.11

 3470 ENCROACHMENT STATIONS=      500.0      601.5  TYPE=      4  TARGET=        0.032
   2800.00      9.14    967.14      0.00    967.01    967.46      0.32      0.40      0.01    968.90
     2160.        0.     2053       107.        0.      443.       59.       39.        9.    964.80
      0.19      0.00      4.64      1.81     0.000     0.030     0.040     0.000    958.00    501.63
  0.000850      400.      400.      400.         2         0         0      0.00     99.83    601.46
0
 *SECNO 3260 000
  2800 NAT Q1=     839.01  WSEL=     967.42  ENC Q1=     839.01  WSEL=     967.52  RATIO=  0.0000
  NAT Q1=     866.  RATIOS LOB,CH,ROB=  0.0011  0.8970  0.1019  WSEL=     967.52

 3470 ENCROACHMENT STATIONS=      500.0      611.7  TYPE=      4  TARGET=        0.032
          FIELD SECTION #6-VALLEY SECTION
   3260.00      9.54    967.54      0.00    967.42    967.80      0.26      0.34      0.01    968.90
     2160.        0.     2000       160.        0.      473.       93.       45.       10.    964.80
      0.23      0.00      4.23      1.72     0.000     0.030     0.040     0.000    958.00    501.25
  0.000655      460.      460.      460.         2         0         0      0.00    110.49    611.74
0
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 3500.000
  2800 NAT Q1=     450.48  WSEL=     967.40  ENC Q1=     451.03  WSEL=     967.50  RATIO= -0.0012
  NAT Q1=     465.  RATIOS LOB,CH,ROB=  0.0000  0.9707  0.0293  WSEL=     967.50

 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=      860.0      920.0  TYPE=      4  TARGET=        0.029
   3500.00      7.82    967.52      0.00    967.40    968.33      0.82      0.36      0.17    972.40
     2160.        0.     2160.        0.        0.      298         0.       47.       11.    965.80
      0.24      0.00      7 25      0.00     0.000     0 030     0.000     0.000    959.70    867.75
  0.002369      240.      240.      240.         2         0         0      0.00     52.25    920.00
0
 *SECNO 4000.000
  2800 NAT Q1=     347.98  WSEL=     968.68  ENC Q1=     357.42  WSEL=     968.78  RATIO= -0.0271
  NAT Q1=     360.  RATIOS LOB,CH,ROB=  0.0000  0.9938  0.0062  WSEL=     968.78

 3470 ENCROACHMENT STATIONS=      380.0      440.0  TYPE=      4  TARGET=        0.006
   4000.00      7.12    968.82      0.00    968.68    969 92      1.11      1.50      0.09    976.10
     2160.        0.     2160.        0.        0.      256.        0.       50.       11.    968 10
      0.25      0.00      8.45      0.00     0.000     0.030     0.000     0.000    961.70    390.12
  0.003648      500.      500.      500.         2         0         0      0.00     49.88    440 00
```

```
0
 *SECNO 4500.000
  2800 NAT Q1=     425.82  WSEL=     970.61  ENC Q1=     425.82  WSEL=     970.71  RATIO=  0.0000
  NAT Q1=     443.   RATIOS LOB,CH,ROB=  0.0000  0.9525  0.0475  WSEL=     970.71

 3470 ENCROACHMENT STATIONS=       80.0      158.6  TYPE=      4  TARGET=        0.039
   4500.00      7.03    970.63      0.00    970.61    971.50      0.87      1.55      0.02    979.70
     2160.        0.     2143.       17.        0.      285.       11.       54.       12.    969.80
      0.27      0.00      7.51      1 61     0.000     0.030     0.040     0.000    963.60     91.27
  0 002700      500.      500.      500.         2         0         0      0.00     67.31    158.58
0
 *SECNO 5250.000
  2800 NAT Q1=     716.62  WSEL=     972.23  ENC Q1=     716.62  WSEL=     972.33  RATIO=  0.0000
  NAT Q1=     884.   RATIOS LOB,CH,ROB=  0.0000  0.6792  0.3208  WSEL=     972.33
 3280 CROSS SECTION    5250.00 EXTENDED       3.22 FEET

1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=      500.0      703 1  TYPE=      4  TARGET=        0.189
          FIELD SECTION #7-VALLEY SECTION
   5250.00      7.32    972.32      0.00    972.23    972.59      0.26      1.03      0.06    982.60
     2160         0.     1812.      348.        0.      410.      200.       61.       14.    970.80
      0.32      0.00      4.42      1.74     0.000     0.030     0.040     0.000    965.00    522.94
  0.000915      750.      750.      750.         2         0         0      0.00    180.15    703.10
0
 CCHV=    0.300 CEHV=    0.500
 *SECNO 5573.000
  2800 NAT Q1=     718.77  WSEL=     972.40  ENC Q1=     729.17  WSEL=     972.50  RATIO= -0.0145
  NAT Q1=     729.   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     972.50

 3470 ENCROACHMENT STATIONS=      250.0      292.0  TYPE=      4  TARGET=        0.000
          DOWNSTREAM FACE MAIN ST.  BRIDGE-FIELD SECTION #8
   5573.00     12.81    972.51      0.00    972.40    972.98      0.47      0.29      0.10    981.80
     2160.        0.     2160.        0.        0.      393.        0.       65.       15.    979 30
      0.34      0.00      5.49      0.00     0.000     0.030     0.000     0.000    959.70    250.00
  0.000876      323.      323.      323.         2         0         0      0.00     39.71    289.71
0
 *SECNO 5600.000
  2800 NAT Q1=     721.28  WSEL=     972.43  ENC Q1=     732.03  WSEL=     972.53  RATIO= -0.0149
  NAT Q1=     732.   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     972.53

 3370 NORMAL BRIDGE,NRD=  9 MIN ELTRD=  979.70 MAX ELLC=  979.30


 3470 ENCROACHMENT STATIONS=      250.0      292 0  TYPE=      4  TARGET=        0.000
          UPSTREAM FACE MAIN ST.  BRIDGE
   5600.00     12.84    972.54      0.00    972.43    973.00      0.47      0.02      0.00    981.80
     2160.        0.     2160.        0.        0.      394.        0.       65.       15.    979.30
      0.34      0.00      5.48      0 00     0.000     0.030     0.000     0.000    959.70    250.00
  0.000870       27.       27.       27.         0         0         0      0.00     39.71    289.71
0
 CCHV=    0.100 CEHV=    0.300
 *SECNO 5635.000
1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 2800 NAT Q1=    1273.11  WSEL=    972 77  ENC Q1=    1273.11  WSEL=    972.87  RATIO=  0.0000
 NAT Q1=    1296.   RATIOS LOB,CH,ROB=  0.1213  0 7511  0.1275  WSEL=    972.87

3470 ENCROACHMENT STATIONS=     222.3     321.1  TYPE=     4  TARGET=       0.018
          CONFUENCE OF FLOW FROM DAM #2
  5635 00    13.16   972.86     0.00   972.77   973.04     0.18     0.02     0.03   965.90
    2160.     247.    1652      261.     142      432.     150.      66.      15.    965.90
     0.34    1.74     3.82     1.74    0.040    0.030    0.040    0.000   959.70   222.31
 0.000289     35.      35.      35.        2        0        0     0.00    98.80   321.11
0
 CCHV=   0.300 CEHV=   0.500
 *SECNO 5875.000
  2800 NAT Q1=    423.05  WSEL=    972.91  ENC Q1=    423.05  WSEL=    973.01  RATIO=  0.0000
  NAT Q1=    659.   RATIOS LOB,CH,ROB=  0.0485  0.6417  0.3097  WSEL=    973.01
 3280 CROSS SECTION   5875.00 EXTENDED      1.00 FEET

3470 ENCROACHMENT STATIONS=     125.0     211.0  TYPE=     4  TARGET=       0.358
  5875.00     4.30   973.00     0.00   972.91   973.41     0.41     0.25     0.11   969.80
    1740.       0.    1740.       0.       0.      340.       0.       69      16.    969.30
     0.36    0 00     5.12     0.02    0.000    0.030    0.040    0.000   968.70   125.00
 0 001795    240.     240.     240.        2        0        0     0.00    86.02   211.02
0
 *SECNO 5885.000
  2800 NAT Q1=    107.82  WSEL=    976.78  ENC Q1=    117.31  WSEL=    976.88  RATIO= -0.0880
  NAT Q1=    119.   RATIOS LOB,CH,ROB=  0.0069  0.9898  0.0033  WSEL=    976.88
 3685 20 TRIALS ATTEMPTED WSEL,CWSEL
 3693 PROBABLE MINIMUM SPECIFIC ENERGY
 3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     125.0     211.0  TYPE=     4  TARGET=       0.010
          DOWNSTREAM OF HERSEY DAM #1
  5885.00     2.09   976.79   976.79   976.78   977.66     0.87     0.11     0.19   975.80
    1125.       0.    1125.       0.       0.      150.       0.       69.      16.    975.30
     0.36    0.00     7.51     0.00    0.000    0.030    0.000    0.000   974.70   125.00
 0.011375     10.      10.      10.       20       11        0     0.00    86.00   211.00
0
 *SECNO 5905.000
  WATER EL=X5 CARD=   977.900
1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 2800 NAT Q1=    210.12  WSEL=    977.90  ENC Q1=    212.58  WSEL=    978.00  RATIO= -0.0117
 NAT Q1=    245.   RATIOS LOB,CH,ROB=  0.0181  0.8662  0.1157  WSEL=    978.00

3470 ENCROACHMENT STATIONS=     125.0     213.0  TYPE=     4  TARGET=       0 134
          UPSTREAM FACE HERSEY DAM #1-FIELD SECTION #9
  5905.00     2.70   977.90     0.00   977.90   978.31     0.41     0.10     0.14   976.10
    1125.       0.    1125.       0.       0.      220.       0.       69.      16     977.10
     0.36    0.00     5 12     0.00    0.000    0.030    0.000    0.000   975.20   125.00
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  0.003318      20.       20       20.        0        0        0     0.00    88.00   213.00
0
 *SECNO 6085.000
  WATER EL=X5 CARD=   977.900
  2800 NAT Q1=   4545.07  WSEL=    977.90  ENC Q1=   4545.07  WSEL=    978.00  RATIO=  0.0000
  NAT Q1=   4656.  RATIOS LOB,CH,ROB=  0.1376  0.3532  0.5092  WSEL=    978.00
 3280 CROSS SECTION   6085.00 EXTENDED      5.90 FEET


 3470 ENCROACHMENT STATIONS=      38 2     492.7  TYPE=     4  TARGET=       0.024
   6085.00     9.20   977.90     0.00   977.90   977.90     0.00     0.00     0.12   969.80
     1125.     144.      409     572.     489.     761.    1795.      76.      17.    969.30
      0.48     0.29     0.54     0.32    0.040    0.030    0.040    0.000   968.70    38.16
  0.000006     180.     180.     180.        0        0        0     0.00   454.50   492.66
0
 *SECNO 8430.000
  2800 NAT Q1=   1841.19  WSEL=    978.09  ENC Q1=   1841.19  WSEL=    978.19  RATIO=  0.0000
  NAT Q1=   1919.  RATIOS LOB,CH,ROB=  0.0127  0.2790  0.7084  WSEL=    978.19

 3470 ENCROACHMENT STATIONS=     204.0     713.7  TYPE=     4  TARGET=       0.040
   8430.00     6.21   978.11     0.00   978.09   978.14     0.03     0.22     0.01   976.10
     2400.       0.      694.    1706.       0.     371.    1445.     203.      42.    976.00
      0.95     0.00     1.87     1.18    0.000    0.030    0.040    0.000   971.90   204.00
  0.000184    1515.    2345.    2365        2        0        0     0.00   509.69   713.69
0
1
  26 MAY 89    14:56:58                                                                    PAGE   20


                                                                THIS RUN EXECUTED 26 MAY 89    14:57:07
 ***************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
   ERROR CORR -  01,02,03,04,05,06
   MODIFICATION -  50,51,52,53,54,55,56
 ***************************************************


NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST


HERSEY RIVER

SUMMARY PRINTOUT TABLE  110
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SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
0.000	960.50	0.00	960.53	169.64	0.00	2160.00	0.00	0.00	0.00	395.00	610.00	0.00
0.000	960.60	0.10	960.63	170.58	0.00	2160.00	0.00	0.00	395.00	395.00	610.00	610.00
400.000	960.53	0.00	960.56	340.00	396.41	688.93	1074.66	340.00	350.00	410 00	450.00	690.00
400.000	960.63	0.10	960.66	306.89	494.01	700.49	965.50	0.25	337.48	410.00	450.00	644 37
550.000	960.45	0.00	960.70	257.89	47.11	1561.58	551.31	265.00	335.00	400.00	460.00	600.00
550.000	960.54	0.09	960.80	139.69	0.00	1603.15	556.85	0.13	400.00	400.00	460.00	539.69
725.000	960.52	0.00	961.18	155.58	0.00	1757.69	402.31	0.00	0.00	500.00	558.00	0.00
725.000	960.59	0.07	961.31	122.37	0.00	1824.47	335.53	0.05	500.00	500.00	558.00	622.37
1000.000	961.56	0.00	962 53	129.87	0.00	2079.20	80.80	675.00	50.00	550.00	640.00	725.00
1000.000	961 66	0.09	962.67	89.07	0.00	2160.00	0.00	0.04	550.00	550.00	640.00	640.00
1500.000	963.96	0.00	965.14	141.75	13.29	1995.91	150.79	1390.00	0.00	1255.00	1300.00	1390.00
1500.000	964.04	0.08	965.28	70.00	10.71	2049.92	99 37	70.00	1240.00	1255.00	1300.00	1310.00

1750.000	965.19	0.00	966.00	193.64	30.01	1954.29	175.69	440.00	940.00	1250.00	1300.00	1380.00
1750.000	965.30	0.11	966.15	68.42	0.00	2015.18	144.82	0.05	1250.00	1250.00	1300.00	1318.43
2000.000	966.13	0.00	966.43	335.00	156.40	1482.66	520.94	335.00	965.00	1170.00	1220 00	1300.00
2000.000	966.28	0.14	966.58	297.65	190.45	1511.93	457.62	0.13	981.18	1170.00	1220.00	1278.83
2400 000	966.52	0.00	966.91	138.96	0.00	2053.11	106.89	575.00	500.00	500.00	575.00	1075.00
2400.000	966.64	0.12	967.05	88.17	0.00	2112.59	47.41	0.03	500.00	500.00	575.00	590.26
2800.000	967.01	0.00	967.32	152.37	0.00	1998.69	161.31	575.00	500.00	500.00	575.00	1075.00
2800.000	967.14	0.12	967 46	99.83	0.00	2053.43	106.57	0.03	500.00	500.00	575.00	601.46
3260.000	967.42	0.00	967.67	160.55	0.00	1951.27	208.73	575.00	500.00	500.00	575.00	1075.00
3260.000	967.54	0.12	967.80	110.49	0.00	1999.71	160.29	0.03	500.00	500.00	575.00	611.74

	SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
	3500.000	967.40	0 00	968.19	97.28	0.00	2104.50	55 50	0.00	0.00	860.00	920.00	0.00
	3500.000	967.52	0.12	968.33	52.25	0 00	2160.00	0.00	0.03	860.00	860.00	920.00	920.00
	4000.000	968.68	0.00	969.84	80.33	0 00	2150.97	9.03	0.00	0.00	380.00	440.00	0 00
	4000.000	968.82	0.13	969.92	49.88	0.00	2160.00	0.00	0.01	380.00	380.00	440.00	440.00
	4500.000	970.61	0.00	971.41	241.87	0 00	2080.80	79.20	0.00	0.00	80.00	145.00	0.00
	4500.000	970.63	0.02	971.50	67.31	0.00	2142.52	17.48	0.04	80.00	80 00	145.00	158.58
	5250.000	972.23	0.00	972.48	201.85	0.00	1757.41	402.59	740.00	0.00	500.00	600.00	740.00
	5250.000	972 32	0.10	972.59	180.15	0.00	1812.16	347.84	0.19	500.00	500.00	600.00	703.10
	5573.000	972.40	0.00	972.88	39.68	0.00	2160.00	0.00	0.00	0.00	250.00	292.00	0.00
	5573.000	972.51	0.10	972.98	39.71	0.00	2160.00	0.00	0.00	250.00	250.00	292.00	292.00
	5600.000	972 43	0.00	972.91	39.68	0.00	2160.00	0.00	0.00	0.00	250.00	292.00	0.00
	5600.000	972 54	0.10	973.00	39.71	0.00	2160.00	0.00	0.00	250.00	250 00	292.00	292.00
	5635.000	972.77	0.00	972.95	110.00	265.38	1625.47	269.16	110.00	215.00	250.00	292.00	325 00
	5635.000	972.86	0.09	973.04	98.80	247.21	1651.97	260.82	0.02	222.31	250.00	292.00	321.11
	5875.000	972.91	0.00	973.29	100.00	30.62	1670.56	38.82	100.00	120.00	125.00	211.00	220.00
	5875.000	973.00	0.09	973.41	86.02	0.00	1740.00	0.00	0.36	125.00	125.00	211.00	211.03
*	5885.000	976 78	0.00	977.64	93.36	6.60	1114.97	3.43	0.00	0.00	125.00	211.00	0.00
*	5885.000	976.79	0.01	977.66	86.00	0.00	1125.00	0.00	0.01	125.00	125.00	211.00	211.00
*	5905.000	977.90	0.00	978 25	132.00	19.88	1066.04	39.08	135.00	110.00	125.00	213.00	245.00
*	5905.000	977 90	0.00	978.31	88.00	0.00	1125.00	0.00	0.13	125.00	125.00	213.00	213.00
*	6085.000	977.90	0.00	977.90	491.25	153.67	399.47	571.87	0.00	0.00	125.00	211.00	0.00
*	6085.000	977.90	0.00	977.90	454.50	144.15	408.88	571.97	0.02	38.16	125.00	211.00	492.66
	8430.000	978.09	0.00	978.12	587.47	27.61	675.82	1696.58	0.00	0.00	204.00	281.00	0.00
	8430.000	978.11	0.02	978.14	509.69	0.00	694.43	1705.57	0.04	204.00	204.00	281.00	713.69

HERSEY RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
0.000	0.00	0.00	0.00	945.10	2160.00	960.50	0.00	960.53	0.48	1.44	1498.72	3129.32
0.000	0.00	0.00	0.00	945.10	2160.00	960.60	0.00	960.63	0.46	1.43	1515.73	3176.99
400.000	400.00	0.00	0.00	950.90	2160.00	960.53	0.00	960.56	1.03	2.04	1749.29	2128.80
400.000	400.00	0.00	0.00	950.90	2160.00	960.63	0.00	960.66	1.02	2.05	1683.41	2133.61
550.000	150.00	0.00	0.00	953.30	2160.00	960.45	0.00	960.70	8.50	4.55	679.63	740.66
550.000	150.00	0.00	0.00	953.30	2160.00	960.54	0.00	960.80	8.71	4.60	591.19	731.91
725.000	175.00	0.00	0.00	955.30	2160.00	960.52	0.00	961.18	32.56	7.13	386.40	378.52
725.000	175.00	0.00	0.00	955.30	2160.00	960.59	0.00	961.31	33.44	7.29	360.13	373.52
1000.000	275.00	0.00	0.00	955.80	2160.00	961.56	0.00	962.53	64.27	8.03	290.96	269.43
1000.000	275.00	0.00	0.00	955.80	2160.00	961.66	0.00	962.67	64.01	8.07	267.51	269.98
1500.000	500.00	0.00	0.00	956.20	2160.00	963.96	963.15	965.14	42.13	9.02	285.10	332.77
1500.000	500.00	0.00	0.00	956.20	2160.00	964.04	0.00	965.28	42.21	9.12	257.26	332.46
1750.000	250.00	0.00	0.00	956.70	2160.00	965.19	0.00	966.00	26.83	7.52	359.51	416.98
1750.000	250.00	0.00	0.00	956.70	2160.00	965.30	0.00	966.15	27.37	7.60	309.33	412.89
2000.000	250.00	0.00	0.00	957.00	2160.00	966.13	0.00	966.43	10.68	5.09	667.64	660.92
2000.000	250.00	0.00	0.00	957.00	2160.00	966.28	0.00	966.58	10.24	5.07	654.37	675.12
2400.000	400.00	0.00	0.00	958.00	2160.00	966.52	0.00	966.91	11.99	5.16	467.58	623.72
2400.000	400.00	0.00	0.00	958.00	2160.00	966.64	0.00	967.05	11.82	5.20	433.67	628.23
2800.000	400.00	0.00	0.00	958.00	2160.00	967.01	0.00	967.32	8.59	4.61	540.33	736.77
2800.000	400.00	0.00	0.00	958.00	2160.00	967.14	0.00	967.46	8.50	4.64	501.78	740.93
3260.000	460.00	0.00	0.00	958.00	2160.00	967.42	0.00	967.67	6.63	4.21	603.81	839.01
3260.000	460.00	0.00	0.00	958.00	2160.00	967.54	0.00	967.80	6.55	4.23	565.74	844.09
3500.000	240.00	0.00	0.00	959.70	2160.00	967.40	0.00	968.19	22.99	7.21	328.01	450.48
3500.000	240.00	0.00	0.00	959.70	2160.00	967.52	0.00	968.33	23.69	7.25	297.87	443.80
4000.000	500.00	0.00	0.00	961.70	2160.00	968.68	0.00	969.84	38.53	8.63	258.05	347.98
4000.000	500.00	0.00	0.00	961.70	2160.00	968.82	0.00	969.92	36.48	8.45	255.69	357.64
4500.000	500.00	0.00	0.00	963.60	2160.00	970.61	968.80	971.41	25.73	7.32	360.72	425.82
4500.000	500.00	0.00	0.00	963.60	2160.00	970.63	0.00	971.50	27.00	7.51	295.99	415.68
5250.000	750.00	0.00	0.00	965.00	2160.00	972.23	0.00	972.48	9.09	4.36	639.79	716.62
5250.000	750.00	0.00	0.00	965.00	2160.00	972.32	0.00	972.59	9.15	4.42	609.50	713.95
5573.000	323.00	0.00	0.00	959.70	2160.00	972.40	0.00	972.88	9.03	5.55	389.14	718.77
5573.000	323.00	0.00	0.00	959.70	2160.00	972.51	0.00	972.98	8.76	5.49	393.27	729.64

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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
5600.000	27.00	979.70	979.30	959.70	2160.00	972.43	0.00	972.91	8.97	5.54	390.09	721.28
5600.000	27.00	979.70	979.30	959.70	2160.00	972.54	0.00	973.00	8.70	5.48	394.21	732.11
5635.000	35.00	0.00	0.00	959.70	2160.00	972.77	0.00	972.95	2.88	3.80	747.22	1273.11
5635.000	35.00	0.00	0.00	959.70	2160.00	972.86	0.00	973.04	2.89	3.82	723.95	1270.41
5875.000	240.00	0.00	0.00	968.70	1740.00	972.91	0.00	973.29	16.92	5.02	364.38	423.05
5875.000	240.00	0.00	0.00	968.70	1740.00	973.00	0.00	973.41	17.95	5.12	340.00	410.72

*	5885.000	10.00	0.00	0.00	974.70	1125.00	976.78	976.78	977.64	108.86	7.47	153.40	107.82
*	5885.000	10.00	0.00	0.00	974.70	1125.00	976.79	976.79	977.66	113.75	7.51	149.88	105.48
*	5905.000	20.00	0.00	0.00	975.20	1125.00	977.90	0.00	978.25	28.67	4.85	254.49	210.12
*	5905.000	20.00	0.00	0.00	975.20	1125.00	977.90	0.00	978.31	33.18	5.12	219.60	195.31
*	6085.000	180.00	0.00	0.00	968.70	1125.00	977.90	0.00	977.90	0.06	0.52	3150.88	4545.07
*	6085.000	180.00	0.00	0.00	968.70	1125.00	977.90	0.00	977.90	0.06	0.54	3045.46	4440.46
	8430.000	2345.00	0.00	0.00	971.90	2400.00	978.09	0.00	978.12	1.70	1.82	1921.35	1841.19
	8430.000	2345.00	0.00	0.00	971.90	2400.00	978.11	0.00	978.14	1.84	1.87	1816.63	1767.57

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HERSEY RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
0.000	2160.00	960.50	0.00	0.00	0.00	169.64	0.00
0.000	2160.00	960.60	0.10	0.00	0.10	170.58	0.00
400.000	2160.00	960.53	0.00	0.03	0.00	340.00	400.00
400.000	2160.00	960.63	0.10	0.03	0.10	306.89	400.00
550.000	2160.00	960.45	0.00	-0.08	0.00	257.89	150.00
550.000	2160.00	960.54	0.09	-0.09	0.09	139.69	150.00
725.000	2160.00	960.52	0.00	0.07	0.00	155.58	175.00
725.000	2160.00	960.59	0.07	0.05	0.07	122.37	175.00
1000.000	2160.00	961.56	0.00	1.05	0.00	129.87	275.00
1000.000	2160.00	961.66	0.09	1.07	0.09	89.07	275.00
1500.000	2160.00	963.96	0.00	2.40	0.00	141.75	500.00
1500.000	2160.00	964.04	0.08	2.39	0.08	70.00	500.00
1750.000	2160.00	965.19	0.00	1.23	0.00	193.64	250.00
1750.000	2160.00	965.30	0.11	1.26	0.11	68.42	250.00
2000.000	2160.00	966.13	0.00	0.94	0.00	335.00	250.00
2000.000	2160.00	966.28	0.14	0.97	0.14	297.65	250.00
2400.000	2160.00	966.52	0.00	0.39	0.00	138.96	400.00
2400.000	2160.00	966.64	0.12	0.36	0.12	88.17	400.00
2800.000	2160.00	967.01	0.00	0.50	0.00	152.37	400.00
2800.000	2160.00	967.14	0.12	0.50	0.12	99.83	400.00
3260.000	2160.00	967.42	0.00	0.41	0.00	160.55	460.00
3260.000	2160.00	967.54	0.12	0.41	0.12	110.49	460.00
3500.000	2160.00	967.40	0.00	-0.02	0.00	97.28	240.00
3500.000	2160.00	967.52	0.12	-0.03	0.12	52.25	240.00
4000.000	2160.00	968.68	0.00	1.28	0.00	80.33	500.00
4000.000	2160.00	968.82	0.13	1.30	0.13	49.88	500.00
4500.000	2160.00	970.61	0.00	1.93	0.00	241.87	500.00
4500.000	2160.00	970.63	0.02	1.81	0.02	67.31	500.00
5250.000	2160.00	972.23	0.00	1.62	0.00	201.85	750.00

5250 000	2160 00	972.32	0.10	1.69	0.10	180.15	750.00
5573.000	2160.00	972.40	0.00	0.18	0.00	39.68	323.00
5573.000	2160.00	972.51	0.10	0.19	0.10	39.71	323.00

1

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	5600.000	2160.00	972.43	0.00	0.03	0.00	39.68	27.00
	5600.000	2160.00	972.54	0.10	0.03	0.10	39.71	27.00
	5635.000	2160.00	972.77	0.00	0.34	0.00	110.00	35.00
	5635.000	2160.00	972.86	0.09	0.32	0.09	98 80	35.00
	5875.000	1740 00	972.91	0.00	0.14	0.00	100 00	240.00
	5875.000	1740.00	973.00	0.09	0.14	0.09	86 02	240.00
*	5885.000	1125.00	976.78	0.00	3.87	0.00	93.36	10.00
*	5885.000	1125.00	976.79	0.01	3.79	0.01	86.00	10.00
*	5905.000	1125.00	977.90	0.00	1.12	0.00	132.00	20.00
*	5905.000	1125.00	977.90	0.00	1.11	0.00	88.00	20.00
*	6085.000	1125.00	977.90	0.00	0.00	0.00	491.25	180.00
*	6085.000	1125.00	977.90	0.00	0.00	0.00	454.50	180.00
	8430.000	2400.00	978.09	0.00	0.19	0.00	587.47	2345.00
	8430.000	2400.00	978.11	0.02	0.21	0.02	509.69	2345.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION	SECNO=	5885.000	PROFILE= 1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	5885.000	PROFILE= 1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	5885.000	PROFILE= 1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	5885.000	PROFILE= 2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	5885.000	PROFILE= 2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	5885.000	PROFILE= 2	20 TRIALS ATTEMPTED TO BALANCE WSEL
NOTE	SECNO=	5905.000	PROFILE= 1	WSEL BASED ON X5 CARD
NOTE	SECNO=	5905.000	PROFILE= 2	WSEL BASED ON X5 CARD
NOTE	SECNO=	6085.000	PROFILE= 1	WSEL BASED ON X5 CARD
NOTE	SECNO=	6085.000	PROFILE= 2	WSEL BASED ON X5 CARD

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FLOODWAY DATA, HERSEY RIVER
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE

0.000	171.	1516.	1.4	960.6	960.5	0.1
400.000	307.	1683.	1.3	960.6	960.5	0.1
550.000	140.	591.	3.7	960.6	960.5	0.1
725.000	122.	360.	6.0	960.6	960.5	0.1
1000.000	89.	268.	8.1	961.7	961 6	0.1
1500.000	70.	257.	8.4	964.1	964.0	0.1
1750.000	68.	309.	7.0	965.3	965.2	0.1
2000.000	298.	654.	3.3	966.2	966.1	0.1
2400.000	88.	434.	5.0	966.6	966 5	0.1
2800.000	100.	502.	4.3	967 1	967.0	0.1
3260.000	110.	566.	3.8	967 5	967.4	0.1
3500.000	52.	298	7.3	967.5	967.4	0.1
4000.000	50.	256.	8.4	968.8	968.7	0.1
4500.000	67.	296.	7.3	970.6	970.6	0.0
5250.000	180.	609.	3.5	972 3	972.2	0.1
5573.000	40.	393.	5.5	972 5	972.4	0.1
5600.000	40.	394.	5.5	972.5	972.4	0.1
5635.000	99.	724.	3 0	972.9	972.8	0.1
5875.000	86.	340.	5.1	973.0	972.9	0.1
5885.000	86.	150.	7.5	976.8	976.8	0.0
5905.000	88.	220.	5.1	977.9	977.9	0.0
6085.000	454.	3045.	0.4	977.9	977.9	0.0
8430.000	510.	1817.	1.3	978.1	978.1	0.0

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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1) COUNTY: OSCEOLA

2) STUDY NAME: VILLAGE OF HERSEY

3) WATERCOURSE: HERSEY RIVER

4) DOCUMENT TYPE: 100 YR NATURAL

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1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF NOVEMBER 1976                         *
 *  UPDATED MAY 1984                                 *
 *                                                   *
 *  RUN DATE  26 MAY 89 TIME   14:56:58              *
 *****************************************************
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*********************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*********************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
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1

26 MAY 89 14:56:58 PAGE 1

THIS RUN EXECUTED 26 MAY 89 14:56:58

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
*****************************************************
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C
T1 VILLAGE OF HERSEY,MI.FIS
T2 100-YEAR FLOOD - NATURAL CONDITION
T3      HERSEY RIVER

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0.        2.        0.        0.   0.000000    0.00      0.0       0.     960.500    0.000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

  110.000   150.000   200.000     0.000     0 000     0.000     0.000     0.000     0.000     0.000

J6  IHLEQ     ICOPY

    1 000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

NC      0.040     0.040     0.030     0.100     0.300     0 000     0.000     0.000     0.000     0.000
ET      0.000     0.000     1.400     0.000     0.000     0.000     0.000     0.000     0.000     0.000
QT      2.000  2160.000  2160.000     0 000     0.000     0.000     0.000     0.000     0.000     0.000
         CONFLUENCE MUSKEGON RIVER AT STA.  18+50
X1      0.000     7.000   395.000   610.000     0.000     0.000     0.000     0.000     0.000     0.000
GR    974.400     0.000   964.000   200.000   963.900   395.000   945.100   510.000   945.100   535.000
GR    968 000   610.000   974.400  1585.000     0.000     0.000     0.000     0.000     0.000     0.000
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ET	0.000	4.100	0.000	350.000	690.000	0.000	0.000	0.000	0.000	0.000
X1	400.000	7.000	410.000	450.000	400.000	400.000	400.000	0.000	0.000	0.000
GR	964.500	0.000	955.000	350.000	954.500	410.000	950.900	420.000	951.500	440.000
GR	955.000	450.000	964.500	1500.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	4.100	0.000	335.000	600.000	0.000	0.000	0.000	0.000	0.000
X1	550.000	18.000	400.000	460.000	150.000	150.000	150 000	0.000	0.000	0.000
GR	970.500	0.000	965.900	100.000	960.500	200.000	960.000	300.000	959.500	400.000
GR	955.000	410.000	953.300	420.000	953.800	445.000	957.000	460.000	957.200	500.000
GR	960.700	600.000	959.600	700.000	959.600	800.000	960.100	900.000	961.000	1000.000
GR	961.600	1100.000	962.300	1200.000	963.000	1300.000	0 000	0.000	0.000	0.000

1

FIELD SECTION #5-VALLEY SECTION

X1	725.000	56.000	500.000	558.000	175.000	175.000	175.000	0.000	0.000	0.000
GR	981.900	0.000	981.000	25.000	978 900	50.000	977.500	75.000	976.600	100.000
GR	975.700	125.000	974.700	150.000	972.900	175.000	970.100	200.000	966.700	225.000
GR	964.100	250.000	962.500	275.000	962.000	300.000	961.700	325.000	961.600	350.000
GR	961.500	375.000	961.800	400.000	961.700	425.000	961.600	450.000	960.600	475.000
GR	960.500	500.000	960.300	504.000	956.600	505.000	955.700	510.000	955.300	515.000
GR	955.500	520.000	955.600	525.000	955.800	530.000	955.900	535.000	956.000	540.000
GR	956.100	545.000	956.100	550.000	956.600	556.000	958.100	558 000	959.000	575.000
GR	959.000	600.000	959.000	625.000	959 300	645.000	962.600	656.000	963.000	675.000
GR	963.000	700.000	962.700	725.000	962.100	750.000	961 700	775.000	962.000	800.000
GR	962.000	825.000	961.500	850.000	961.700	875.000	961.200	900.000	961.800	925.000
GR	961.200	950.000	961.700	975.000	961.100	1000.000	961.600	1025.000	961.700	1050.000
GR	963.700	1450.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	4.100	0.000	50.000	725.000	0.000	0.000	0.000	0.000	0.000
X1	1000.000	21.000	550.000	640.000	275.000	275.000	275.000	0.000	0.000	0.000
GR	977.200	50.000	975.200	100.000	972.000	200.000	965.500	300.000	963.000	400 000
GR	962.700	500.000	962.000	550.000	958.300	560.000	955.800	570.000	956.500	580.000
GR	957.700	590.000	958.500	600.000	960.000	605.000	960.000	640.000	961.900	690.000
GR	963.000	700.000	963.800	725.000	963.100	750.000	961.700	800.000	961.800	900.000
GR	962.700	1000.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	4.100	6.100	0.000	1390.000	1240.000	1310.000	0.000	0 000	0.000
X1	1500.000	11.000	1255.000	1300.000	500.000	500.000	500.000	0.000	0.000	0.000
GR	984.200	0.000	974.400	670.000	964.600	1108.000	963.500	1255.000	956.200	1270.000
GR	961.100	1300.000	964.600	1342.000	964.900	1390.000	964.600	1425.000	960.700	1520.000
GR	964.600	1720.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	4.100	1.400	940 000	1380.000	0.000	0.000	0.000	0.000	0.000
X1	1750 000	16.000	1250.000	1300.000	250.000	250.000	250.000	0.000	0.000	0.000
GR	978.300	300.000	976.100	400.000	974.400	500.000	972.500	600.000	970.800	700.000
GR	968.400	800.000	967.000	900.000	965.900	1000.000	965.800	1100.000	965.100	1200.000
GR	964.300	1250.000	956.700	1275.000	962.300	1300 000	964.900	1340.000	965.000	1400.000
GR	968.000	1500.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	4 100	0.000	965 000	1300.000	0.000	0.000	0.000	0.000	0.000
X1	2000.000	9.000	1170.000	1220.000	250.000	250.000	250.000	0.000	0.000	0.000
GR	984.200	0 000	974.400	293.000	965.600	753 000	965.300	1170.000	957.000	1190.000
GR	962.500	1220.000	964.600	1317.000	974.400	1380.000	974.600	1463.000	0.000	0.000
ET	0.000	4.100	0.000	500.000	1075.000	0.000	0.000	0.000	0.000	0.000
X1	2400.000	56.000	500.000	575.000	400.000	400.000	400.000	0.000	0.000	0.000
GR	984.000	0.000	983.400	25.000	983.200	50.000	983.000	75.000	982.400	100.000
GR	978.400	125.000	974.900	150.000	973.600	175.000	973.200	200.000	974.000	225.000
GR	973.600	250.000	972.800	275.000	971.200	300.000	968.200	325.000	967.700	350.000
GR	967.300	375.000	967.300	400.000	968.100	425.000	968.100	450.000	968 100	475.000
GR	968.900	500.000	962.400	506.000	961.800	511.000	960.100	516 000	958.400	521.000
GR	958.100	526.000	958.000	531.000	958.500	536.000	958.500	541.000	960.400	546.000
GR	960.800	551.000	962.500	557.000	963.700	560.000	964.800	575.000	965.000	600.000

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GR     966.000     625.000     966.800     650.000     968.100     675.000     968.600     686.000     979.600     710.000
GR     980.400     725.000     981.000     750.000     981.400     775.000     981.700     800.000     981.200     825.000
GR     979.800     850.000     978.100     875.000     977.400     900.000     977.000     925.000     977.000     950.000
1
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GR     977.400     975.000     977.000    1000.000     976.700    1025.000     977.600    1033.000     977.300    1051.000
GR     976.600    1075.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000

ET       0.000       4.100       0.000     500.000    1075.000       0.000       0.000       0.000       0.000       0.000
X1    2800.000       0.000       0.000       0.000     400.000     400.000     400.000       0.000       0.000       0.000

ET       0.000       4.100       0.000     500.000    1075.000       0.000       0.000       0.000       0.000       0.000
          FIELD SECTION #6-VALLEY SECTION
X1    3260.000       0.000       0.000       0.000     460.000     460.000     460.000       0.000       0.000       0.000

X1    3500.000      12.000     860.000     920.000     240.000     240.000     240.000       0.000       0.000       0.000
GR     984.200       0.000     974.400     240.000     972.400     860.000     959.800     880.000     959.700     900.000
GR     965.800     920.000     970.400    1050.000     974.600    1200.000     974.400    1520.000     974.600    1800.000
GR     974.400    2200.000     984.200    2360.000       0.000       0.000       0.000       0.000       0.000       0.000

X1    4000.000      10.000     380.000     440.000     500.000     500.000     500.000       0.000       0.000       0.000
GR     984.400       0.000     976.100     380.000     961.700     400.000     961.700     420.000     968.100     440.000
GR     970.000     540.000     974.400     640.000     976.000     710.000     974.800     800.000     974.400     920.000

X1    4500.000      13.000      80.000     145.000     500.000     500.000     500.000       0.000       0.000       0.000
GR     984.200       0.000     974.400      60.000     979.700      80.000     963.600     100.000     963.600     125.000
GR     969.800     145.000     972.200     700.000     974.400     840.000     975.000    1200.000     974.400    1840.000
GR     975.000    2000.000     974.400    2280.000     984.200    2400.000       0.000       0.000       0.000       0.000

ET       0.000       4.100       0.000       0.000     740.000       0.000       0.000       0.000       0.000       0.000
          FIELD SECTION #7-VALLEY SECTION
X1    5250.000      58.000     500.000     600.000     750.000     750.000     750.000       0.000       0.000       0.000
GR     986.200       0.000     986.200      25.000     986.300      50.000     986.300      75.000     986.300     100.000
GR     986.200     125.000     986.200     150.000     986.300     175.000     986.600     200.000     985.200     225.000
GR     985.200     250.000     985.600     275.000     986.000     287.000     986.400     307.000     985.600     325.000
GR     985.700     350.000     986.400     375.000     986.700     400.000     986.600     425.000     986.400     450.000
GR     985.700     475.000     982.600     500.000     970.500     527.000     970.400     531.000     966.700     534.000
GR     966.000     539.000     965.600     544.000     965.100     549.000     965.100     554.000     965.000     559.000
GR     965.000     564.000     965.200     569.000     965.400     574.000     965.800     579.000     966.700     586.000
GR     969.900     589.000     970.800     600.000     970.300     625.000     970.100     650.000     970.400     675.000
GR     970.600     700.000     969.700     725.000     970.000     750.000     971.000     775.000     971.800     800.000
GR     973.200     825.000     973.600     850.000     974.300     875.000     974.000     900.000     973.800     925.000
GR     973.600     950.000     973.300     975.000     974.000    1000.000     974.400    1025.000     974.000    1050.000
GR     970.600    1060.000     970.300    1075.000     969.100    1100.000       0.000       0.000       0.000       0.000

NC       0.000       0.000       0.000       0.300       0.500       0.000       0.000       0.000       0.000       0.000
          DOWNSTREAM FACE MAIN ST. BRIDGE-FIELD SECTION #8
X1    5573.000      32.000     250.000     292.000     323.000     323.000     323.000       0.000       0.000       0.000
X4       1.000     979.300     292.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
GR     987.300       0.000     987.000      25.000     986.600      50.000     986.200      75.000     985.600     100.000
GR     984.900     125.000     984.200     150.000     983.500     175.000     982.700     200.000     982.100     225.000
GR     981.800     250.000     965.900     250.000     965.300     255.000     961.300     260.000     959.900     265.000
GR     959.700     270.000     960.400     275.000     962.700     280.000     964.400     285.000     965.900     288.000
GR     981.400     292.000     981.300     300.000     980.800     325.000     980.100     350.000     979.700     375.000
GR     979.400     400.000     979.100     425.000     978.700     450.000     978.500     475.000     978.000     500.000
GR     977.600     525.000     977.100     550.000       0.000       0.000       0.000       0.000       0.000       0.000
1
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QT       2.000    2160.000    2160.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
          UPSTREAM FACE MAIN ST. BRIDGE
X1    5600.000       0.000       0.000       0.000      27.000      27.000      27.000       0.000       0.000       0.000
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BT      -9.000    200.000    982.700      0.000    225.000    982.100      0.000    250.000    981.800    979.300
BT       0.000    275.000    981.700    979.300    292.000    981.400    979.300    300.000    981.300      0.000
BT       0.000    325.000    980.800      0.000    350.000    980.100      0.000    375.000    979.700      0.000

NC       0.000      0.000      0.000      0.100      0.300      0.000      0.000      0.000      0.000      0.000
ET       0.000      4.100      0.000    215.000    325.000      0.000      0.000      0.000      0.000      0.000
          CONFUENCE OF FLOW FROM DAM #2
X1    5635.000     22.000    250.000    292.000     35.000     35.000     35.000      0.000      0.000      0.000
GR     987.300      0.000    987.000     25.000    986.600     50.000    986.200     75.000    985.600    100.000
GR     965.900    250.000    965.300    255.000    961.300    260.000    959.900    265.000    959.800    267.000
GR     959.700    270.000    960.400    275.000    962.700    280.000    964.400    285.000    965.900    292.000
GR     979.400    400.000    979.100    425.000    978.700    450.000    978.500    475.000    978.000    500.000
GR     977.600    525.000    977.100    550.000      0.000      0.000      0.000      0.000      0.000      0.000

NC       0.000      0.000      0.000      0.300      0.500      0.000      0.000      0.000      0.000      0.000
QT       2.000   1740.000   1740.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
ET       0.000      4.100      0.000    120.000    220.000      0.000      0.000      0.000      0.000      0.000
X1    5875.000     13.000    125.000    211.000    240.000    240.000    240.000      0.000      0.000      0.000
GR     979.300      0.000    975.300     25.000    974.300     38.000    972.200     63.000    972.200     88.000
GR     971.900    113.000    969.800    125.000    969.200    138.000    968.700    188.000    969.300    211.000
GR     971.000    213.000    971.100    214.000    972.000    500.000      0.000      0.000      0.000      0.000

QT       2.000   1125.000   1125.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
          DOWNSTREAM OF HERSEY DAM #1
X1    5885.000     13.000    125.000    211.000     10.000     10.000     10.000      0.000      0.000      0.000
GR     985.300      0.000    981.300     25.000    980.300     38.000    978.200     63.000    978.200     88.000
GR     977.900    113.000    975.800    125.000    975.200    138.000    974.700    188.000    975.300    211.000
GR     977.000    213.000    977.100    214.000    978.000    500.000      0.000      0.000      0.000      0.000

ET       0.000      4.100      0.000    110.000    245.000      0.000      0.000      0.000      0.000      0.000
          UPSTREAM FACE HERSEY DAM #1-FIELD SECTION #9
X1    5905.000     13.000    125.000    213.000     20.000     20.000     20.000      0.000      0.000      0.000
X5       2.000    977.900    977.900      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR     985.300      0.000    981.300     25.000    980.300     38.000    978.200     63.000    978.200     88.000
GR     977.900    113.000    976.100    125.000    975.200    138.000    975.300    188.000    975.800    212.000
GR     977.100    213.000    977.100    214.000    978.000    500.000      0.000      0.000      0.000      0.000

X1    6085.000     13.000    125.000    211.000    180.000    180.000    180.000      0.000      0.000      0.000
X5       2.000    977.900    977.900      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR     979.300      0.000    975.300     25.000    974.300     38.000    972.200     63.000    972.200     88.000
GR     971.900    113.000    969.800    125.000    969.200    138.000    968.700    188.000    969.300    211.000
GR     971.000    213.000    971.100    214.000    972.000    500.000      0.000      0.000      0.000      0.000

QT       2.000   2400.000   2400.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
X1    8430.000     41.000    204.000    281.000   1515.000   2365.000   2345.000      0.000      0.000      0.000
GR     987.700      0.000    986.500     25.000    985.200     50.000    983.400     75.000    981.500    100.000
GR     979.800    125.000    977.800    150.000    977.300    175.000    976.380    200.000    976.100    204.000
GR     975.600    206.000    972.900    211.000    971.900    216.000    972.600    226.000    972.100    236.000
GR     972.800    246.000    973.200    256.000    974.000    266.000    974.200    271.000    975.600    279.000
GR     976.000    281.000    976.500    300.000    976.300    325.000    975.600    350.000    975.700    375.000
1
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GR     975.300    400.000    975.200    425.000    975.000    450.000    975.600    469.000    974.100    475.000
GR     973.100    500.000    972.600    525.000    975.500    561.000    975.900    575.000    975.500    600.000
GR     973.600    625.000    973.900    650.000    973.700    675.000    973.100    700.000    975.600    730.000
GR     980.900    738.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
EJ       0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
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   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

 *PROF 1

 IHLEQ = 1.  THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF
 PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH.  SEE DOCUMENTATION FOR
 DETAILS

 CCHV=   0.100 CEHV=   0.300
 *SECNO 0.000
          CONFLUENCE MUSKEGON RIVER AT STA.  18+50
      0.00     15.40    960.50      0.00    960 50    960.53      0.03      0.00      0.00    963.90
     2160.        0.     2160.        0.        0.     1499.        0.        0.        0.     968.00
      0.00      0.00      1.44      0.00     0.000     0.030     0.000     0.000    945.10    415.80
  0.000048        0.        0.        0.         0         0         0      0.00    169.64    585.44
0
 *SECNO 400.000

 3470 ENCROACHMENT STATIONS=      350.0      690.0  TYPE=      1  TARGET=      340.000
    400.00      9.63    960.53      0.00      0.00    960.56      0.03      0.03      0.00    954.50
     2160.      396.      689.     1075.      346.      337.     1065.       15.        2.     955.00
      0.08      1.14      2.04      1.01     0.040     0.030     0.040     0.000    950.90    350.00
  0.000103      400.      400.      400.         1         0         0      0.00    340.00    690.00
0
 *SECNO 550.000

 3470 ENCROACHMENT STATIONS=      335.0      600.0  TYPE=      1  TARGET=      265.000
    550 00      7.15    960 45      0.00      0.00    960.70      0.25      0.07      0.06    959.50
     2160.       47.     1562.      551.       51.      343.      285.       19.        3.     957.00
      0.09      0.92      4.55      1.93     0.040     0.030     0.040     0.000    953.30    335.00
  0.000850      150.      150.      150.         2         0         0      0.00    257.89    592.89
0
 *SECNO 725.000
          FIELD SECTION #5-VALLEY SECTION
    725.00      5.22    960 52      0.00      0.00    961.18      0.67      0.36      0.13    960.50
     2160.        0.     1758.      402         0.      246.      140.       21.        4.     958 10
      0.10      0.02      7.13      2.88     0.040     0.030    0 040     0.000    955.30    493.51
  0.003256      175.      175.      175.         1         0         0      0.00    155.58    649.09
0
 *SECNO 1000.000
1
  26 MAY 89    14:56:58                                                                          PAGE     7


    SECND     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 3470 ENCROACHMENT STATIONS=       50.0      725 0  TYPE=      1  TARGET=      675.000
   1000.00      5.76    961.56      0.00      0.00    962.53      0.97      1.26      0.09    962.00
     2160.        0.     2079.       81.        0.       259       32.       23.        5.     960.00
      0.11      0.00      8.03      2.52    0 000     0.030     0.040     0.000    955.80    551.19
  0.006427      275.      275.      275.         2         0         0      0 00    129.87    681.06
0
 *SECNO 1500.000
   1500.00      7.76    963.96    963.15      0.00    965.14      1.18      2.55      0.06    963.50
     2160.       13.     1996.      151.       15.      221.       49.       27.        7.     961.10
      0.13      0.91      9.02      3.06     0.040     0.030     0.040     0.000    956 20   1192.65
  0.004213      500.      500.      500.         2        11         0      0.00    141.75   1334.40
0
 *SECNO 1750.000
```

```
3470 ENCROACHMENT STATIONS=      940.0     1380.0  TYPE=      1  TARGET=      440.000
  1750.00      8.49    965.19      0.00      0.00    966.00      0.80      0.82      0.04    964.30
    2160.       30.      1954      176.       25.      260.       74.       29.        8.    962.30
     0.14      1.18      7.52      2.36     0.040     0.030     0.040     0.000    956.70   1186.36
 0.002683      250.      250.      250.         2         0         0      0.00    193.64   1380.00
0
*SECNO 2000.000

3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=      965.0     1300.0  TYPE=      1  TARGET=      335.000
  2000.00      9.13    966.13      0.00      0.00    966.43      0.30      0.38      0.05    965.30
    2160.      156.      1483.     521.      155.      291.      221.       31.        9.    962.50
     0.15      1.01      5.09      2.35     0.040     0.030     0.040     0.000    957.00    965.00
 0.001068      250.      250.      250.         2         0         0      0.00    335.00   1300.00
0
*SECNO 2400.000

3470 ENCROACHMENT STATIONS=      500.0     1075.0  TYPE=      1  TARGET=      575.000
  2400.00      8.52    966.52      0.00      0.00    966.91      0.40      0.45      0.03    968.90
    2160.        0.      2053.     107.        0.      398.       70.       37        11.    964.80
     0.18      0.00      5.16      1.53     0.000     0.030     0.040     0.000    958.00    502.20
 0.001199      400.      400.      400.         2         0         0      0.00    138.96    641 16
0
1
 26 MAY 89    14:56:58                                                                          PAGE     8


    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
    Q         GLOB      QCH       GROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


*SECNO 2800.000

3470 ENCROACHMENT STATIONS=      500.0     1075.0  TYPE=      1  TARGET=      575.000
  2800.00      9.01    967.01      0.00      0 00    967.32      0.31      0.40      0.01    968.90
    2160.        0.      1999.     161.        0.      434.      106.       41.       13.    964.80
     0.20      0.00      4.61      1.51     0.000     0.030     0.040     0.000    958.00    501.74
 0.000859      400.      400.      400.         2         0         0      0.00    152 37    654.11
0
*SECNO 3260.000

3470 ENCROACHMENT STATIONS=      500.0     1075 0  TYPE=      1  TARGET=      575.000
          FIELD SECTION #6-VALLEY SECTION
  3260.00      9.42    967.42      0.00      0.00    967.67      0.25      0.34      0.01    968.90
    2160.        0.      1951.     209.        0.      464.      140.       47.       14.    964.80
     0.23      0.00      4.21      1.49     0.000     0.030     0.040     0.000    958.00    501.37
 0.000663      460.      460       460.         2         0         0      0.00    160.55    661.92
0
*SECNO 3500.000

3301 HV CHANGED MORE THAN HVINS

  3500.00      7.70    967.40      0.00      0.00    968.19      0.79      0.36      0.16    972.40
    2160.        0.      2105.      55.        0.      292.       36.       50.       15.    965.80
     0.24      0.00      7.21      1.53     0.000     0 030     0.040     0.000    959.70    867.94
 0.002299      240.      240.      240          2         0         0      0.00     97.28    965.22
0
*SECNO 4000.000
  4000.00      6.98    968.68      0.00      0.00    969.84      1.15      1.54      0.11    976.10
    2160.        0.      2151.       9.        0.      249.        9.       53.       16.    968.10
     0.26      0.00      8.63      1.01     0.000     0.030     0.040     0.000    961.70    390.30
 0.003853      500.      500.      500.         3         0         0      0.00     80.33    470.63
```

```
*SECNO 4500.000
  4500.00      7.01    970 61    968.80      0.00    971.41      0.80      1.54      0.04    979.70
    2160.        0.     2081.       79.        0.      284.       77.       57.       18.     969.80
     0 28      0.00      7.32      1.03     0.000     0.030     0.040     0.000    963.60     91.29
  0.002573     500.      500.      500.         4        11         0      0.00    241.87    333.16
0
1
 26 MAY 89    14 56:58                                                                          PAGE    9

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 5250.000

 3301 HV CHANGED MORE THAN HVINS

          FIELD SECTION #7-VALLEY SECTION
  5250.00      7.23    972.23      0.00      0.00    972.48      0.25      1.01      0.06    982.60
    2160.        0.     1757.      403.        0.      403.      237        65.       22.     970.80
     0.33      0.00      4.36      1.70     0.000     0.030     0.040     0.000    965.00    523.15
  0.000909     750.      750.      750.         3         0         0      0.00    201.85    725.00
0
 CCHV=   0.300 CEHV=   0.500
 *SECNO 5573 000
          DOWNSTREAM FACE MAIN ST  BRIDGE-FIELD SECTION #8
  5573 00     12.70    972.40      0 00      0.00    972.88      0.48      0.29      0.11    981.80
    2160.        0.     2160.        0.        0.      389.        0.       69.       23.     979.30
     0.35      0.00      5.55      0.00     0.000     0 030     0.000     0.000    959.70    250.00
  0.000903     323.      323.      323.         2         0         0      0.00     39.68    289.68
0
 *SECNO 5600.000

 3370 NORMAL BRIDGE, NRD=  9 MIN ELTRD=  979.70 MAX ELLC=  979.30

          UPSTREAM FACE MAIN ST.  BRIDGE
  5600.00     12.73    972.43      0.00      0.00    972.91      0.48      0.02      0.00    981.80
    2160.        0.     2160.        0.        0.      390.        0.       70.       23.     979 30
     0.35      0.00      5.54      0.00     0.000     0.030     0.000     0.000    959.70    250.00
  0.000897       27       27.       27.         0         0         0      0.00     39.68    289.68
0
 CCHV=   0.100 CEHV=   0.300
 *SECNO 5635.000

 3470 ENCROACHMENT STATIONS=     215.0     325.0  TYPE=     1  TARGET=     110.000
          CONFUENCE OF FLOW FROM DAM #2
  5635 00     13.07    972.77      0.00      0.00    972.95      0.18      0.02      0.03    965.90
    2160.      265.     1625.      269.      160.      428.      159.       70.       23.     965.90
     0 35      1.66      3.80      1.70     0.040     0.030     0.040     0.000    959.70    215.00
  0.000288       35.       35.       35.         2         0         0      0.00    110.00    325.00
0
1
 26 MAY 89    14:56·58                                                                          PAGE   10

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 CCHV=   0.300 CEHV=   0.500
```

```
*SEC 3 5875.000
3280 CROSS SECTION   5875.00 EXTENDED      0.92 FEET


3470 ENCROACHMENT STATIONS=     120.0     220.0  TYPE=     1  TARGET=     100.000
  5875.00      4.21    972.91      0.00      0.00    973.29      0.38      0.24      0.10    969.80
    1740.       31.     1671.       39        13.      333.       18.       73.       23.     969.30
     0.37      2.29      5.02      2.13     0.040     0.030     0.040     0.000    968.70    120.00
 0.001692      240.      240.      240.         0         0         0      0.00    100.00    220.00
0
*SECNO 5885.000
3685 20 TRIALS ATTEMPTED WSEL,CWSEL
3693 PROBABLE MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
          DOWNSTREAM OF HERSEY DAM #1
  5885.00      2.08    976.78    976.78      0.00    977.64      0.86      0.11      0.19    975.80
    1125.        7.     1115.        3.        3.      149.        1.       73.       23.     975.30
     0.37      2.39      7.47      2.65     0.040     0.030    0 040     0.000    974.70    119.38
 0.010886       10.        10       10.        20         8         0      0.00     93.36    212.74
0
*SECNO 5905.000
 WATER EL=X5 CARD=   977.900

3470 ENCROACHMENT STATIONS=     110.0     245.0  TYPE=     1  TARGET=     135.000
          UPSTREAM FACE HERSEY DAM #1-FIELD SECTION #9
  5905.00      2.70    977.90      0.00      0.00    978.25      0.35      0.09      0.15    976.10
    1125.       20.     1066.       39.       11.      220       24.       73        23      977.10
     0.37      1.84      4.85      1.62     0.040     0.030     0.040     0.000    975.20    113.00
 0.002867       20.       20.       20.         0         0         0      0.00    132.00    245.00
0
*SECNO 6085.000
 WATER EL=X5 CARD=   977.900
3280 CROSS SECTION   6085.00 EXTENDED      5.90 FEET

  6085.00      9.20    977.90      0.00      0.00    977.90      0.00      0.00      0.10    969.80
    1125.      154.      399.      572.      551.      761.     1838.       80.       25.     969.30
     0.50      0.28      0.52      0.31     0.040     0.030     0.040     0.000    968.70      8.75
 0.000006      180.      180.      180.         0         0         0      0.00    491.25    500.00
0
1
  26 MAY 89    14.56:58                                                                          PAGE   11

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 *SECNO 8430.000
  8430.00      6.19    978.09      0.00      0.00    978.12      0.03      0.20      0.01    976.10
    2400.       28.      676.     1697.       53.      371     1498.      212.       52.     976.00
     0.98      0.52      1.82      1.13     0.040     0.030     0.040     0.000    971.90    146.30
 0.000170     1515.     2345.     2365.         3         0         0      0 00    587.47    733.77
0
1
  26 MAY 89    14:56:58                                                                          PAGE   12


                                                                THIS RUN EXECUTED 26 MAY 89    14:57:04
 ***************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
   ERROR CORR -  01,02,03,04,05,06
   MODIFICATION -  50,51,52,53,54,55,56
```

00BREAK00

1) COUNTY: OSCEOLA

2) STUDY NAME: VILLAGE OF HERSEY

3) WATERCOURSE: MUSKEGON RIVER

4) DOCUMENT TYPE: 100 YR ENCROACHED

00BREAK00

THIS RUN EXECUTED 4 MAY 89 15:28:34

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**************************************************
```

T1 VILLAGE OF HERSEY,MI-FIS
T2 100-YEAR FLOOD - ENCROACHED CONDITIN
T3 MUSKEGON RIVER

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	3.	0.	0.	0.000000	0.00	0.0	0.	959.010	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15 000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

```
*PROF 2

CCHV=   0.100 CEHV=   0.300
*SECNO 0.000
 2800 NAT Q1=   4047.56  WSEL=    958.91  ENC Q1=   4047.56  WSEL=    959.01  RATIO=  0.0000
 NAT Q1=   4314.   RATIOS LOB,CH,ROB=  0.0139  0.8408  0 1453  WSEL=    959.01

 3470 ENCROACHMENT STATIONS=     502.0     837.1  TYPE=     4  TARGET=       0.062
          FIELD SECTION #4- D/S CORPORATE LIMIT- VALLEY SECTION
      0 00     12.31   959.01     0.00   958.91   959.26     0.25     0.00     0.00   953.00
    10200.        0.    9121.    1079.       0.    2159.     641.        0        0.   953.40
      0.00     0.00     4.22     1.68    0.000    0.040    0.070    0.000   946.70   502.00
  0.000655        0.       0.       0.        0        0        0     0.00   335.13   837.13
0
 *SECNO 500.000
 2800 NAT Q1=   4107.55  WSEL=    959.22  ENC Q1=   4107.55  WSEL=    959.32  RATIO=  0.0000
 NAT Q1=   4578   RATIOS LOB,CH,ROB=  0.0151  0.8345  0.1504  WSEL=    959.32

 3470 ENCROACHMENT STATIONS=     502.0     808.2  TYPE=     4  TARGET=       0.103
    500.00     12.63   959.33     0.00   959.22   959.59     0.26     0.32     0.00   953.00
    10200.        0.    9473      727.       0.    2230.     449.      31.       4.   953.40
      0.03     0 00     4.25     1.62    0.000    0.040    0.070    0.000   946.70   502.00
  0.000636     500.     500.     500.        2        0        0     0.00   306.15   808.15
0
 *SECNO 1000.000
 2800 NAT Q1=   4188.79  WSEL=    959.51  ENC Q1=   4188.79  WSEL=    959.61  RATIO=  0.0000
 NAT Q1=   4844.   RATIOS LOB,CH,ROB=  0.0165  0.8282  0.1552  WSEL=    959.61

 3470 ENCROACHMENT STATIONS=     502.0     770.7  TYPE=     4  TARGET=       0.135
   1000.00     12.93   959.63     0.00   959.51   959.90     0.27     0.31     0.00   953.00
    10200.        0.    9757.     443.       0.    2298.     273.      62.       7.   953.40
      0.07     0.00     4.25     1.62    0.000    0.040    0.070    0.000   946.70   502.00
  0.000611     500.     500.     500.        2        0        0     0.00   268.73   770.73
```

```
0
 CCHV=   0.300 CEHV=   0.500
 *SECNO 1256.000
  2800 NAT Q1=   3895.58  WSEL=    959.66  ENC Q1=   4105.34  WSEL=    959.76  RATIO= -0.0538
  NAT Q1=   4938.  RATIOS LOB,CH,ROB=  0.0099  0.8314  0.1587  WSEL=    959.76

 3470 ENCROACHMENT STATIONS=     502.0     725.0  TYPE=     4  TARGET=       0.169
1
   4 MAY 89    15:28:30                                                                                    PAGE    9

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

   1256.00    13.08    959.78      0.00    959.66    960.08      0.30      0.16      0.01    953.00
    10200.       0.    10200         0         0.     2330.        0.       76.        8.    953.40
      0.08     0.00      4.38      0.00     0.000     0.040     0.000     0.000    946.70    502.00
  0.000662     256.      256.      256.         1         0         0      0.00    223.00    725.00
0
 CCHV=   0.500 CEHV=   1.000
 *SECNO 1485.000
  2800 NAT Q1=   2548.43  WSEL=    959.89  ENC Q1=   2578.29  WSEL=    959.99  RATIO= -0.0117
  NAT Q1=   2578.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    959.99

 3265 DIVIDED FLOW


 3470 ENCROACHMENT STATIONS=     254.0     425.0  TYPE=     4  TARGET=       0.000
          FIELD SECTION #3- DOWNSTREAM FACE OF FOURTH ST.  BRIDGE
   1485.00    17.40    960.00      0.00    959.89    960.54      0.54      0.22      0.24    967.20
    10200.       0.    10200.       0.         0.     1734.        0.       87.        9.    966.20
      0.09     0.00      5.88      0.00     0.000     0.040     0.000     0.000    942.60    265.39
  0.001559     229.      229.      229.         2         0         0      0.00    148.35    415.74
0
 CCHV=   0.500 CEHV=   0.500
 *SECNO 1525.000
  2800 NAT Q1=   2570.49  WSEL=    959.96  ENC Q1=   2600.47  WSEL=    960.06  RATIO= -0.0117
  NAT Q1=   2600.  RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=    960.06

 3265 DIVIDED FLOW


 3370 NORMAL BRIDGE,NRD= 13 MIN ELTRD=  965.70 MAX ELLC=  964.40


 3470 ENCROACHMENT STATIONS=     254.0     425.0  TYPE=     4  TARGET=       0.000
          U/S FACE OF FOURTH ST.  BRIDGE
   1525.00    17.47    960.07      0.00    959.96    960.61      0.53      0.06      0.00    967.20
    10200.       0.    10200.       0.         0.     1743.        0.       88.       10.    966.20
      0.10     0.00      5.85      0.00     0.000     0.040     0.000     0.000    942.60    265.26
  0.001536      40.       40.       40.         0         0         0      0.00    148.60    415.87
0
 *SECNO 1540.000
1
   4 MAY 89    15:28:30                                                                                    PAGE   10

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST
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 2800 NAT Q1=    2477.07  WSEL=     959.84  ENC Q1=    2509.07  WSEL=     959.94  RATIO= -0.0129
 NAT Q1=    2512.   RATIOS LOB,CH,ROB=  0.0002  0.9990  0.0008  WSEL=     959.94

3265 DIVIDED FLOW


3470 ENCROACHMENT STATIONS=      269.0      396.0  TYPE=      4  TARGET=        0.001
         FIELD SECTION #21- RUINS OF OLD FOURTH ST. BRIDGE
  1540.00     18.26    959.96      0.00    959.84    960.77      0.81      0.02      0.14    956.70
   10200.        0.    10200.        0.        0.     1412.        0.       89.       10.     955.30
     0.10      0.00      7.22      0.00     0.000     0.040     0.000     0.000    941.70    269.00
 0.001775       15.        15       15.         2         0         0      0.00    125.51    396.00
0
CCHV=    0.100 CEHV=    0.300
*SECNO 1580.000
 2800 NAT Q1=    2503.53  WSEL=     959.92  ENC Q1=    2536.88  WSEL=     960.02  RATIO= -0.0133
 NAT Q1=    2541.   RATIOS LOB,CH,ROB=  0.0002  0.9983  0.0014  WSEL=     960.02

3265 DIVIDED FLOW


3470 ENCROACHMENT STATIONS=      269.0      396.0  TYPE=      4  TARGET=        0.002
  1580.00     18.34    960.04      0.00    959.92    960.84      0.80      0.07      0.00    956.70
   10200.        0.    10200.        0.        0.     1421.        0.       90.       10.     955.30
     0.10      0.00      7.18      0.00     0.000     0.040     0.000     0.000    941.70    269.00
 0.001742       40.        40.       40.         1         0         0      0.00    125.57    396.00
0
*SECNO 1850.000
 2800 NAT Q1=    2348.43  WSEL=     960.50  ENC Q1=    2384 12  WSEL=     960.60  RATIO= -0.0152
 NAT Q1=    2384.   RATIOS LOB,CH,ROB=  0.0000  1.0000  0.0000  WSEL=     960.60

3470 ENCROACHMENT STATIONS=      395.0      610 0  TYPE=      4  TARGET=        0.000
         CONFLUENCE HERSEY RIVER
  1850.00     15.53    960.63      0.00    960.50    961.33      0.70      0.48      0.01    963.90
   10200.        0.    10200.        0.        0.     1521.        0.       99.       11.     968.00
     0.11      0.00      6.70      0.00     0.000     0.040     0.000     0.000    945.10    414.98
 0.001814      270.       270.      270.         2         0         0      0 00    170.89    585.87
0
*SECNO 2000.000
1
  4 MAY 89     15:28:30                                                                          PAGE    11


    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        DLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 2800 NAT Q1=    7595.69  WSEL=     961.26  ENC Q1=    7595.69  WSEL=     961.36  RATIO=  0.0000
 NAT Q1=    8297.   RATIOS LOB,CH,ROB=  0.0078  0.7488  0.2435  WSEL=     961.36
3280 CROSS SECTION    2000.00 EXTENDED       6.67 FEET


3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=      710.0     1131.3  TYPE=      4  TARGET=        0.085
  2000.00     14.97    961.37      0.00    961.26    961.45      0.09      0.06      0.06    954.70
    9530.        0.     7779.     1751         0.     3119.     1095.      109.       12.     954.70
     0.13      0.00      2.49      1.60     0.000     0.040     0.040     0.000    946.40    710.00
 0.000162      150.       150.      150.         2         0         0      0.00    421.33   1131.33
0
*SECNO 2375.000
 2800 NAT Q1=    3157.87  WSEL=     961.20  ENC Q1=    3157.87  WSEL=     961.30  RATIO=  0.0000
 NAT Q1=    3224.   RATIOS LOB,CH,ROB=  0.1558  0.8307  0.0135  WSEL=     961.30
```

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 3470 ENCROACHMENT STATIONS=      306.6      672.2  TYPE=      4  TARGET=        0.020
          FIELD SECTION #2- VALLEY SECTION
   2375.00     11.70    961.30      0.00    961.20    961.65      0.35      0.12      0.08    954.30
     9530.     1419      8078.       33.      852.     1576.       18.      138.       15.     955.40
      0.15      1.67      5.13      1.84     0.070     0.040     0.040     0.000    949.60    306.56
  0.000909      375.      375.      375.         2         0         0      0.00    365.68    672.24
0
 *SECNO 3000.000
  2800 NAT Q1=    3543.37  WSEL=     961.76  ENC Q1=    3543.37  WSEL=     961.86  RATIO=  0.0000
  NAT Q1=    3614.   RATIOS LOB,CH,ROB=  0.1718  0.8133  0.0150  WSEL=     961.86

 3470 ENCROACHMENT STATIONS=      303.4      673.6  TYPE=      4  TARGET=        0.019
   3000.00     12.27    961.87      0.00    961.76    962.16      0.30      0.50      0.01    954.30
     9530.     1578.     7900.       52.      981.     1666.       27.      175.       20.     955.40
      0.19      1.61      4.74      1.93     0.070     0.040     0.040     0.000    949.60    303.41
  0.000722      625.      625.      625.         2         0         0      0.00    370.20    673.61
0
 *SECNO 3070.000
  2800 NAT Q1=    3981.63  WSEL=     961.88  ENC Q1=    3981.63  WSEL=     961.98  RATIO=  0.0000
  NAT Q1=    4066.   RATIOS LOB,CH,ROB=  0.0710  0.8896  0.0394  WSEL=     961.98

 3470 ENCROACHMENT STATIONS=      347.8      748.3  TYPE=      4  TARGET=        0.021
1
   4 MAY 89     15:28:30                                                                          PAGE    12


          FIELD SECTION #1- U/S CORPORATE LIMIT- VALLEY SECTION
   3070.00     11.18    961.98      0.00    961.88    962.21      0.23      0.04      0.01    959.20
     9530.      598.     8647.      285.      520.     2149.      126.      179.       21.     956.60
      0.20      1.15      4.02      2.25     0.070     0.040     0.040     0.000    950.80    347.84
  0.000571       70.       70.       70.         2         0         0      0.00    400.44    748.28
0
1
   4 MAY 89     15:28:30                                                                          PAGE    13


                                                                    THIS RUN EXECUTED  4 MAY 89    15:28:36
*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
*****************************************************

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

MUSKEGON RIVER

SUMMARY PRINTOUT TABLE  110
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SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
0.000	958.91	0.00	959.16	363.74	144.13	8985.13	1070.74	453.00	387.00	502.00	725.00	840.00
0.000	959.01	0.10	959.26	335.13	0.00	9121.40	1078.60	0.06	502.00	502.00	725.00	837.13
500.000	959.22	0.00	959.47	334.07	163.23	9338.29	698.48	390.00	419.00	502.00	725.00	809.00
500.000	959.33	0.11	959.59	306.15	0.00	9473.37	726.63	0.10	502.00	502.00	725.00	808.15
1000.000	959.51	0.00	959.78	293.07	186.47	9622.91	390.63	327.00	440.00	502.00	725.00	767.00
1000.000	959.63	0.12	959.90	268.73	0.00	9757.31	442.69	0.14	502.00	502.00	725.00	770.73

1256.000	959.66	0.00	959.96	223.00	0.00	10200.00	0.00	223.00	502.00	502.00	725.00	725.00
1256.000	959.78	0.13	960.08	223.00	0.00	10200.00	0.00	0.17	502.00	502.00	725.00	725.00
1485.000	959.89	0.00	960.43	147.86	0.00	10200.00	0.00	0.00	0.00	254.00	425.00	0.00
1485.000	960.00	0.12	960.54	148.35	0.00	10200.00	0.00	0.00	254.00	254.00	425.00	425.00
1525.000	959.96	0.00	960.50	148.16	0.00	10200.00	0.00	0.00	0.00	254.00	425.00	0.00
1525.000	960.07	0.11	960.61	148.60	0.00	10200.00	0.00	0.00	254.00	254.00	425.00	425.00
1540.000	959.84	0.00	960.67	130.49	2.15	10190.09	7.75	0.00	0.00	269.00	396.00	0.00
1540.000	959.96	0.12	960.77	125.51	0.00	10200.00	0.00	0.00	269.00	269.00	396.00	396.00
1580.000	959.92	0.00	960.74	130.64	2.26	10183.74	14.00	0.00	0.00	269.00	396.00	0.00
1580.000	960.04	0.12	960.84	125.57	0.00	10200.00	0.00	0.00	269.00	269.00	396.00	396.00
1850.000	960.50	0.00	961.22	169.68	0.00	10200.00	0.00	0.00	0.00	395.00	610.00	0.00
1850.000	960.63	0.13	961.33	170.89	0.00	10200.00	0.00	0.00	395.00	395.00	610.00	610.00
2000.000	961.26	0.00	961.34	470.00	78.21	7691.40	1760.39	470.00	670.00	710.00	960.00	1140.00
2000.000	961.37	0.11	961.45	421.33	0.00	7779.37	1750.63	0.08	710.00	710.00	960.00	1131.33
2375.000	961.20	0.00	961.54	401.73	1456.58	7947.01	126.40	0.00	0.00	509.00	669.00	0.00
2375.000	961.30	0.10	961.65	365.68	1419.29	8078.08	32.63	0.02	306.56	509.00	669.00	672.24

SECNO	CWSEL	DIFKWS	EG	TOPWID	QLOB	QCH	QROB	PERENC	STENCL	STCHL	STCHR	STENCR
3000.000	961.76	0.00	962.05	405.58	1611.16	7778.67	140.16	0.00	0.00	509.00	669.00	0.00
3000.000	961.87	0.10	962.16	370.20	1577.63	7900.17	52.20	0.02	303.41	509.00	669.00	673.62
3070.000	961.88	0.00	962.10	509.66	653.60	8508.61	367.79	0.00	0.00	500.00	721.00	0.00
3070.000	961.98	0.11	962.21	400.44	598.12	8647.21	284.67	0.02	347.84	500.00	721.00	748.28

MUSKEGON RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
0.000	0.00	0.00	0.00	946.70	10200.00	958.91	0.00	959.16	6.35	4.20	2862.76	4047.56
0.000	0.00	0.00	0.00	946.70	10200.00	959.01	0.00	959.26	6.55	4.22	2800.58	3985.87
500.000	500.00	0.00	0.00	946.70	10200.00	959.22	0.00	959.47	6.17	4.23	2735.89	4107.55
500.000	500.00	0.00	0.00	946.70	10200.00	959.33	0.00	959.59	6.36	4.25	2678.52	4044.47
1000.000	500.00	0.00	0.00	946.70	10200.00	959.51	0.00	959.78	5.93	4.23	2613.44	4188.79
1000.000	500.00	0.00	0.00	946.70	10200.00	959.63	0.00	959.90	6.11	4.25	2571.49	4126.30
1256.000	256.00	0.00	0.00	946.70	10200.00	959.66	0.00	959.96	6.86	4.43	2304.80	3895.58
1256.000	256.00	0.00	0.00	946.70	10200.00	959.78	0.00	960.08	6.62	4.38	2329.67	3963.38
1485.000	229.00	0.00	0.00	942.60	10200.00	959.89	0.00	960.43	16.02	5.94	1716.31	2548.43
1485.000	229.00	0.00	0.00	942.60	10200.00	960.00	0.00	960.54	15.59	5.88	1733.77	2583.65
1525.000	40.00	965.70	964.40	942.60	10200.00	959.96	0.00	960.50	15.75	5.91	1727.25	2570.49
1525.000	40.00	965.70	964.40	942.60	10200.00	960.07	0.00	960.61	15.36	5.85	1742.97	2602.24
1540.000	15.00	0.00	0.00	941.70	10200.00	959.84	0.00	960.67	16.96	7.29	1407.33	2477.07

1340.000	15.00	0.00	0.00	941.70	10200.00	959.96	0.00	960.77	17.75	7.22	1411.78	2420.88
1580.000	40.00	0.00	0.00	941.70	10200.00	959.92	0.00	960.74	16.60	7.24	1416.76	2503.53
1580.000	40.00	0.00	0.00	941.70	10200.00	960.04	0.00	960.84	17.42	7.18	1421.11	2444.05
1850.000	270.00	0.00	0.00	945.10	10200.00	960.50	0.00	961.22	18.86	6.80	1499.40	2348.43
1850.000	270.00	0.00	0.00	945.10	10200.00	960.63	0.00	961.33	18.14	6.70	1521.43	2394.76
2000.000	150.00	0.00	0.00	946.40	9530.00	961.26	0.00	961.34	1.57	2.49	4356.35	7595.69
2000.000	150.00	0.00	0.00	946.40	9530.00	961.37	0.00	961.45	1.62	2.49	4214.15	7485.15
2375.000	375.00	0.00	0.00	949.60	9530.00	961.20	0.00	961.54	9.11	5.10	2498.92	3157.87
2375.000	375.00	0.00	0.00	949.60	9530.00	961.30	0.00	961.65	9.09	5.13	2446.07	3161.20
3000.000	625.00	0.00	0.00	949.60	9530.00	961.76	0.00	962.05	7.23	4.71	2726.63	3543.37
3000.000	625.00	0.00	0.00	949.60	9530.00	961.87	0.00	962.16	7.22	4.74	2674.92	3547.74
3070.000	70.00	0.00	0.00	950.80	9530.00	961.88	0.00	962.10	5.73	4.00	2913.07	3981.63
3070.000	70.00	0.00	0.00	950.80	9530.00	961.98	0.00	962.21	5.71	4.02	2795.25	3989.35

1

MUSKEGON RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
0.000	10200.00	958.91	0.00	0.00	0.00	363.74	0.00
0.000	10200.00	959.01	0.10	0.00	0.10	335.13	0.00
500.000	10200.00	959.22	0.00	0.31	0.00	334.07	500.00
500.000	10200.00	959.33	0.11	0.32	0.11	306.15	500.00
1000.000	10200.00	959.51	0.00	0.30	0.00	293.07	500.00
1000.000	10200.00	959.63	0.12	0.31	0.12	268.73	500.00
1256.000	10200.00	959.66	0.00	0.14	0.00	223.00	256.00
1256.000	10200.00	959.78	0.13	0.15	0.13	223.00	256.00
1485.000	10200.00	959.89	0.00	0.23	0.00	147.86	229.00
1485.000	10200.00	960.00	0.12	0.22	0.12	148.35	229.00
1525.000	10200.00	959.96	0.00	0.07	0.00	148.16	40.00
1525.000	10200.00	960.07	0.11	0.07	0.11	148.60	40.00
1540.000	10200.00	959.84	0.00	-0.12	0.00	130.49	15.00
1540.000	10200.00	959.96	0.12	-0.11	0.12	125.51	15.00
1580.000	10200.00	959.92	0.00	0.08	0.00	130.64	40.00
1580.000	10200.00	960.04	0.12	0.08	0.12	125.57	40.00
1850.000	10200.00	960.50	0.00	0.58	0.00	169.68	270.00
1850.000	10200.00	960.63	0.13	0.59	0.13	170.89	270.00
2000.000	9530.00	961.26	0.00	0.76	0.00	470.00	150.00
2000.000	9530.00	961.37	0.11	0.73	0.11	421.33	150.00
2375.000	9530.00	961.20	0.00	-0.06	0.00	401.73	375.00
2375.000	9530.00	961.30	0.10	-0.07	0.10	365.68	375.00
3000.000	9530.00	961.76	0.00	0.57	0.00	405.58	625.00
3000.000	9530.00	961.87	0.10	0.57	0.10	370.20	625.00

3070.000	9530.00	961.88	0.00	0.11	0.00	509.66	70.00
3070.000	9530.00	961.98	0.11	0.12	0.11	400 44	70.00

1

SUMMARY OF ERRORS AND SPECIAL NOTES

1

FLOODWAY DATA, MUSKEGON RIVER
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
0 000	335	2801.	3.6	959.0	958.9	0.1
500.000	306.	2679.	3.8	959.3	959.2	0.1
1000.000	269.	2571.	4.0	959.6	959.5	0.1
1256.000	223.	2330.	4.4	959.8	959.7	0.1
1485.000	150.	1734.	5.9	960.0	959.9	0.1
1525.000	151.	1743.	5.9	960.1	960.0	0.1
1540.000	127.	1412.	7.2	959.9	959.8	0.1
1580.000	127.	1421.	7.2	960.0	959.9	0.1
1850.000	171.	1521.	6.7	960.6	960.5	0.1
2000.000	421.	4214.	2.3	961.4	961.3	0.1
2375.000	366.	2446.	3.9	961.3	961.2	0.1
3000.000	370.	2675.	3.6	961.9	961.8	0.1
3070.000	400.	2795.	3.4	962.0	961.9	0.1

1

THIS RUN EXECUTED 4 MAY 89 15:28:37

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*****************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
*****************************************************
```

00BREAK00

1) COUNTY: OSCEOLA

2) STUDY NAME: VILLAGE OF HERSEY

3) WATERCOURSE: MUSKEGON RIVER

4) DOCUMENT TYPE: 100 YR NATURAL

00BREAK00

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1*****************************************************
 *  WATER SURFACE PROFILES                           *
 *  VERSION OF NOVEMBER 1976                         *
 *  UPDATED MAY 1984                                 *
 *                                                   *
 *  RUN DATE   4 MAY 89 TIME   15:28:30              *
 *****************************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616
*  (916) 440-2105 (FTS) 448-2105
*************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

1

4 MAY 89 15:28.30 PAGE 1

THIS RUN EXECUTED 4 MAY 89 15:28:30

```
**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
**************************************************
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C
T1 VILLAGE OF HERSEY,MI. - FIS
T2 100-YEAR FLOOD - NATURAL CONDITION
T3      MUSKEGON RIVER

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0.        2.        0.        0.   0.000630    0.00      0.0       0.     959.200    0.000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    1.000     0.000    -1.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

   110.000   150.000   200.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000

ET      0.000      4.100      1.400    387.000    840.000      0.000      0.000      0.000      0.000      0.000
NC      0.040      0.070      0.040      0.100      0.300      0.000      0.000      0.000      0.000      0.000
QT      2.000  10200 000  10200.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
         FIELD SECTION #4- D/S CORPORATE LIMIT- VALLEY SECTION
X1      0.000     70.000    502.000    725.000      0.000      0.000      0.000      0.000      0.000      0.000
GR    976.800      0.000    972 000     25.000    965.500     50.000    964.200     75.000    962.700    100.000
GR    961.400    125.000    961.000    150.000    961.200    175 000    959.700    195.000    970.000    215.000
GR    969.600    225.000    970.000    244.000    969.200    275.000    968.000    300.000    964.600    325.000
GR    961.900    350.000    962.800    375.000    962.600    400.000    962.000    425.000    961.500    450.000
GR    961.600    467.000    959.200    475.000    953.000    502.000    950.900    507.000    949.600    510.000
GR    948.900    520.000    948.700    530.000    947.200    540.000    946.700    550.000    946.700    560.000
GR    948.100    570.000    948.700    580.000    948.700    590.000    948.900    600.000    949.000    610.000
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GR     949.400     620.000     949.700     630.000     950.000     640.000     950.200     650.000     950.400     659.000
GR     950.200     670.000     950.000     680.000     950.400     690.000     950.400     700.000     950.300     710.000
GR     950.900     720.000     953.400     725.000     953.600     750.000     954.200     775.000     954.400     800.000
GR     954.300     805.000     952.400     813.000     950.200     825.000     952.400     841.000     953.000     850.000
GR     954.800     875.000     957.000     900.000     958.600     925.000     960.000     950.000     963.000     975.000
GR     967.100    1000.000     970.900    1025.000     972.100    1050.000     972.100    1075.000     973.000    1100.000
GR     973.000    1125.000     973.000    1150.000     972.800    1175.000     972.800    1200.000     973.500    1227.000

ET       0.000       4.100       0.000     419.000     809.000       0.000       0.000       0.000       0.000       0.000
X1     500.000       0.000       0.000       0.000     500.000     500.000     500.000       0.000       0.000       0.000
1
  4 MAY 89     15:28:30                                                                                          PAGE     2


ET       0.000       4.100       0.000     440.000     767.000       0.000       0.000       0.000       0.000       0.000
X1    1000.000       0.000       0.000       0.000     500.000     500.000     500.000       0.000       0.000       0.000

NC       0.070       0.070       0.040       0.300       0.500       0.000       0.000       0.000       0.000       0.000
ET       0.000       4.100       0.000     502.000     725.000       0.000       0.000       0.000       0.000       0.000
X1    1256.000       0.000       0.000       0.000     256.000     256.000     256.000       0.000       0.000       0.000

NC       0.000       0.000       0.000       0.500       1.000       0.000       0.000       0.000       0.000       0.000
          FIELD SECTION #3- DOWNSTREAM FACE OF FOURTH ST.  BRIDGE
X1    1485.000      44.000     254.000     425.000     229.000     229.000     229.000       0.000       0.000       0.000
X4       1.000     963.600     423.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
GR     974.200       0.000     973.400      25.000     972.600      50.000     971.900      75.000     971.200     100.000
GR     970.200     125.000     969.400     150.000     968.600     175.000     967.900     200.000     967.600     225.000
GR     967.200     254.000     964.400     256.000     952.700     281.000     951.200     286.000     949.100     291.000
GR     944.600     301.000     942.700     311.000     964.200     311.000     964.200     312.000     942.700     312.000
GR     942.600     321.000     942.800     341.000     944.700     351.000     945.700     361.000     946.600     368.000
GR     963.900     368.000     963.900     369.000     946.600     369.000     946.700     371.000     948.700     381.000
GR     951.200     391.000     952.400     396.000     952.700     401.000     966.200     425.000     965.900     450.000
GR     965.700     475.000     965.700     500.000     965.800     525.000     965.800     550.000     965.800     575.000
GR     965.700     600.000     965.600     625.000     965.500     650.000     965.500     675.000       0.000       0.000

NC       0.000       0.000       0.000       0.000       0.500       0.000       0.000       0.000       0.000       0.000
          U/S FACE OF FOURTH ST.  BRIDGE
X1    1525.000       0.000       0.000       0.000      40.000      40.000      40.000       0.000       0.000       0.000
BT     -13.000     175.000     968.600       0.000     200.000     967.900       0.000     225.000     967.600       0.000
BT       0.000     254.000     967.200       0.000     256.000     967.000     964.400     311.000     966.900     964.200
BT       0.000     312.000     966.900     964.200     368.000     966.600     963.900     369.000     966.600     963.900
BT       0.000     423.000     966.300     963.600     425.000     966.200       0.000     450.000     965.900       0.000
BT       0.000     475.000     965.700       0.000       0.000       0.000       0.000       0.000       0.000       0.000

          FIELD SECTION #21- RUINS OF OLD FOURTH ST.  BRIDGE
X1    1540.000      30.000     269.000     396.000      15.000      15.000      15.000       0.000       0.000       0.000
GR     974.400       0.000     967.200     170.000     966.500     195.000     965.900     220.000     965.400     245.000
GR     968.700     262.000     956.700     269.000     961.900     272.000     956.700     273.000     952.700     286.000
GR     951.300     291.000     950.600     296.000     949.100     308.000     945.400     318.000     942.700     328.000
GR     941.700     348.000     947.200     358.000     949.200     368.000     951.800     378.000     952.300     383.000
GR     952.700     388.000     955.300     396.000     962.300     401.000     964.900     403.000     966.800     420.000
GR     964.100     445.000     964.500     470.000     964.000     495.000     961.100     520.000     974.400    1370.000

NC       0.070       0.040       0.040       0.100       0.300       0.000       0.000       0.000       0.000       0.000
X1    1580.000       0.000       0.000       0.000      40.000      40.000      40.000       0.000       0.000       0.000

          CONFLUENCE HERSEY RIVER
X1    1850.000       7.000     395.000     610.000     270.000     270.000     270.000       0.000       0.000       0.000
GR     974.400       0.000     964.000     200.000     963.900     395.000     945.100     510.000     945.100     535.000
GR     968.000     610.000     974.400    1585.000       0.000       0.000       0.000       0.000       0.000       0.000

QT       2.000    9530.000    9530.000       0.000       0.000       0.000       0.000       0.000       0.000       0.000
ET       0.000       4.100       0.000     670.000    1140.000       0.000       0.000       0.000       0.000       0.000
1
  4 MAY 89     15 28:30                                                                                          PAGE     3
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X1   2000.000     9.000   710.000   960.000   150.000   150.000   150.000     0.000     0.000     0.000
GR    984.200     0.000   974.400   550.000   964.400   650.000   954.700   710.000   946.400   770.000
GR    946.400   870 000   954.700   960.000   955.200  1110.000   954.700  1210.000     0.000     0.000

        FIELD SECTION #2- VALLEY SECTION
X1   2375.000    68.000   509.000   669.000   375.000   375.000   375.000     0.000     0.000     0.000
GR    973.500     0.000   974.100    25.000   974.700    45.000   971.500    50.000   971.700    75.000
GR    974.100    91.000   970.000   100.000   972 700   125.000   973.200   145.000   968.300   175.000
GR    964.200   200.000   963.100   225.000   966.000   250.000   962.600   275.000   957.600   299.000
GR    956.100   325.000   957.300   350.000   957.700   375.000   956.900   400.000   958.300   425.000
GR    957.300   436 000   957.600   450 000   957.500   475.000   955.500   500.000   954.300   509.000
GR    953.800   510.000   953.300   515.000   953.600   525.000   953.000   528.000   951.900   536.000
GR    951.800   546.000   951.400   550.000   951.300   556.000   951.100   566.000   951.000   576.000
GR    950.800   586 000   950.300   596.000   949.700   606.000   949.600   616.000   949.700   626.000
GR    950.700   636.000   952.000   646.000   952.500   656.000   953.800   666.000   955.400   669.000
GR    957.000   675 000   969.400   700.000   970.100   725.000   971.100   750.000   972.600   775.000
GR    973.500   800.000   973.400   825.000   973.100   850.000   973.100   875.000   973.000   900.000
GR    973.000   925.000   973.800   950.000   974.200   975.000   974.000  1000.000   974.600  1025 000
GR    974.800  1050.000   975.100  1075.000   975.300  1100.000   976.400  1125.000   976.800  1130.000
GR    977.200  1150.000   977.800  1175.000   977.400  1206.000     0.000     0.000     0.000     0.000

X1   3000 000     0.000     0.000     0.000   625.000   625.000   625.000     0.000     0.000     0.000

        FIELD SECTION #1- U/S CORPORATE LIMIT- VALLEY SECTION
X1   3070.000    73.000   500.000   721.000    70.000    70.000    70.000     0.000     0.000     0.000
GR    978.600     0.000   979.500    25.000   979.300    50.000   979.400    75.000   979.200   100.000
GR    978.900   125.000   979.500   150.000   977.500   175.000   976.400   200.000   975.300   214.000
GR    963.800   235.000   963.000   250.000   960.800   275.000   960.600   300.000   961.500   325.000
GR    957.000   350.000   958.500   375.000   958.800   400.000   957.500   407.000   958.300   425.000
GR    959.400   450.000   959 000   475.000   959.200   500.000   957.600   512.000   953.900   527.000
GR    952.600   537.000   951.900   547.000   951.600   557.000   951.600   567.000   951.000   577.000
GR    951.400   587.000   950.900   597.000   950.900   607.000   950.900   617.000   951.000   627.000
GR    951.100   637.000   951.400   647.000   950.900   657.000   950.800   667.000   950.900   677.000
GR    951.100   687.000   952.200   697.000   953.100   707.000   953.300   713.000   953.900   717.000
GR    956.600   721.000   958.200   750.000   958.200   750.000   962.300   775.000   967.200   800.000
GR    969.200   825.000   970.600   850.000   972.100   875.000   972.900   900.000   973.500   925.000
GR    974.300   950.000   974.900   975.000   974.500  1000.000   974.300  1025.000   973.400  1050.000
GR    973.300  1075.000   973.500  1100.000   973.400  1125.000   973.800  1150.000   973.500  1175.000
GR    973.900  1200.000   975.100  1225.000   974.900  1243.000   975.000  1250.000   973.100  1258.000
GR    973.800  1263.000   973.600  1275.000   973.600  1300.000     0.000     0.000     0.000     0.000
EJ      0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000
1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 *PROF 1

 CCHV=   0.100 CEHV=   0 300
 *SECNO 0.000

 3470 ENCROACHMENT STATIONS=     387.0     840 0  TYPE=     1  TARGET=     453.000
          FIELD SECTION #4- D/S CORPORATE LIMIT- VALLEY SECTION
     0.00     12.21    958.91     0 00     0.00    959.16     0.25     0.00     0.00    953.00
   10200.      144.     8985.    1071.      76.     2137.     650.       0.       0.     953.40
     0 00      1.90      4.20     1.65    0.040     0.040    0.070    0.000   946 70   476.26
  0.000635      0.        0.        0        0         0        3     0.00   363.74   840.00
0
 *SECNO 500.000
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 3470 ENCROACHMENT STATIONS=      419.0      809.0  TYPE=      1  TARGET=      390.000
    500.00     12.52    959.22     0.00       0.00   959.47     0.26       0.31      0.00    953.00
    10200.      163.     9338.     698.        84.    2207.     445.        32.        4.     953.40
      0.03      1.94      4.23     1.57     0.040    0.040    0.070     0.000    946.70    474.93
  0.000617      500.      500.     500.         1        0        0      0.00    334.07    809.00
0
 *SECNO 1000.000

 3470 ENCROACHMENT STATIONS=      440.0      767.0  TYPE=      1  TARGET=      327.000
   1000.00     12.81    959.51     0.00       0.00   959.78     0.27       0.30      0.00    953.00
    10200.      186.     9623.     391.        93.    2273.     248.        63.        8.     953.40
      0.07      2.02      4.23     1.58     0.040    0.040    0.070     0.000    946.70    473.93
  0.000593      500.      500      500.         1        0        0      0.00    293.07    767.00
0
 CCHV=    0.300 CEHV=    0.500
 *SECNO 1256.000

 3470 ENCROACHMENT STATIONS=      502.0      725.0  TYPE=      1  TARGET=      223.000
   1256.00     12.96    959.66     0.00       0.00   959.96     0.30       0.16      0.02    953.00
    10200.        0.    10200.       0.         0.    2305.       0.        77.        9.  100000.00
      0.08      0.00      4.43     0.00     0.000    0.040    0.000     0.000    946.70    502.00
  0.000686      256.      256.     256.         1        0        0      0.00    223.00    725.00
0
 CCHV=    0.500 CEHV=    1.000
1
   4 MAY 89     15:28:30                                                                    PAGE     5

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

 *SECNO 1485.000

 3265 DIVIDED FLOW

          FIELD SECTION #3- DOWNSTREAM FACE OF FOURTH ST.  BRIDGE
   1485.00     17.29    959.89     0.00       0.00   960.43     0.55       0.23      0.24    967.20
    10200.        0.    10200.       0.         0.    1716.       0.        88.       10.     966.20
      0.10      0.00      5.94     0.00     0.000    0.040    0.000     0.000    942.60    265.65
  0.001602      229.      229.     229.         2        0        0      0.00    147.86    415.50
0
 CCHV=    0.500 CEHV=    0.500
 *SECNO 1525.000

 3265 DIVIDED FLOW


 3370 NORMAL BRIDGE, NRD= 13 MIN ELTRD=  965.70 MAX ELLC=  964.40

          U/S FACE OF FOURTH ST  BRIDGE
   1525.00     17.36    959.96     0.00       0.00   960.50     0.54       0.06      0.00    967.20
    10200.        0     10200.       0.         0.    1727.       0.        89.       10.     966.20
      0.10      0.00      5.91     0.00     0.000    0.040    0.000     0.000    942.60    265.49
  0.001575       40.       40       40.         2        0        0      0.00    148.16    415.65
0
 *SECNO 1540.000

 3265 DIVIDED FLOW

          FIELD SECTION #21- RUINS OF OLD FOURTH ST.  BRIDGE
   1540.00     18.14    959.84     0.00       0.00   960.67     0.83       0.02      0.14    956.70
    10200.        2.    10190.       8.         3.    1397.       7.        90.       10.     955.30
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      0.10      0.75      7.29      1.05     0.070     0.040     0.070     0.000    941.70    267.17
  0.001696       15        15.       15.         2         0         0      0.00    130.49    399.24
0
 CCHV=    0.100 CEHV=    0.300
 *SECNO 1580.000

 3265 DIVIDED FLOW

   1580.00     18.22    959.92      0.00      0.00    960.74      0.81      0.07      0.00    956.70
    10200.        2.     10184.       14.        3.     1406.        8.       91.       10.    955.30
      0.10      0.75      7.24      1.84     0.070     0.040     0.040     0.000    941.70    267.12
  0.001660       40.       40.       40.         1         0         0      0.00    130.64    399.30
0
1
   4 MAY 89    15:28:30                                                                          PAGE     6

    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        DLOSS   BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


 *SECNO 1850.000
          CONFLUENCE HERSEY RIVER
   1850.00     15.40    960.50      0.00      0.00    961.22      0.72      0.48      0.01    963.90
    10200.        0.     10200.        0.        0.     1499.        0.      100       11.    968.00
      0.11      0.00      6.80      0.00     0.000     0.040     0.000     0.000    945.10    415.77
  0.001886      270.      270.      270.         2         0         0      0.00    169.68    585.45
0
 *SECNO 2000.000
 3280 CROSS SECTION    2000.00 EXTENDED       6.56 FEET


 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=      670.0     1140.0  TYPE=      1  TARGET=      470.000
   2000.00     14.86    961.26      0.00      0.00    961.34      0.08      0.06      0.06    954.70
     9530.       78.     7691.     1760.      133.     3093.     1131.      110.       12.    954.70
      0.13      0.59      2.49      1.56     0.070     0.040     0.040     0.000    946.40    670.00
  0.000157      150.      150.      150.         2         0         0      0.00    470.00   1140.00
0
 *SECNO 2375.000
          FIELD SECTION #2- VALLEY SECTION
   2375.00     11.60    961.20      0.00      0.00    961.54      0.34      0.12      0.08    954.30
     9530.     1457.     7947.      126.      892     1560.       48.      140.       16.    955.40
      0 15      1.63      5.10      2.65     0.070     0.040     0.040     0.000    949 60    281.73
  0.000911      375.      375.      375.         2         0         0      0.00    401.73    683.46
0
 *SECNO 3000.000
   3000.00     12.16    961.76      0.00      0.00    962 05      0.29      0.51      0.01    954.30
     9530.     1611.     7779.      140.     1021.     1650.       56.      177.       22.    955.40
      0.19      1.58      4.71      2.49     0.070     0.040     0.040     0.000    949.60    279.02
  0.000723      625.      625.      625.         2         0         0      0.00    405.58    684.60
0
 *SECNO 3070.000
          FIELD SECTION #1- U/S CORPORATE LIMIT- VALLEY SECTION
   3070 00     11.08    961.88      0.00      0.00    962.10      0.23      0.04      0.01    959.20
     9530.      654.     8509.      368       616.     2126.      171.      182.       23.    956.60
      0.20      1.06      4.00      2.15     0.070     0.040     0.040     0.000    950.80    262.76
  0.000573       70.       70.       70.         2         0         0      0.00    509.66    772.42
0
1
   4 MAY 89    15:28:30                                                                          PAGE     7
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00BREAK00

1) COUNTY: OSCEOLA

2) STUDY NAME: VILLAGE OF HERSEY

3) WATERCOURSE: MUSKEGON RIVER

4) DOCUMENT TYPE: CALIBRATION

00BREAK00

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EEEEEE   EEEEEE          JJJJJJ    AAAA    IIIII     SSSS    IIIII    N    N              1
E        E                   J    A   A     I      S         I      NN   N             11
E        E       ------      J    A   A     I       SSSS     I      N N  N   ------     1
EEEE     EEEE             J  J    AAAAAA    I           S    I      N  N N              1
E        E                J  J    A   A     I      S    S   I      N   NN              1
EEEEEE   EEEEEE            JJJ     A   A   IIIII     SSSS    IIIII    N    N           11111
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USACOE DETROIT H800 VOS 7.1.0 PRINTER: 6

EE-JAISIN-1 29 DEC 88 17:01:23

TERMINAL: 105

VILLAGE OF HERSEY, MI. FIS
MUSKEGON RIVER

S= .00063

CALIBRATION OF HEC-2 MODEL (AT FOURTH ST. BRIDGE, SECTION # 1406)

D.A. @ 4TH ST (HERSEY) BRIDGE = 1670 SQ. MI, MAXM. FLOW = 6.55 CFS/SQ.MI (FROM H.D# 308, PG 26)

Q_{MAX} = 6.55 x 1670 = 10,940 CFS, HIGHWATER @ BRIDGE = 960.90 (SCALED FROM PROFILE, H.D# 308)

STARTING SLOPE (SCALED FROM PROFILE, H.D# 308) = 0.00063, CWSEL (FROM HEC-2) = 960.17 < 960.90

FROM FOURTH ST. BRIDGE DRAWING BY M.D. MICHIGAN ENGINEERING & SURVEY, BIG RAPIDS, MI.

Q_{100} = 10,900 CFS, EL = 960.60 > 959.97 (FROM HEC-2) Q_{50} = 9,500 CFS, EL = 959.38 ≈ 959.42 (FROM HEC-2)

INCL. 1

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*****************************************************
*  WATER SURFACE PROFILES                           *
*  VERSION OF NOVEMBER 1976                         *
*  UPDATED MAY 1984                                 *
*                                                   *
*  RUN DATE  29 DEC 88 TIME    17:00:04             *
*****************************************************
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*************************************
*  U.S. ARMY CORPS OF ENGINEERS     *
*  THE HYDROLOGIC ENGINEERING CENTER *
*  609 SECOND STREET, SUITE D       *
*  DAVIS, CALIFORNIA 95616          *
*  (916) 440-2105 (FTS) 448-2105    *
*************************************
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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 29 DEC 88 17:00:05

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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
*************************************************
```

C
T1 VILLAGE OF HERSEY,MI. - FIS
T2 100-YEAR FLOOD
T3 MUSKEGON RIVER

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	2.	0.	0.	0.000630	0.00	0.0	0.	959.200	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

NC	0.040	0.070	0.040	0.100	0.300	0.000	0.000	0.000	0.000	0.000
QT	4.000	10200.000	10500.000	9500.000	10940.000	0.000	0.000	0.000	0.000	0.000

FIELD SECTION #4- D/S CORPORATE LIMIT- VALLEY SECTION

X1	0.000	70.000	502.000	725.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	387.000	0 000	840.000	0.000	0.000	0.000	0.000
GR	976.800	0.000	972.000	25.000	965 500	50.000	964.200	75 000	962.700	100 000
GR	961.400	125.000	961.000	150.000	961.200	175.000	959.700	195 000	970.000	215.000
GR	969.600	225.000	970.000	244.000	969.200	275.000	968.000	300.000	964.600	325.000
GR	961.900	350.000	962.800	375.000	962.600	400.000	962.000	425.000	961.500	450.000
GR	961.600	467.000	959 200	475.000	953.000	502.000	950.900	507.000	949.600	510.000
GR	948.900	520.000	948.700	530.000	947.200	540.000	946.700	550.000	946 700	560.000
GR	948.100	570.000	948.700	580.000	948.700	590.000	948.900	600.000	949 000	610.000
GR	949.400	620.000	949.700	630.000	950.000	640 000	950 200	650.000	950 400	659.000
GR	950.200	670.000	950.000	680.000	950.400	690.000	950.400	700.000	950.300	710.000
GR	950.900	720.000	953.400	725.000	953.600	750.000	954.200	775.000	954.400	800.000
GR	954 300	805.000	952.400	813.000	950.200	825.000	952.400	841.000	953.000	850.000
GR	954.800	875.000	957.000	900.000	958.600	925.000	960.000	950.000	963.000	975.000
GR	967.100	1000.000	970.900	1025.000	972.100	1050 000	972.100	1075.000	973.000	1100.000
GR	973.000	1125.000	973.000	1150.000	972.800	1175.000	972.800	1200.000	973.500	1227.000
X1	500.000	0.000	0.000	0.000	500.000	500.000	500.000	0.000	0.000	0.000
X3	0.000	0 000	0.000	419.000	0.000	809.000	0 000	0.000	0.000	0.000
X1	1000.000	0 000	0.000	0.000	500.000	500.000	500.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	440.000	0.000	767.000	0.000	0.000	0.000	0.000
NC	0.070	0.070	0.040	0.300	0.500	0.000	0.000	0.000	0.000	0.000
X1	1256.000	0 000	0.000	0.000	256.000	256.000	256.000	0.000	0.000	0.000
X3	0.000	0.000	0.000	502.000	0.000	725.000	0.000	0.000	0.000	0.000

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NC      0.000      0.000      0.000      0.500      1.000      0.000      0.000      0.000      0.000      0.000
         FIELD SECTION #3- DOWNSTREAM FACE OF FOURTH ST. BRIDGE
X1   1406.000     44.000    254.000    425.000    150.000    150.000    150.000      0.000      0.000      0.000
X4      1.000    963 600    423.000      0.000      0.000      0.000      0.000      0.000      0.000      0.000
GR    974.200      0.000    973.400     25.000    972.600     50.000    971.900     75.000    971.200    100.000
GR    970.200    125.000    969.400    150.000    968.600    175.000    967.900    200.000    967.600    225.000
GR    967.200    254 000    964.400    256.000    952.700    281.000    951 200    286.000    949.100    291.000
GR    944.600    301.000    942.700    311.000    964.200    311.000    964.200    312.000    942.700    312.000
GR    942.600    321.000    942.800    341.000    944.700    351.000    945.700    361.000    946.600    368.000
GR    963.900    368.000    963.900    369.000    946.600    369.000    946.700    371.000    948.700    381.000
GR    951.200    391 000    952.400    396.000    952.700    401.000    966.200    425.000    965.900    450.000
GR    965.700    475 000    965.700    500.000    965.800    525.000    965.800    550.000    965.800    575.000
GR    965.700    600.000    965.600    625.000    965.500    650.000    965.500    675.000      0.000      0.000

NC      0.000      0.000      0.000      0.000      0.500      0.000      0.000      0.000      0.000      0.000
         U/S FACE OF FOURTH ST. BRIDGE
X1   1444 000      0.000      0.000      0.000     38.000     38.000     38 000      0.000      0.000      0.000
BT    -13.000    175.000    968.600      0.000    200.000    967.900      0.000    225.000    967.600      0.000
BT      0.000    254.000    967.200      0.000    256.000    967.000    964.400    311.000    966.900    964 200
BT      0.000    312 000    966.900    964 200    368.000    966.600    963.900    369.000    966.600    963.900
BT      0 000    423.000    966.300    963.600    425.000    966.200      0.000    450.000    965.900      0.000
BT      0.000    475.000    965.700      0.000      0.000      0.000      0.000      0.000      0.000      0.000

         FIELD SECTION #21- RUINS OF OLD FOURTH ST. BRIDGE
X1   1460.000     30.000    269.000    396.000     16.000     16.000     16.000      0.000      0.000      0.000
GR    974.400      0.000    967.200    170.000    966.500    195.000    965.900    220.000    965.400    245.000
GR    968.700    262.000    956 700    269.000    961.900    272.000    956.700    273.000    952.700    286.000
GR    951.300    291.000    950.600    296.000    949.100    308.000    945.400    318.000    942.700    328.000
GR    941.700    348.000    947.200    358.000    949.200    368.000    951.800    378.000    952.300    383.000
GR    952.700    388.000    955.300    396.000    962.300    401.000    964.900    403.000    966.800    420.000
GR    964.100    445.000    964.500    470.000    964.000    495.000    961.100    520.000    974.400   1370.000

NC      0.070      0.040      0.040      0.100      0.300      0.000      0.000      0.000      0.000      0 000
X1   1500.000      0.000      0.000      0.000     40.000     40.000     40.000      0.000      0 000      0 000

         CONFLUENCE HERSEY RIVER
X1   1850.000      7.000    395.000    610.000    350.000    350.000    350.000      0.000      0.000      0.000
GR    974.400      0.000    964.000    200.000    963.900    395.000    945.100    510.000    945.100    535.000
GR    968.000    610 000    974.400   1585.000      0.000      0.000      0.000      0.000      0.000      0.000

QT      4.000   9530.000   9530.000   9530.000   9530.000      0.000      0.000      0.000      0.000      0.000
X1   2000.000      9 000    710.000    960.000    150.000    150.000    150.000      0.000      0.000      0.000
GR    984.200      0.000    974 400    550.000    964.400    650.000    954.700    710.000    946.400    770.000
GR    946.400    870.000    954.700    960.000    955.200   1110.000    954.700   1210.000      0.000      0.000

         FIELD SECTION #2- VALLEY SECTION
X1   2375.000     68.000    509.000    669.000    375.000    375.000    375.000      0.000      0.000      0.000
GR    973.500      0.000    974.100     25.000    974.700     45.000    971.500     50.000    971.700     75.000
GR    974.100     91 000    970.000    100.000    972.700    125.000    973.200    145.000    968.300    175.000
GR    964.200    200.000    963.100    225.000    966 000    250.000    962.600    275.000    957.600    299.000
GR    956.100    325.000    957.300    350 000    957.700    375.000    956.900    400.000    958.300    425.000
GR    957.300    436.000    957.600    450.000    957.500    475.000    955.500    500.000    954.300    509.000
GR    953.800    510.000    953.300    515.000    953.600    525.000    953.000    528.000    951.900    536 000
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GR	951.800	546.000	951.400	550.000	951.300	556.000	951.100	566.000	951.000	576.000
GR	950.800	586.000	950.300	596.000	949.700	606 000	949.600	616.000	949.700	626.000
GR	950.700	636.000	952.000	646.000	952.500	656.000	953.800	666.000	955.400	669.000
GR	957.000	675.000	969.400	700.000	970.100	725.000	971.100	750.000	972.600	775.000
GR	973.500	800.000	973.400	825.000	973.100	850.000	973.100	875.000	973.000	900.000
GR	973.000	925.000	973.800	950.000	974 200	975.000	974.000	1000.000	974.600	1025.000
GR	974.800	1050.000	975.100	1075.000	975.300	1100.000	976.400	1125.000	976.800	1130.000
GR	977.200	1150.000	977.800	1175.000	977.400	1206.000	0.000	0.000	0.000	0.000
X1	3000.000	0.000	0.000	0.000	625.000	625.000	625.000	0.000	0.000	0.000

FIELD SECTION #1- U/S CORPORATE LIMIT- VALLEY SECTION

X1	3240.000	73 000	500.000	721.000	240.000	240.000	240.000	0.000	0.000	0.000
GR	978.600	0.000	979.500	25 000	979.300	50.000	979.400	75.000	979.200	100.000
GR	978.900	125.000	979.500	150.000	977.500	175.000	976.400	200.000	975.300	214.000
GR	963.800	235.000	963.000	250.000	960.800	275.000	960.600	300.000	961.500	325.000
GR	957 000	350.000	958.500	375.000	958.800	400.000	957.500	407.000	958.300	425.000
GR	959.400	450.000	959.000	475.000	959.200	500.000	957.600	512.000	953.900	527.000
GR	952.600	537.000	951.900	547.000	951.600	557.000	951.600	567.000	951.000	577 000
GR	951.400	587.000	950.900	597.000	950.900	607.000	950.900	617.000	951.000	627.000
GR	951.100	637.000	951.400	647.000	950.900	657.000	950.800	667.000	950.900	677.000
GR	951.100	687.000	952.200	697.000	953.100	707.000	953.300	713.000	953.900	717.000
GR	956.600	721.000	958 200	750.000	958.200	750.000	962.300	775.000	967.200	800.000
GR	969.200	825.000	970.600	850.000	972.100	875.000	972.900	900.000	973.500	925.000
GR	974.300	950.000	974.900	975.000	974 500	1000.000	974.300	1025.000	973.400	1050.000
GR	973.300	1075.000	973 500	1100.000	973.400	1125.000	973.800	1150.000	973.500	1175.000
GR	973.900	1200.000	975.100	1225.000	974.900	1243.000	975.000	1250.000	973.100	1258.000
GR	973.800	1263.000	973.600	1275.000	973.600	1300.000	0.000	0.000	0.000	0.000
EJ	0 000	0.000	0 000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         GLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*PROF 1

CCHV=   0.100 CEHV=   0.300
*SECNO 0.000

3470 ENCROACHMENT STATIONS=      387.0      840.0  TYPE=      1  TARGET=      453.000
         FIELD SECTION #4- D/S CORPORATE LIMIT- VALLEY SECTION
     0.00     12.21    958.91      0.00    959.20    959.16      0.25      0.00      0.00    953.00
   10200.      144.     8985.     1071.       76.     2137.      650.        0.        0.    953.40
     0.00      1.90      4.20      1.65     0.040     0.040     0.070     0.000    946.70    476.26
 0.000635        0.        0.        0.         0         0         3      0.00    363.74    840.00

*SECNO 500.000

3470 ENCROACHMENT STATIONS=      419.0      809.0  TYPE=      1  TARGET=      390.000
   500.00     12.52    959.22      0.00      0.00    959.47      0.26      0.31      0.00    953.00
   10200.      163      9338.      698.       84.     2207.      445.       32.        4.    953.40
     0.03      1.94      4.23      1.57     0.040     0.040     0.070     0.000    946.70    474.93
 0.000617      500.      500.      500.         1         0         0      0.00    334.07    809.00

*SECNO 1000.000

3470 ENCROACHMENT STATIONS=      440.0      767.0  TYPE=      1  TARGET=      327.000
  1000.00     12.81    959.51      0.00      0.00    959.78      0.27      0.30      0.00    953.00
   10200.      186.     9623.      391.       93.     2273.      248.       63.        8.    953.40
     0.07      2.02      4.23      1.58     0.040     0.040     0.070     0.000    946.70    473.93
 0.000593      500.      500.      500.         1         0         0      0.00    293.07    767.00

CCHV=   0.300 CEHV=   0.500
*SECNO 1256.000

3470 ENCROACHMENT STATIONS=      502.0      725.0  TYPE=      1  TARGET=      223.000
  1256.00     12.96    959.66      0.00      0.00    959.96      0.30      0.16      0.02    953.00
   10200.        0.    10200.        0.        0.     2305.        0.       77.        9.  100000.00
     0.08      0.00      4.43      0.00     0.000     0.040     0.000     0.000    946.70    502.00
 0.000686      256.      256.      256.         1         0         0      0.00    223.00    725.00

CCHV=   0.500 CEHV=   1.000
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957.8

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 1406.000

3265 DIVIDED FLOW

         FIELD SECTION #3- DOWNSTREAM FACE OF FOURTH ST.  BRIDGE
  1406.00     17.21    959.81      0.00      0.00    960.36      0.56      0.15      0.25    967.20
   10200.        0.    10200.        0.        0.     1705.        0.       84.       10.    966.20
    0.09      0.00      5 98      0.00     0.000     0.040     0.000     0.000    942.60    265.81
 0 001632      150.      150.      150.         2         0         0      0.00    147.53    415.35


CCHV=   0.500 CEHV=   0.500
*SECNO 1444.000

3265 DIVIDED FLOW


3370 NORMAL BRIDGE, NRD= 13 MIN ELTRD=  965.70 MAX ELLC=  964.40
         V/S FACE OF FOURTH ST.  BRIDGE
  1444.00     17.28    959.88      0.00      0.00    960.43      0.55      0.06      0.00    967.20
   10200.        0.    10200.         0        0.     1715.        0.       86.       10.    966.20
    0.09      0 00      5 95      0.00     0.000     0.040     0.000     0.000    942.60    265.66
 0 001604       38.       38.       38.         2         0         0      0.00    147.83    415.49


*SECNO 1460.000

3265 DIVIDED FLOW

         FIELD SECTION #21- RUINS OF OLD FOURTH ST.  BRIDGE
  1460.00     18.06    959 76      0.00      0.00    960.60      0.84      0.03      0.14    956.70
   10200.        2.    10190.        7.         3     1387.        7.       86.       10.    955.30
    0.09      0.74      7.35      1 05     0.070     0.040     0.070     0.000    941.70    267.21
 0.001734       16.       16.       16         2         0         0      0.00    130.33    399.19


CCHV=   0.100 CEHV=   0.300
*SECNO 1500.000

3265 DIVIDED FLOW

  1500.00     18.14    959.84      0.00      0.00    960.67      0.82      0.07      0.00    956.70
   10200.        2.    10184.       14.         3.     1396.        7.       88.       10.    955.30
    0.10      0.75      7.29      1 84     0.070     0.040     0.040     0.000    941.70    267.17
 0.001697       40.       40.       40.         1         0         0      0.00    130.48    399.24
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97772
14.02
99214

14950 $\left(\frac{1450}{2350}\right)^{.947}$

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  SECND     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECND 1850.000
        CONFLUENCE HERSEY RIVER
  1850.00    15.49   960.59     0.00      0.00    961.30      0.70      0.62      0.01    963.90
   10200.       0.    10200.       0.        0.    1515.         0       99.       11.    968.00
    0.11     0.00      6.73     0.00     0.000     0.040     0.000     0.000    945.10    415.22
 0.001835     350      350.     350.         2         0         0      0.00    170.53    585.75

*SECND 2000.000
3280 CROSS SECTION   2000.00 EXTENDED      6.64 FEET

3301 HV CHANGED MORE THAN HVINS

  2000.00    14.94   961.34     0.00      0.00    961.41      0.07      0.05      0.06    954.70
    9530.      74.    7140.    2317.      137.    3114.     1599.      110.       12.    954.70
    0.13     0.54      2.29     1.45     0.070     0.040     0.040     0.000    946.40    668.90
 0.000133    150.      150.     150.         2         0         0      0.00    541.10   1210.00

*SECND 2375.000
        FIELD SECTION #2- VALLEY SECTION
  2375.00    11.66   961.26     0.00      0.00    961.60      0.34      0.10      0.08    954.30
    9530.     1475.    7927.     128.      906.    1570.       49.      142.       17.    955.40
    0.15     1.63      5.05     2.63     0.070     0.040     0.040     0.000    949.60    281.42
 0.000887    375.      375.     375.         2         0         0      0.00    402.17    683.59

*SECND 3000.000
  3000.00    12.21   961.81     0.00      0.00    962.10      0.29      0.49      0.01    954.30
    9530.     1624.    7765.     141.     1032.    1658.       57.      180        22.    955.40
    0.20     1.57      4.68     2.48     0.070     0.040     0.040     0.000    949.60    278.79
 0.000709    625.      625.     625.         2         0         0      0.00    405.91    684.70

*SECND 3240.000
        FIELD SECTION #1- U/S CORPORATE LIMIT- VALLEY SECTION
  3240.00    11.24   962.04     0.00      0.00    962.25      0.22      0.15      0.01    959.20
    9530.      690.    8460.     380.      654.    2161.      179.      196.       25.    956.60
    0.21     1.06      3.91     2.12     0.070     0.040     0.040     0.000    950.80    260.96
 0.000536    240.      240.     240.         2         0         0      0.00    512.43    773.39
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960.7

THIS RUN EXECUTED 29 DEC 88 17:00:08

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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T1 VILLAGE OF HERSEY,MI-FIS
T2 100-YEAR FLOOD (FLOW FROM FOURTH ST. BRIDGE DRAWING)
T3 MUSKEGON RIVER

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	3.	0.	0.	0.000630	0.00	0 0	0.	959.200	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2 000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*PROF 2

CCHV=    0.100 CEHV=    0.300
*SECNO 0.000

3470 ENCROACHMENT STATIONS=      387.0      840.0  TYPE=      1  TARGET=      453.000
         FIELD SECTION #4- D/S CORPORATE LIMIT- VALLEY SECTION
     0.00     12.38    959.08      0.00    959.20    959.33      0.25      0.00      0.00    953.00
   10500.       155     9226.     1119.       80.     2174.      669.        0.        0.    953.40
     0.00      1.93      4.24      1.67     0.040     0 040     0.070     0.000    946.70    475.54
 0.000632        0.        0.        0.         0         0         3      0.00    364.46    840.00

*SECNO 500.000

3470 ENCROACHMENT STATIONS=      419.0      809.0  TYPE=      1  TARGET=      390.000
   500.00     12.68    959.38      0 00      0.00    959.64      0.26      0.31      0.00    953.00
   10500.       178.     9588.      734        89.     2243.      459.       33.        4.    953.40
     0.03      2.00      4.27      1.60     0.040     0.040     0.070     0.000    946.70    474.38
 0.000615       500.      500.      500.         1         0         0      0.00    334.62    809 00

*SECNO 1000.000

3470 ENCROACHMENT STATIONS=      440.0      767.0  TYPE=      1  TARGET=      327 000
  1000.00     12.98    959.68      0.00      0.00    959.95      0.27      0.30      0.00    953.00
   10500.       202.     9890.      408.       97.     2310.      255.       64.        8.    953.40
     0.07      2.08      4.28      1.60     0.040     0.040     0.070     0.000    946.70    473 39
 0.000594       500.      500.      500.         1         0         0      0.00    293.61    767.00

CCHV=    0.300 CEHV=    0.500
*SECNO 1256.000

3470 ENCROACHMENT STATIONS=      502.0      725.0  TYPE=      1  TARGET=      223.000
  1256.00     13.12    959.82      0.00      0.00    960.13      0.31      0.16      0.02    953.00
   10500         0.    10500.        0.        0.     2341.        0.       79.        9.  100000 00
     0.08      0.00      4.48      0.00     0.000     0.040     0.000     0.000    946.70    502.00
 0.000691       256.      256.      256.         1         0         0      0.00    223.00    725.00

CCHV=    0.500 CEHV=    1.000
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```
  SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
  Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
  TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
  SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 1406.000

3265 DIVIDED FLOW

        FIELD SECTION #3- DOWNSTREAM FACE OF FOURTH ST.  BRIDGE
  1406.00     17.37    959.97      0.00      0.00    960.55      0.57      0.15      0.26    967.20
   10500.        0.    10500.        0.        0.     1729.        0.       86.       10.     966.20
     0.09      0.00      6.07      0.00     0.000     0.040     0.000     0.000    942.60    265.46
 0.001664      150.      150.      150.         2         0         0      0.00    148.22    415.68

CCHV=   0.500 CEHV=   0.500
*SECNO 1444.000

3265 DIVIDED FLOW

3370 NORMAL BRIDGE, NRD= 13 MIN ELTRD=  965.70 MAX ELLC=  964.40

        U/S FACE OF FOURTH ST.  BRIDGE
  1444 00     17.45    960.05      0.00      0.00    960.61      0.57      0.06      0.00    967.20
   10500.        0.    10500.        0.        0.     1740.        0.       87.       10.     966.20
     0.09      0.00      6.03      0.00     0.000     0.040     0.000     0.000    942.60    265.30
 0.001635       38.       38.       38.         2         0         0      0.00    148.52    415.83

*SECNO 1460.000

3265 DIVIDED FLOW

        FIELD SECTION #21- RUINS OF OLD FOURTH ST.  BRIDGE
  1460.00     18.22    959.92      0.00      0.00    960.79      0.86      0.03      0.15    956.70
   10500.        2.    10489.        8.        3.     1407.        8.       88.       10.     955.30
     0.09      0.77      7 45      1.08     0.070     0.040     0.070     0.000    941.70    267.12
 0.001756       16.       16.       16.         2         0         0      0.00    130.67    399.30

CCHV=   0.100 CEHV=   0.300
*SECNO 1500.000

3265 DIVIDED FLOW

  1500.00     18.31    960.01      0.00      0.00    960.86      0.85      0.07      0.00    956.70
   10500.        2.    10483.       15.        3.     1417        8.       89.       10.     955.30
     0.09      0.78      7.40      1.90     0.070     0.040     0.040     0.000    941.70    267.07
 0.001718       40.       40.       40.         1         0         0      0.00    130.82    399.36
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```
  SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
  Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
  TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
  SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

*SECNO 1850.000
        CONFLUENCE HERSEY RIVER
 1850 00     15.68     960.78      0.00       0.00     961.49      0.72       0.62       0.01     963.90
  10500.        0.     10500         0.         0.      1546.        0.       101.        11.      968.00
    0.11      0.00      6.79      0.00      0.000      0.040      0.000      0.000     945.10     414.10
 0.001842     350.      350.      350.          2          0          0       0.00     172.24     586.34

*SECNO 2000.000
3280 CROSS SECTION   2000.00 EXTENDED      6.84 FEET

3301 HV CHANGED MORE THAN HVINS

 2000.00     15.14     961.54      0.00       0.00     961.61      0.07       0.05       0 07     954.70
   9530.        77.      7095.     2358.       145.      3163.     1648.       112.        13.      954.70
    0.13      0.53      2.24      1.43      0.070      0.040      0.040      0.000     946.40     667.68
 0.000124     150.      150.      150.          2          0          0       0.00     542.32    1210.00

*SECNO 2375.000
        FIELD SECTION #2- VALLEY SECTION
 2375.00     11.86     961.46      0.00       0 00     961.78      0.32       0.10       0.08     954.30
   9530.      1531.      7866.      133.       952.      1602.       52.       145.        17.      955.40
    0.15      1.61      4.91      2.57      0.070      0.040      0.040      0.000     949.60     280 45
 0.000816     375.      375.      375.          2          0          0       0.00     403.55     684.00

*SECNO 3000.000
 3000.00     12.37     961.97      0.00       0.00     962.24      0.27       0.46       0.00     954.30
   9530.      1665.      7720.      145.      1069.      1683.       60.       184.        22.      955.40
    0.20      1.56      4.59      2.44      0.070      0.040      0.040      0.000     949.60     278.02
 0.000666     625       625.      625.          2          0          0       0.00     407.00     685.02

*SECNO 3240.000
        FIELD SECTION #1- U/S CORPORATE LIMIT- VALLEY SECTION
 3240.00     11.38     962.18      0.00       0.00     962.39      0.21       0.14       0.01     959.20
   9530.       724.      8415.      392.       689.      2194.      187.       200.        25.      956.60
    0.22      1.05      3.84      2.09      0.070      0.040      0.040      0.000     950.80     259.29
 0.000505     240.      240.      240.          2          0          0       0.00     515.00     774 28
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THIS RUN EXECUTED 29 DEC 88 17:00:09

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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T1 VILLAGE OF HERSEY,MI-FIS
T2 50-YEAR FLOOD (FLOW FROM FOURTH ST. BRIDGE DRAWING)
T3 MUSKEGON RIVER

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	4.	0.	0.	0.000630	0.00	0.0	0.	957.900	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	3.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*PROF 3

CCHV=   0.100 CEHV=   0.300
*SECNO 0.000

3470 ENCROACHMENT STATIONS=     387.0     840 0  TYPE=     1  TARGET=     453.000
         FIELD SECTION #4- D/S CORPORATE LIMIT- VALLEY SECTION
     0.00     11.82    958.52     0.00    957.90    958.76     0.24      0.00      0.00    953.00
    9500.      121.     8420.     959.       66.     2051.     605.        0.        0.     953.40
     0.00      1.82      4.11     1.58     0.040     0.040    0.070     0.000    946.70    477.95
 0.000640        0.        0.       0.         0         0        3      0.00    362.05    840.00

*SECNO 500.000

3470 ENCROACHMENT STATIONS=     419.0     809.0  TYPE=     1  TARGET=     390.000
   500.00     12.13    958.83     0.00      0.00    959.08     0.25      0.31      0.00    953.00
    9500.      137.     8746.     617        74.     2121.     413.       31.        4.     953.40
     0.04      1.85      4.12     1.49     0.040     0.040    0.070     0.000    946.70    476.58
 0.000617      500.      500.     500.         1         0        0      0.00    332.42    809.00

*SECNO 1000.000

3470 ENCROACHMENT STATIONS=     440.0     767.0  TYPE=     1  TARGET=     327.000
  1000.00     12.43    959.13     0.00      0.00    959.38     0.25      0.30      0.00    953.00
    9500.      153.     8997      350.       82.     2188      232.       60.        8.     953.40
     0.07      1.87      4.11     1.51     0.040     0.040    0.070     0.000    946.70    475.28
 0.000589      500.      500.     500         1         0        0      0.00    291.72    767.00

CCHV=   0 300 CEHV=   0.500
*SECNO 1256.000

3470 ENCROACHMENT STATIONS=     502.0     725 0  TYPE=     1  TARGET=     223.000
  1256.00     12.57    959.27     0.00      0.00    959.56     0.28      0.16      0.02    953.00
    9500.        0.     9500.       0.        0.     2219.       0.        74.        9.  100000.00
     0.09      0.00      4.28     0.00     0.000     0.040    0.000     0.000    946.70    502.00
 0.000672      256.      256.     256.         1         0        0      0.00    223.00    725.00

CCHV=   0.500 CEHV=   1.000
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 1406.000

3265 DIVIDED FLOW

         FIELD SECTION #3- DOWNSTREAM FACE OF FOURTH ST.  BRIDGE
  1406.00     16.82    959.42      0 00      0.00    959.94      0.52      0.15      0.23    967.20
    9500.        0.     9500.        0.        0.     1648.        0.       80.       10.     966.20
     0.09      0.00      5.77      0.00     0.000     0.040     0.000     0.000    942.60    266.64
 0.001552      150.      150.      150.         2         0         0      0.00    145.92    414.56

CCHV=   0.500 CEHV=   0.500
*SECNO 1444.000

3265 DIVIDED FLOW

3370 NORMAL BRIDGE, NRD= 13 MIN ELTRD=  965.70 MAX ELLC=  964.40

         U/S FACE OF FOURTH ST.  BRIDGE
  1444.00     16.89    959.49      0.00      0.00    960.00      0.51      0.06      0.00    967.20
    9500.        0.     9500.        0.        0.     1658.        0.       82.       10.     966.20
     0.10      0.00      5.73      0.00     0.000     0.040     0.000     0.000    942.60    266.50
 0.001527       38.       38.       38.         2         0         0      0.00    146.20    414 70

*SECNO 1460.000

3265 DIVIDED FLOW

         FIELD SECTION #21- RUINS OF OLD FOURTH ST.  BRIDGE
  1460.00     17.68    959.38      0.00      0.00    960.16      0.78      0 03      0.13    956.70
    9500.        1.     9493.        6.        2.     1339.        6.       82.       10.     955.30
     0.10      0.67      7.09      0.97     0.070     0.040     0.070     0.000    941.70    267.44
 0 001679       16.       16.       16.         2         0         0      0.00    129.53    398.91

CCHV=   0.100 CEHV=   0.300
*SECNO 1500.000

3265 DIVIDED FLOW

  1500.00     17.76    959 46      0.00      0.00    960.23      0.77      0.07      0.00    956.70
    9500.        1.     9488        10.        2.     1348.        6.       84.       10.     955.30
     0.10      0.67      7.04      1.71     0.070     0.040     0.040     0.000    941.70    267.40
 0.001643       40.       40.       40.         1         0         0      0.00    129.68    398.96
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 1850.000
         CONFLUENCE HERSEY RIVER
  1850 00    15.07    960.17     0.00      0.00    960.84     0.67      0.60      0.01    963.90
    9500.       0.     9500.       0.        0.     1442.       0        95.       11.     968.00
     0.11     0.00      6.59     0.00     0.000     0.040    0 000    0.000    945.10    417.84
 0.001815     350.      350.     350.         2         0        0     0.00    166.50    584.34

*SECNO 2000.000
3280 CROSS SECTION   2000.00 EXTENDED      6.18 FEET

3301 HV CHANGED MORE THAN HVINS

  2000.00    14.48    960.88     0.00      0.00    960.95     0.08      0.06      0.06    954.70
    9530.      66.     7252.    2213.      118.     2997.    1482.      105.       12.     954.70
     0.13     0.56      2.42     1.49     0.070     0.040    0.040    0.000    946.40    671.79
 0.000155     150.      150.     150.         2         0        0     0.00    538.21   1210.00

*SECNO 2375 000
         FIELD SECTION #2- VALLEY SECTION
  2375.00    11.18    960.78     0.00      0.00    961.17     0.39      0.12      0.09    954.30
    9530.    1332.     8082.     116.      797.     1493.      42.      135.       16.     955.40
     0.15     1.67      5.41     2.77     0.070     0.040    0.040    0.000    949.60    283.73
 0.001090     375.      375.     375.         2         0        0     0.00    398.89    682.62

*SECNO 3000.000
  3000.00    11.85    961.45     0.00      0.00    961.77     0.32      0.59      0.01    954.30
    9530.    1527.     7870.     133.      949.     1600.      51.      171.       22.     955.40
     0.19     1.61      4.92     2.58     0.070     0.040    0.040    0.000    949.60    280.52
 0 000820     625.      625.     625.         2         0        0     0.00    403.45    683.97

*SECNO 3240.000
         FIELD SECTION #1- U/S CORPORATE LIMIT- VALLEY SECTION
  3240.00    10.91    961.71     0.00      0.00    961.95     0.24      0.17      0.01    959.20
    9530.     614      8561.     354.      576.     2089.     162.      185.       25.     956.60
     0 21     1.07      4.10     2 18     0.070     0.040    0.040    0.000    950.80    264.70
 0.000616     240.      240.     240.         2         0        0     0.00    506 69    771.38
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THIS RUN EXECUTED 29 DEC 88 17:00:11

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**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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T1 VILLAGE OF HERSEY,MI-FIS
T2 MAXIMUM FLOW FROM H. D. #308
T3 MUSKEGON RIVER

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0.	5.	0.	0.	0 000630	0.00	0.0	0.	960.200	0.000

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.000	0 000	-1.000	0.000	0 000	0.000	0.000	0.000	0.000	0.000

```
   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*PROF 4

CCHV=   0.100 CEHV=   0.300
*SECNO 0.000

3470 ENCROACHMENT STATIONS=      387.0      840.0  TYPE=      1  TARGET=      453.000
         FIELD SECTION #4- D/S CORPORATE LIMIT- VALLEY SECTION
     0.00      12.56    959.26      0.00    960.20    959.52      0.26      0.00      0.00    953.00
   10940.       170.     9584.     1186        85.     2216.      690.        0.        0.     953.40
     0.00      1.99      4.32      1.72     0.040     0.040     0.070     0.000    946.70    474.79
 0.000640        0.        0.        0.         0         0         3      0.00    365.21    840.00


*SECNO 500.000

3470 ENCROACHMENT STATIONS=      419.0      809.0  TYPE=      1  TARGET=      390.000
   500.00      12.87    959.57      0.00      0.00    959.84      0.27      0.32      0.00    953.00
   10940.       197.     9961       782.       94.     2286.      475.       34.        4.     953.40
     0.03      2 09      4.36      1.65     0.040     0.040     0.070     0.000    946.70    473.74
 0.000624       500.      500       500.         1         0         0      0.00    335.26    809.00

*SECNO 1000.000

3470 ENCROACHMENT STATIONS=      440.0      767.0  TYPE=      1  TARGET=      327.000
  1000.00      13.17    959.87      0.00      0.00    960.15      0.28      0.31      0.00    953.00
   10940.       222.    10284.      433.      103      2353.      263        66.        8.     953.40
     0.07      2.16      4 37      1.65     0.040     0.040     0.070     0.000    946.70    472.74
 0 000604       500.      500.      500.         1         0         0      0.00    294.26    767.00


CCHV=   0.300 CEHV=   0.500
*SECNO 1256.000

3470 ENCROACHMENT STATIONS=      502.0      725.0  TYPE=      1  TARGET=      223.000
  1256.00      13.32    960 02      0.00      0.00    960.34      0.33      0.17      0.02    953.00
   10940.         0     10940.        0.        0.     2385.        0.        81.        9.  100000.00
     0.08      0.00      4.59      0.00     0.000     0.040     0 000     0.000    946.70    502.00
 0.000706       256.      256.      256.         1         0         0      0.00    223.00    725.00


CCHV=   0.500 CEHV=   1.000
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST

*SECNO 1406.000

3265 DIVIDED FLOW

         FIELD SECTION #3- DOWNSTREAM FACE OF FOURTH ST.  BRIDGE
  1406.00     17.57    960.17      0.00      0.00    960.77      0.60      0.16      0.27    967.20
   10940.        0.    10940.        0.        0.    1759.        0.       88.       10.    966.20
     0.09      0.00      6.22      0.00     0.000     0.040     0.000     0.000    942.60    265.03
 0.001724      150.      150.      150.         2         0         0      0.00    149.05    416.08

CCHV=   0 500 CEHV=   0 500
*SECNO 1444.000

3265 DIVIDED FLOW

3370 NORMAL BRIDGE, NRD= 13 MIN ELTRD=  965.70 MAX ELLC=  964.40

         U/S FACE OF FOURTH ST.  BRIDGE
  1444.00     17.65    960.25      0.00      0.00    960.84      0.59      0.06      0.00    967.20
   10940.        0.    10940.        0.        0.    1770.        0.       89.       10.    966.20
     0.09      0.00      6.18      0.00     0 000     0.040     0.000     0.000    942.60    264.87
 0.001694       38.       38.       38.         2         0         0      0.00    149.37    416.24

*SECNO 1460 000

3265 DIVIDED FLOW

         FIELD SECTION #21- RUINS OF OLD FOURTH ST.  BRIDGE
  1460.00     18.42    960.12      0 00      0.00    961.03      0.90      0.03      0.15    956.70
   10940.        3.    10928.        9.         3    1432.        8.       90.       10.    955.30
     0.09      0.82      7.63      1.13     0.070     0.040     0.070     0.000    941.70    267.00
 0.001805       16.       16.       16.         2         0         0      0.00    131.07    399.44

CCHV=   0.100 CEHV=   0.300
*SECNO 1500.000

3265 DIVIDED FLOW

  1500.00     18.51    960.21      0.00      0.00    961.10      0.89      0.07      0.00    956.70
   10940.        3     10920.       17.        4.    1442         9.       91.       10.    955.30
     0.09      0 82      7.57      1.98     0.070     0.040     0.040     0.000    941.70    266.96
 0.001766       40.       40.       40.         1         0         0      0.00    131.24    399.50
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   SECNO      DEPTH      CWSEL      CRIWS      WSELK      EG         HV         HL         OLOSS    BANK ELEV
   Q          QLOB       QCH        QROB       ALOB       ACH        AROB       VOL        TWA    LEFT/RIGHT
   TIME       VLOB       VCH        VROB       XNL        XNCH       XNR        WTN        ELMIN       SSTA
   SLOPE      XLOBL      XLCH       XLOBR      ITRIAL     IDC        ICONT      CORAR      TOPWID      ENDST

*SECNO 1850.000
        CONFLUENCE HERSEY RIVER
  1850.00    15.91    961.01      0.00       0.00    961.75      0.74       0.64       0.02    963.90
   10940.       0.    10940.        0.         0.     1587.        0.       103.        11.     968.00
    0.11     0.00      6.90      0.00      0.000     0.040     0.000      0.000    945 10    412.67
 0.001865     350       350.      350.          2         0         0      0 00    174.43    587.11

*SECNO 2000.000
3280 CROSS SECTION   2000.00 EXTENDED      7.10 FEET

3301 HV CHANGED MORE THAN HVINS

  2000.00    15.40    961.80      0.00       0.00    961.86      0.06       0.05       0.07    954.70
    9530.      82.     7038.     2410.       156.     3228.     1713.       115.        13.     954.70
    0.13     0.52      2.18      1.41      0.070     0.040     0.040      0.000    946.40    666.07
 0.000114    150.      150.      150.          2         0         0       0.00    543.93   1210.00

*SECNO 2375.000
        FIELD SECTION #2- VALLEY SECTION
  2375.00    12.13    961.73      0.00       0.00    962.02      0.29       0.09       0.07    954.30
    9530.     1603.     7788.      139.      1013.     1645.       56.       148.        17.     955.40
    0.15     1.58      4.74      2.50      0.070     0.040    0 040      0.000    949.60    279.18
 0.000733    375.      375       375.          2         0         0       0.00    405.36    684.54

*SECNO 3000.000
  3000.00    12.59    962.19      0.00       0.00    962.44      0.26       0.42       0.00    954.30
    9530.     1718.     7662.      150.      1119.     1718.       63.       189.        22.     955.40
    0.20     1 54      4.46      2.38      0.070     0.040    0 040      0 000    949.60    276.98
 0.000613    625.      625.      625.          2         0         0       0.00    408.47    685.46

*SECNO 3240.000
        FIELD SECTION #1- U/S CORPORATE LIMIT- VALLEY SECTION
  3240.00    11.58    962.38      0.00       0.00    962.58      0.19       0.13       0.01    959.20
    9530.      769.     8354.      408.       737.     2238.      198.       205.        25.     956.60
    0.22     1.04      3.73      2.06      0.070     0.040     0.040      0.000    950.80    257.01
 0.000465    240       240       240.          2         0         0       0.00    518.41    775.42
```

THIS RUN EXECUTED 29 DEC 88 17:00:12

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*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

MUSKEGON RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
0.000	0.00	0.00	0.00	946.70	10200.00	958.91	0.00	959.16	6.35	4.20	2862.76	4047.56
0.000	0.00	0.00	0.00	946.70	10500.00	959.08	0.00	959.33	6.32	4.24	2923.15	4175.70
0.000	0.00	0.00	0.00	946.70	9500.00	958.52	0.00	958.76	6.40	4.11	2722.35	3755.55
0.000	0.00	0.00	0.00	946.70	10940.00	959.26	0.00	959.52	6.40	4.32	2991.67	4323.36
500.000	500.00	0.00	0.00	946.70	10200.00	959.22	0.00	959.47	6.17	4.23	2735.89	4107.55
500.000	500.00	0.00	0.00	946.70	10500.00	959.38	0.00	959.64	6.15	4.27	2790.88	4232.77
500.000	500.00	0.00	0.00	946.70	9500.00	958.83	0.00	959.08	6.17	4.12	2607.76	3823.84
500.000	500.00	0.00	0.00	946.70	10940.00	959.57	0.00	959.84	6.24	4.36	2855.07	4380.76
1000.000	500.00	0.00	0.00	946.70	10200.00	959.51	0.00	959.78	5.93	4.23	2613.44	4188.79
1000.000	500.00	0.00	0.00	946.70	10500.00	959.68	0.00	959.95	5.94	4.28	2661.42	4308.44
1000.000	500.00	0.00	0.00	946.70	9500.00	959.13	0.00	959.38	5.89	4.11	2501.32	3914.42
1000.000	500.00	0.00	0.00	946.70	10940.00	959.87	0.00	960.15	6.04	4.37	2718.83	4453.26
1256.000	256.00	0.00	0.00	946.70	10200.00	959.66	0.00	959.96	6.86	4.43	2304.80	3895.58
1256.000	256.00	0.00	0.00	946.70	10500.00	959.82	0.00	960.13	6.91	4.48	2341.23	3995.10
1256.000	256.00	0.00	0.00	946.70	9500.00	959.27	0.00	959.56	6.72	4.28	2219.22	3665.41
1256.000	256.00	0.00	0.00	946.70	10940.00	960.02	0.00	960.34	7.06	4.59	2385.16	4116.27
1406.000	150.00	0.00	0.00	942.60	10200.00	959.81	0.00	960.36	16.32	5.98	1704.78	2525.22
1406.000	150.00	0.00	0.00	942.60	10500.00	959.97	0.00	960.55	16.64	6.07	1729.18	2574.38
1406.000	150.00	0.00	0.00	942.60	9500.00	959.42	0.00	959.94	15.52	5.77	1647.84	2411.38
1406.000	150.00	0.00	0.00	942.60	10940.00	960.17	0.00	960.77	17.24	6.22	1759.03	2634.81
1444.000	38.00	965.70	964.40	942.60	10200.00	959.88	0.00	960.43	16.04	5.95	1715.37	2546.54
1444.000	38.00	965.70	964.40	942.60	10500.00	960.05	0.00	960.61	16.35	6.03	1740.07	2596.39
1444.000	38.00	965.70	964.40	942.60	9500.00	959.49	0.00	960.00	15.27	5.73	1657.73	2431.07
1444.000	38.00	965.70	964.40	942.60	10940.00	960.25	0.00	960.84	16.94	6.18	1770.45	2658.01
1460.000	16.00	0.00	0.00	941.70	10200.00	959.76	0.00	960.60	17.34	7.35	1396.85	2449.39
1460.000	16.00	0.00	0.00	941.70	10500.00	959.92	0.00	960.79	17.56	7.45	1418.15	2505.72
1460.000	16.00	0.00	0.00	941.70	9500.00	959.38	0.00	960.16	16.79	7.09	1346.96	2318.75
1460.000	16.00	0.00	0.00	941.70	10940.00	960.12	0.00	961.03	18.05	7.63	1444.06	2574.68

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10K*S	VCH	AREA	.01K
1500.000	40.00	0.00	0.00	941.70	10200.00	959.84	0.00	960.67	16.97	7.29	1406.48	2476.24
1500.000	40.00	0.00	0.00	941.70	10500.00	960.01	0.00	960.86	17.18	7.40	1427.97	2533.35
1500.000	40.00	0.00	0.00	941.70	9500.00	959.46	0.00	960.23	16.43	7.04	1356.15	2343.79
1500.000	40.00	0.00	0.00	941.70	10940.00	960.21	0.00	961.10	17.66	7.57	1454.24	2603.64
1850.000	350.00	0.00	0.00	945.10	10200.00	960.59	0.00	961.30	18.35	6.73	1514.82	2380.83
1850.000	350.00	0.00	0.00	945.10	10500.00	960.78	0.00	961.49	18.42	6.79	1546.04	2446 78
1850.000	350.00	0.00	0.00	945 10	9500.00	960.17	0.00	960.84	18.15	6.59	1442.49	2229.79
1850.000	350.00	0.00	0.00	945.10	10940.00	961.01	0.00	961.75	18.65	6.90	1586.57	2533.04
2000.000	150.00	0.00	0.00	946.40	9530.00	961.34	0.00	961.41	1.33	2.29	4848.73	8275.38
2000.000	150.00	0.00	0.00	946.40	9530.00	961.54	0.00	961.61	1.24	2.24	4955.60	8548.60
2000.000	150.00	0.00	0.00	946.40	9530.00	960.88	0.00	960.95	1.55	2.42	4596.50	7644.14
2000.000	150.00	0.00	0.00	946.40	9530.00	961.80	0.00	961.86	1.14	2.18	5096.97	8915.17
2375.000	375.00	0.00	0.00	949.60	9530.00	961.26	0.00	961.60	8.87	5.05	2524 45	3200.18
2375 000	375.00	0.00	0.00	949.60	9530.00	961.46	0.00	961.78	8.16	4.91	2605.92	3336 76
2375.000	375.00	0.00	0.00	949.60	9530.00	960.78	0.00	961.17	10 90	5.41	2331.73	2886.60
2375.000	375.00	0.00	0.00	949.60	9530.00	961.73	0.00	962.02	7.33	4.74	2713.58	3520.80
3000.000	625.00	0.00	0.00	949.60	9530.00	961.81	0.00	962.10	7.09	4.68	2746.60	3578.03
3000.000	625.00	0.00	0.00	949.60	9530.00	961.97	0.00	962.24	6.66	4.59	2811.48	3691 58
3000.000	625.00	0.00	0.00	949.60	9530.00	961.45	0.00	961.77	8.20	4.92	2600.21	3327.11
3000.000	625.00	0.00	0.00	949.60	9530.00	962.19	0.00	962.44	6.13	4.46	2899.53	3847.91
3240.000	240.00	0.00	0.00	950.80	9530.00	962.04	0.00	962.25	5.36	3.91	2994.25	4115.49
3240.000	240.00	0.00	0.00	950.80	9530.00	962.18	0.00	962.39	5.05	3.84	3069 76	4241.60
3240.000	240.00	0.00	0.00	950.80	9530.00	961.71	0.00	961.95	6.16	4.10	2826.64	3841 14
3240.000	240.00	0.00	0.00	950.80	9530.00	962.38	0.00	962.58	4.65	3.73	3173.32	4417.42

MUSKEGON RIVER

SUMMARY PRINTOUT TABLE 150

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
0.000	10200.00	958.91	0.00	0.00	-0.29	363.74	0.00
0.000	10500.00	959.08	0.17	0.00	-0.12	364.46	0.00
0.000	9500.00	958.52	-0.55	0.00	0.62	362.05	0.00
0.000	10940.00	959.26	0.74	0.00	-0.94	365.21	0.00
500.000	10200.00	959.22	0.00	0.31	0.00	334.07	500.00
500.000	10500.00	959.38	0.16	0.30	0.00	334.62	500.00
500.000	9500.00	958.83	-0.55	0.31	0.00	332.42	500.00
500.000	10940.00	959.57	0.74	0.31	0.00	335.26	500.00
1000.000	10200.00	959.51	0.00	0.30	0.00	293.07	500.00
1000.000	10500.00	959.68	0.16	0.30	0.00	293.61	500.00
1000.000	9500.00	959.13	-0.55	0.30	0.00	291.72	500.00
1000.000	10940.00	959.87	0.74	0.30	0.00	294.26	500.00
1256.000	10200.00	959.66	0.00	0.14	0.00	223.00	256.00
1256.000	10500.00	959.82	0.16	0.14	0.00	223.00	256.00
1256.000	9500.00	959.27	-0.55	0.14	0.00	223.00	256.00
1256.000	10940.00	960.02	0.74	0.14	0.00	223.00	256.00
1406.000	10200.00	959.81	0.00	0.15	0.00	147.53	150.00
1406.000	10500.00	959.97	0.17	0.15	0.00	148.22	150.00
1406.000	9500.00	959.42	-0.55	0.15	0.00	145.92	150.00
1406.000	10940.00	960.17	0.75	0.16	0.00	149.05	150.00
1444.000	10200.00	959.88	0.00	0.07	0.00	147.83	38.00
1444.000	10500.00	960.05	0.17	0.07	0.00	148.52	38.00
1444.000	9500.00	959.49	-0.56	0.07	0.00	146.20	38.00
1444.000	10940.00	960.25	0.76	0.08	0.00	149.37	38.00
1460.000	10200.00	959.76	0.00	-0.12	0.00	130.33	16.00
1460.000	10500.00	959.92	0.16	-0.12	0.00	130.67	16.00
1460.000	9500.00	959.38	-0.55	-0.11	0.00	129.53	16.00
1460.000	10940.00	960.12	0.75	-0.13	0.00	131.07	16.00
1500.000	10200.00	959.84	0.00	0.08	0.00	130.48	40.00
1500.000	10500.00	960.01	0.16	0.08	0.00	130.82	40.00
1500.000	9500.00	959.46	-0.55	0.08	0.00	129.68	40.00
1500.000	10940.00	960.21	0.75	0.09	0.00	131.24	40.00
1850.000	10200.00	960.59	0.00	0.75	0.00	170.53	350.00
1850.000	10500.00	960.78	0.18	0.77	0.00	172.24	350.00
1850.000	9500.00	960.17	-0.61	0.71	0.00	166.50	350.00
1850.000	10940.00	961.01	0.85	0.80	0.00	174.43	350.00

SECND	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
2000.000	9530.00	961.34	0.00	0.75	0.00	541.10	150.00
2000.000	9530.00	961.54	0.20	0.76	0.00	542.32	150.00
2000.000	9530.00	960.88	-0.66	0.71	0.00	538.21	150.00
2000.000	9530.00	961.80	0.92	0.79	0.00	543.93	150.00
2375.000	9530 00	961.26	0.00	-0.08	0.00	402.17	375.00
2375.000	9530.00	961.46	0.20	-0.08	0.00	403.55	375.00
2375.000	9530.00	960.78	-0.68	-0.10	0.00	398.89	375.00
2375 000	9530.00	961.73	0.95	-0.07	0.00	405.36	375.00
3000.000	9530.00	961.81	0.00	0.55	0.00	405.91	625.00
3000.000	9530.00	961.97	0.16	0 51	0.00	407.00	625.00
3000.000	9530.00	961.45	-0.52	0.67	0.00	403.45	625.00
3000.000	9530.00	962.19	0.74	0.46	0.00	408.47	625.00
3240.000	9530.00	962 04	0.00	0.22	0.00	512.43	240.00
3240.000	9530.00	962.18	0.15	0.21	0.00	515.00	240.00
3240.000	9530.00	961.71	-0.48	0 26	0.00	506.69	240.00
3240.000	9530.00	962.38	0.68	0 20	0.00	518.41	240.00

00BREAK00

1) COUNTY: OSCEOLA

2) STUDY NAME: VILLAGE OF HERSEY

3) WATERCOURSE:

4) DOCUMENT TYPE: REPORT

00BREAK00

FLOOD INSURANCE STUDY

VILLAGE OF HERSEY, MICHIGAN

OSCEOLA COUNTY

PRELIMINARY

RECEIVED
APR 18 1991
NATURAL RESOURCES
LAND & WATER MGMT.

Federal Emergency Management Agency

COMMUNITY NUMBER - 260489

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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	2.1 Scope of Study	2
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EXHIBITS

Flood Profiles

Muskegon River	Panel 01P
Hersey River	Panel 02P

Flood Insurance Rate Map Index
Flood Insurance Rate Map

Elevation Reference Marks

FLOOD INSURANCE STUDY

VILLAGE OF HERSEY,
OSCEOLA COUNTY,
MICHIGAN

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Village of Hersey, Osceola County, Michigan, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

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

The hydrologic and hydraulic analyses for this study were performed by the U.S. Army Corps of Engineers, Detroit District (the Study Contractor) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-88-E-2739, Project Order No. 6. This study was completed in May 1989.

1.3 Coordination

On June 23, 1987, an initial coordination meeting was held with representatives of FEMA, the Michigan Department of Natural Resources (MDNR), the Village of Hersey, and the Study Contractor.

During the search for basic data, contacts were made with the MDNR, Hydrologic Studies Unit, Land and Water Management Division; and the Osceola County Clerk.

Results of the technical aspects of this study were coordinated with, reviewed, and approved by the MDNR, the State coordinating agency.

On , the results of this Flood Insurance Study were reviewed and accepted at a final coordination meeting attended by representatives of the Study Contractor, FEMA, and the community.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Village of Hersey, Osceola County, Michigan. The area of study is shown on the Vicinity Map (Figure 1).

Flooding caused by overflow of the Muskegon River and the Hersey River was studied in detail.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards.

The areas studied were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction through May 1994. The scope and methods of study were proposed to and agreed upon by FEMA and the Village of Hersey.

2.2 Community Description

The Village of Hersey is located in the western portion of Michigan's lower peninsula, about 60 miles north of the City of Grand Rapids. It is bordered on the east by Hersey Township and on the west by Richmond Township. The Village of Hersey is served by U.S. Highways 10 and 131, and CSX railroad. According to the 1980 census (Reference 1), the population of Hersey Township was 1,229 in 1980.

Because of the proximity of the Village of Hersey to Lake Michigan, the area's climate is influenced appreciably by the lake. As a result, low temperatures are experienced in the spring, and a warming effect occurs in the fall. Winter and summer temperatures are similarly tempered by the lake, making annual climatic extremes rare. The average frost-free season lasts approximately 170 days. The average annual precipitation is 31.19 inches and is fairly uniformly distributed throughout the year. The area receives approximately 80 inches of snow annually.

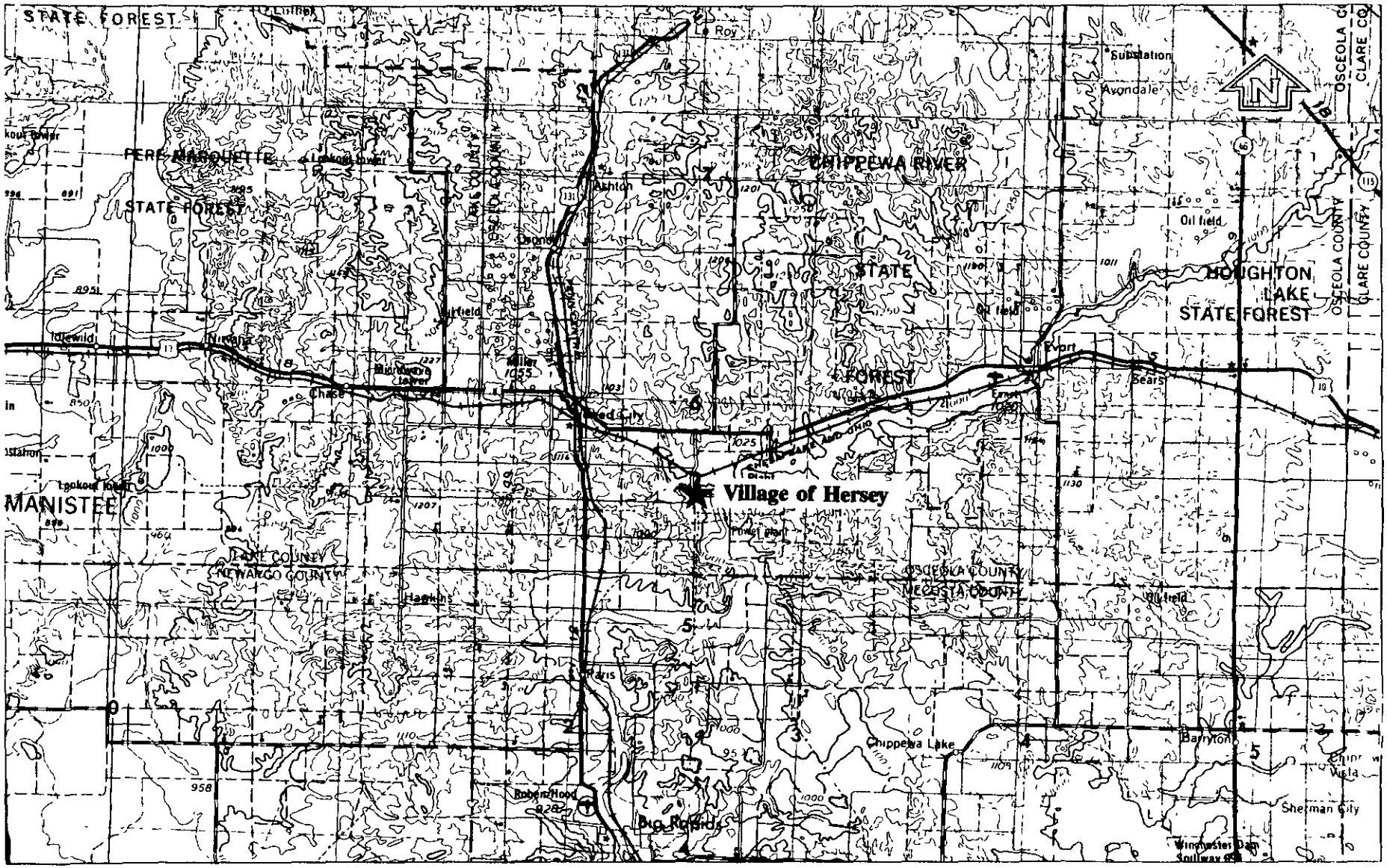


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

VILLAGE OF HERSEY, MI
(OSCEOLA CO.)

APPROXIMATE SCALE

2000 0 2000 4000 6000 FEET

VICINITY MAP

2.3 Principal Flood Problems

The principal flood problems in the Village of Hersey are due to high-water levels on the Muskegon and Hersey Rivers. Records on the Muskegon River gage at Evart, Michigan (Reference 2), indicate that most periods of high runoff occur in late winter or spring.

2.4 Flood Protection Measures

The Hersey Dam provides some degree of flood protection for the Village by diverting 660 cubic feet per second (cfs) south to the Muskegon River. However, the Hersey Dam does not provide protection against the 100-year flood. No other flood protection measures exist within the Village of Hersey.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that is expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40-percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60-percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each riverine flooding source studied in detail affecting the community.

A discharge-frequency relationship based on peak annual flows was obtained from the U.S. Geological Survey (USGS) gage located on the Muskegon River at Evart, Michigan. A flood-flow frequency analysis was performed using Weibull plotting positions and the log-Pearson Type III distribution (HECWRC program, Reference 3). A generalized skew of -0.12 and a mean square error of 0.135 were

used, based on the COE generalized skew study (Reference 4). The 100-year flow at the gage (8,950 cfs) was adjusted to provide values at the Village of Hersey using a drainage area ratio method.

A discharge frequency relationship for the Hersey River was developed using USGS regression equations (Reference 5).

Rating curves were developed for the spillway at Hersey Dam to determine water-surface elevations upstream of the dam to determine the amount of split flow which would divert to the Muskegon River, and the amount of flow around the dam through Rapids Park.

Peak discharge-drainage area relationships for the 100-year floods of each flooding source studied in detail in the community are shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ MILES)	PEAK DISCHARGE (CFS) 100-YEAR
MUSKEGON RIVER		
just downstream of confluence of Hersey River	1,670	10,200
just upstream of confluence of Hersey River	1,550	9,530
HERSEY RIVER		
at mouth	116	2,160
just upstream of Main Street	N/A	1,740
just downstream of Hersey Dam	N/A	1,125
about 2,500 feet upstream of Hersey Dam	N/A	2,400

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Cross-section data for the backwater analyses were obtained by field surveys. All bridges, dam spillways, and culverts were surveyed to obtain elevation data and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles and on the Flood Insurance Rate Map.

Water-surface elevations of floods for the selected recurrence intervals were computed using the HEC-2 step-backwater computer program (Reference 6). The starting water-surface elevation for the Muskegon River was determined using the slope-area method.

The starting water-surface elevation for the Hersey River was determined from the Muskegon River profile.

Channel and overbank roughness coefficients (Manning's "n") used in the hydraulic computations were determined by field observations of the stream and floodplain areas. The "n" values for the Muskegon River were 0.04 in the channel and ranged from 0.04 to 0.07 in the overbank areas. The "n" values for the Hersey River were 0.03 in the channel and 0.04 in the overbanks.

Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals.

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

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps and described in the exhibit labeled Elevation Reference Marks.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100- and 500-year floodplain boundaries and 100-year floodway to assist communities in developing floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the

boundaries were interpolated using topographic maps at a scale of 1:25000 with a contour interval of 3 meters (Reference 7).

The 100-year floodplain boundaries are shown on the Flood Insurance Rate Map. On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, AH, AO, A99, V, and VE). Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 100-year floodplain boundary is shown on the Flood Insurance Rate Map.

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces the flood-carrying capacity, increases the flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. In Michigan though, under Michigan Act 245, Public Acts of 1929, as amended by Act 167, Public Acts of 1968 (Reference 8), encroachment in the floodplain is limited to that which will cause only an insignificant increase in flood heights. Thus, at the recommendation of the Michigan Department of Natural Resources, Land and Water Resources Division, a floodway having no more than a 0.1-foot surcharge has been delineated for this study. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways for this study were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections and are shown in Table 2, Floodway Data. The computed floodways are shown on the Flood Insurance Rate Map. In cases where the floodway and 100-year floodplain boundaries are either close together or collinear,

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
MUSKEGON RIVER								
A	0	335[3]	2801	3.6	958.9	958.9	959.0	0.1
B	1485	150[3]	1734	5.9	959.9	959.9	960.0	0.1
C	3070	400[3]	2795	3.4	961.9	961.9	962.0	0.1
HERSEY RIVER								
A	725[2]	122	360	6.0	960.5	960.5	960.6	0.1
B	3260[2]	110	566	3.8	967.4	967.4	967.5	0.1
C	5250[2]	180	609	3.5	972.2	972.2	972.3	0.1
D	8430[2]	510	1817	1.3	978.1	978.1	978.1	0.0

[1]FEET ABOVE CORPORATE LIMITS
[2]FEET ABOVE MOUTH
[3]THIS WIDTH EXTENDS BEYOND CORPORATE LIMITS

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

VILLAGE OF HERSEY, MI
(OSCEOLA COUNTY)

FLOODWAY DATA

MUSKEGON RIVER—HERSEY RIVER

only the floodway boundary is shown. Portions of the floodway for the Muskegon River lie outside the corporate limits.

Along streams where floodways have not been computed, the community must ensure that the cumulative effect of development in the floodplain will not cause an increase in the base flood elevations greater than the State's allowable surcharge at any point within the community.

The area between the floodway and the 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than the State's allowable surcharge at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown on the Floodway Schematic (Figure 2).

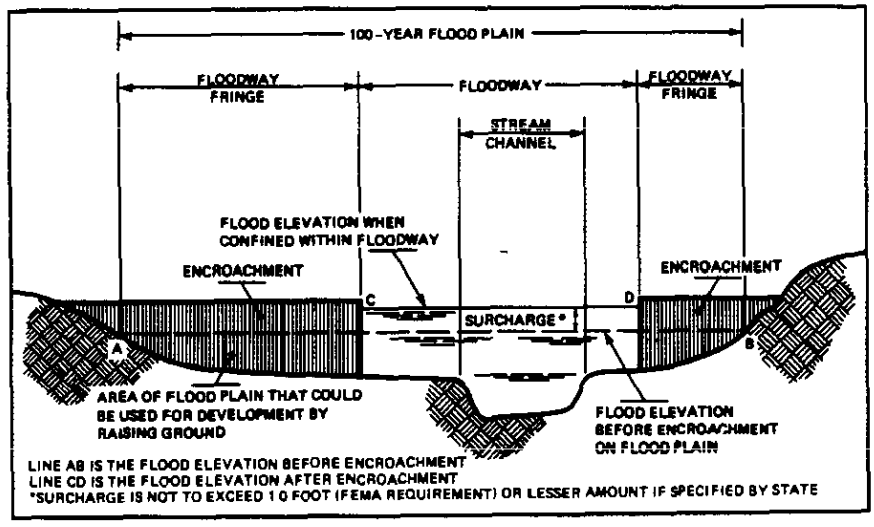


FIGURE 2 - Floodway Schematic

5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 100-year floodplain, areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols the 100- and 500-year floodplains, the floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

7.0 OTHER STUDIES

In 1931, the U.S. Army Corps of Engineers prepared a report on the Muskegon River covering navigation, flood control, power development and irrigation (Reference 9). No other studies have been conducted in the area.

This Flood Insurance Study supersedes the previously printed Flood Hazard Boundary Map for the Village of Hersey (Reference 10).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, 175 West Jackson Boulevard, 4th Floor, Chicago, Illinois 60604-2698.

Future revisions may be made that do not result in the republishing of the Flood Insurance Study report. To assure that any user is aware of all revisions, it is advisable to contact the map repository of flood hazard data located in the community.

9.0 REFERENCES AND BIBLIOGRAPHY

1. U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, Number of Inhabitants, Michigan, Washington, D.C., January 1982.

2. U.S. Geological Survey, Water Resources Data - Michigan, Lansing, Michigan, October 1930-September 1931, October 1933-Current.

3. U.S. Army Corps of Engineers, Hydrologic Engineering Center, Flood Flow Frequency Analysis, Generalized Computer Program 723-X6-L7550, Davis, California, February 1982.

4. ----------, Detroit District, Development of Generalized Skew Coefficients for Use in Estimating Flood Flow Frequencies, Detroit, Michigan, 1979.

5. U.S. Geological Survey, Water Resources Investigations Report No. 84-4207, Statistical Models for Estimating Flow Characteristics of Michigan Streams, Lansing, Michigan, 1984.

6. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water Surface Profiles, Users Manual, September 1982, with updates.

7. U.S. Geological Survey, 7.5 Minute Series Topographic Maps, Scale 1:25000, Contour Interval 3 Meters: Hersey, Michigan, 1983.

8. State of Michigan, Floodplain Control Act of 1968, Act 245, P.A. 1929 as amended by Act 167, P.A. 1968, Michigan Water Resources Commission, Lansing, Michigan, 1968.

9. U.S. Army Corps of Engineers, Report on Muskegon River, Michigan, Milwaukee, Wisconsin, 1931.

10. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Insurance Study, Village of Hersey, Michigan, July 1975.

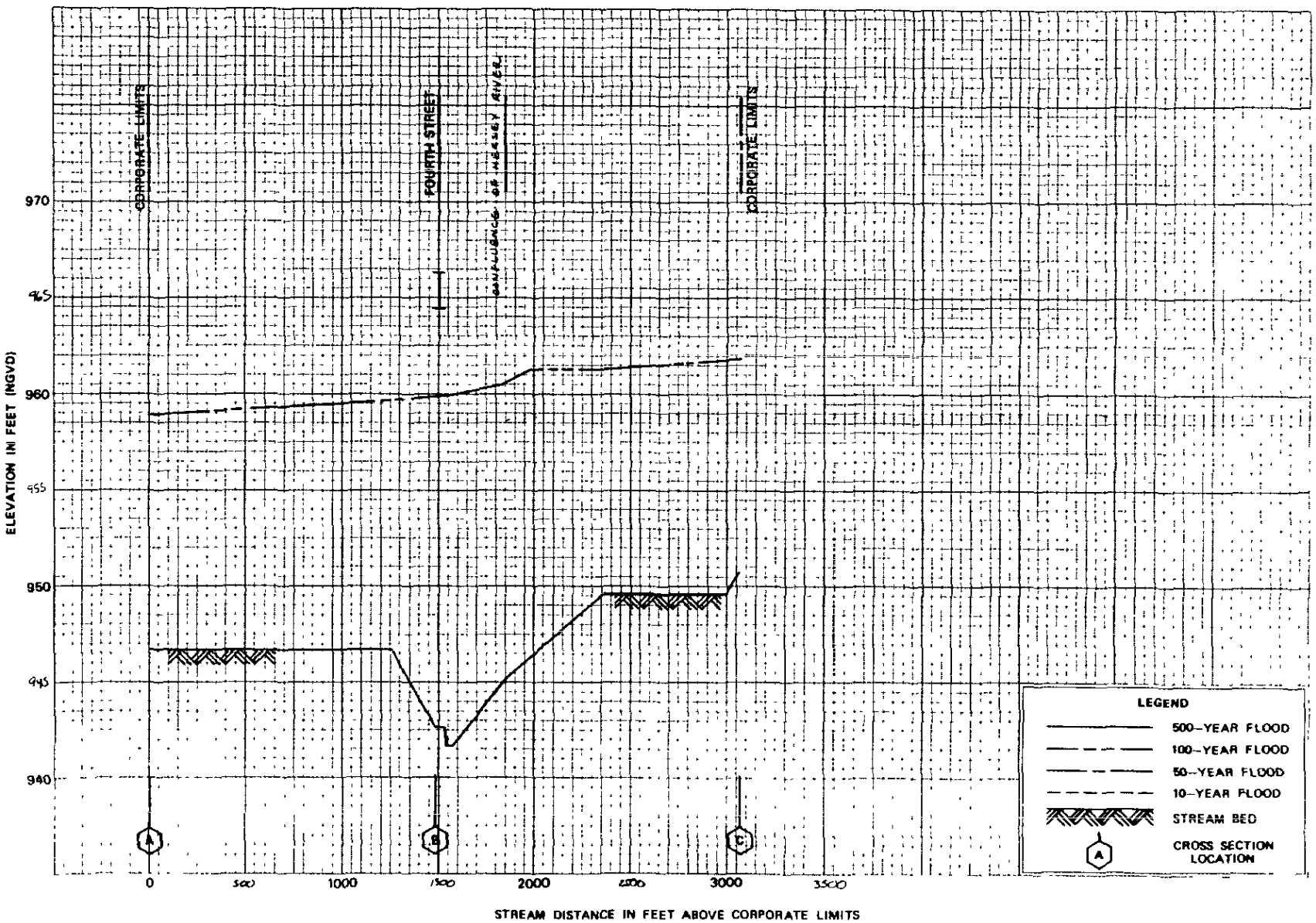
U.S. Department of the Interior, Geological Survey, Interagency Advisory Committee on Water data, Office of Water Data Coordination, Hydrology Subcommittee, Bulletin No. 17B, Guidelines for Determining Flood Flow Frequency, September 1981, revised March 1982.

ELEVATION REFERENCE MARKS

REFERENCE MARK	FLOOD INSURANCE RATE MAP PANEL	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
1	0001	966.927	chiseled square on top of concrete walk at northwest corner of Fourth Street bridge over the Muskegon River
2	0001	976.287	16d nail set on south side of power pole located at east end of Fourth Street, south side of road, west side of the Muskegon River
3	0001	972.232	16d spike on southeast side of telephone pole located at northwest corner of Fourth Street and Hemlock Street
4	0001	980.434	chiseled square on top of southeast side of concrete island located at northwest corner of intersection of Main Street and Second Street
5	0001	981.759	chiseled square on top of concrete walk at northwest corner of Main Street bridge over the Hersey River
6	0001	981.755	16d nail set on east side of light pole located at northwest corner of intersection of Gooch Street and First Street
7	0001	981.656	20d spike on west side of power pole located at westerly side of abandoned railroad spur, about 100 feet north of Mill Site Road
8	0001	972.522	16d spike on south side of guy pole No. 407 located on north side of Fourth Street, about 166 feet east of centerline of Maple Street

ELEVATION REFERENCE MARKS (Continued)

REFERENCE MARK	FLOOD INSURANCE RATE MAP PANEL	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
9	0001	979.268	chiseled square on concrete curb at northeast corner of intersection of Fourth Street and Main Street



FLOOD PROFILES

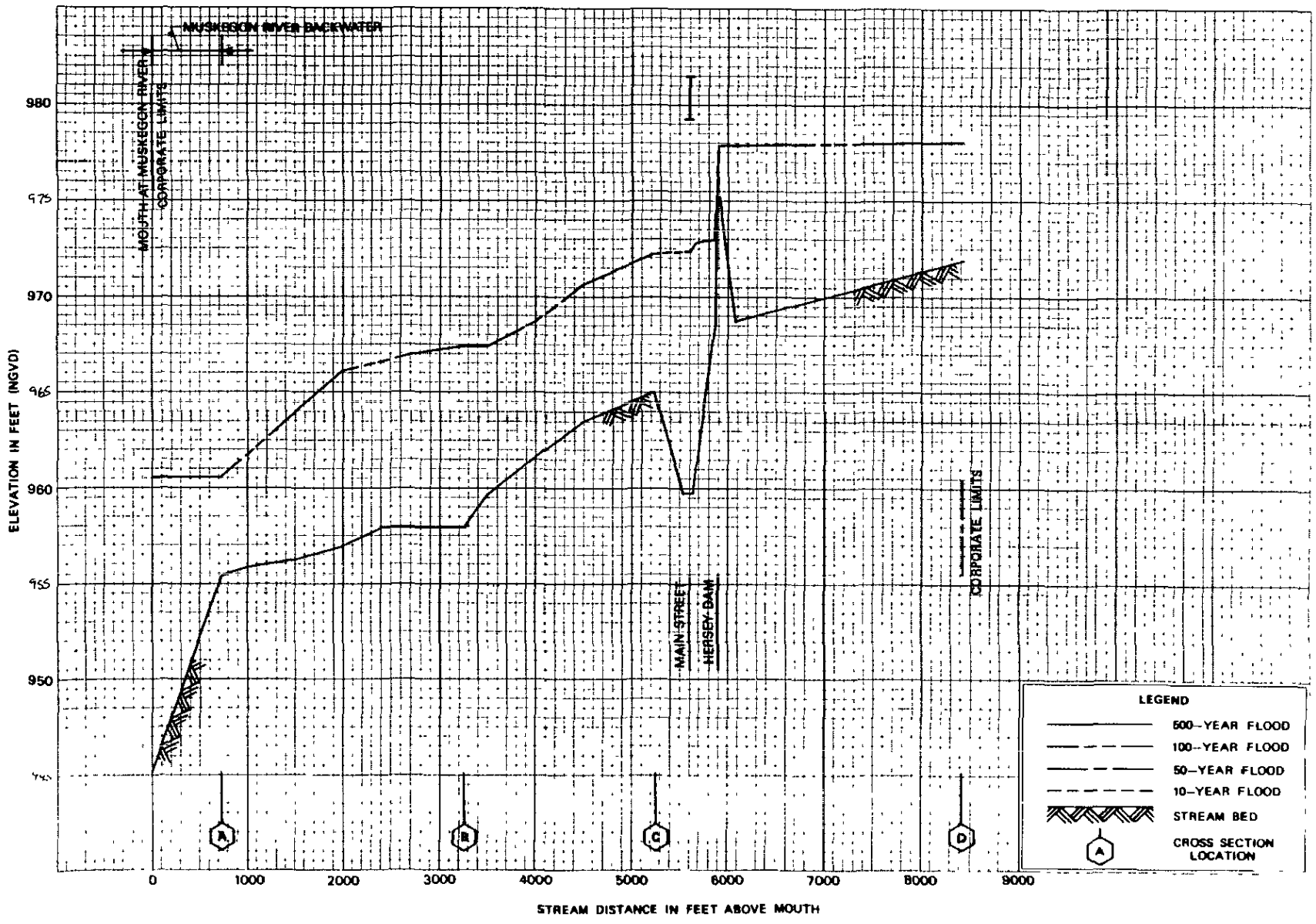
MUSKEGON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

VILLAGE OF HERSEY, MI

(OSCEOLA CO.)

01P



FLOOD PROFILES

HERSEY RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

VILLAGE OF HERSEY, MI

(OSCEOLA CO.)

02P

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
BOX 1027
DETROIT, MICHIGAN 48231-1027

IN REPLY REFER TO

May 2, 1989

Great Lakes Hydraulics and Hydrology Branch

RECEIVED
MAY 05 1989
NATURAL RESOURCES
LAND & WATER MGMT

Mr. Bruce E. Menerey, P.E.
Technical Programs
Land and Water Management Division
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

Dear Mr. Menerey:

Submitted for your review and approval is a copy of the hydraulic calculations for the City of Hersey, Michigan, Flood Insurance Study. Enclosed are the HEC-2 runs for the 100-year (natural and encroached) frequency flood, a map showing the location of cross sections along with the corresponding section numbers in the computer run, copies of the bridge and dam sketches in the field notes and a brief write-up dealing with items that will assist the review process.

According to FEMA guidelines, the information supplied to aid in the review process is not intended for flood plain management purposes or distribution to other individuals at this time. Before using or distributing this information, approval should be obtained from FEMA.

If you have any questions regarding the enclosed data, please contact Mr. Gary O'Keefe at (313) 226-6772.

Sincerely,

for P. M. O'Dell, P.E.
Chief, Engineering Division

Enclosures

CITY OF HERSEY, MICHIGAN
FLOOD INSURANCE STUDY
HYDRAULIC COMPUTATION BACKGROUND INFORMATION

The Muskegon River was studied from the downstream corporate limit at the City of Hersey to the upstream corporate limit. The Hersey River was studied from its mouth at the Muskegon River to the corporate limit.

Analyses of the hydraulic characteristics of flooding along both streams were carried out to provide estimates of the elevations of the 100-year flood. Water surface elevations were computed using the COE HEC-2 step-backwater computer program.

Cross section data for the backwater analysis were obtained by a field survey completed in August 1988. All bridges, dams and culverts were surveyed to obtain elevation data and structural geometry.

Channel and overbank roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and were based on observations of the streams and flood plain areas.

The starting water surface elevation for the Muskegon River was determined by beginning the computations at the downstream corporate limit using the slope area method. The slope used was scaled from the profile in House Document No. 308. The Muskegon River profile generated by the HEC-2 model was used to determine the starting elevation for the Hersey River.

There are three spillways at Hersey Dam which empty into the Hersey River and one which follows a ravine south of the Hersey River to an open field. Rating curves were developed for each of the spillways to determine the flow distribution between the Hersey River and the ravine.

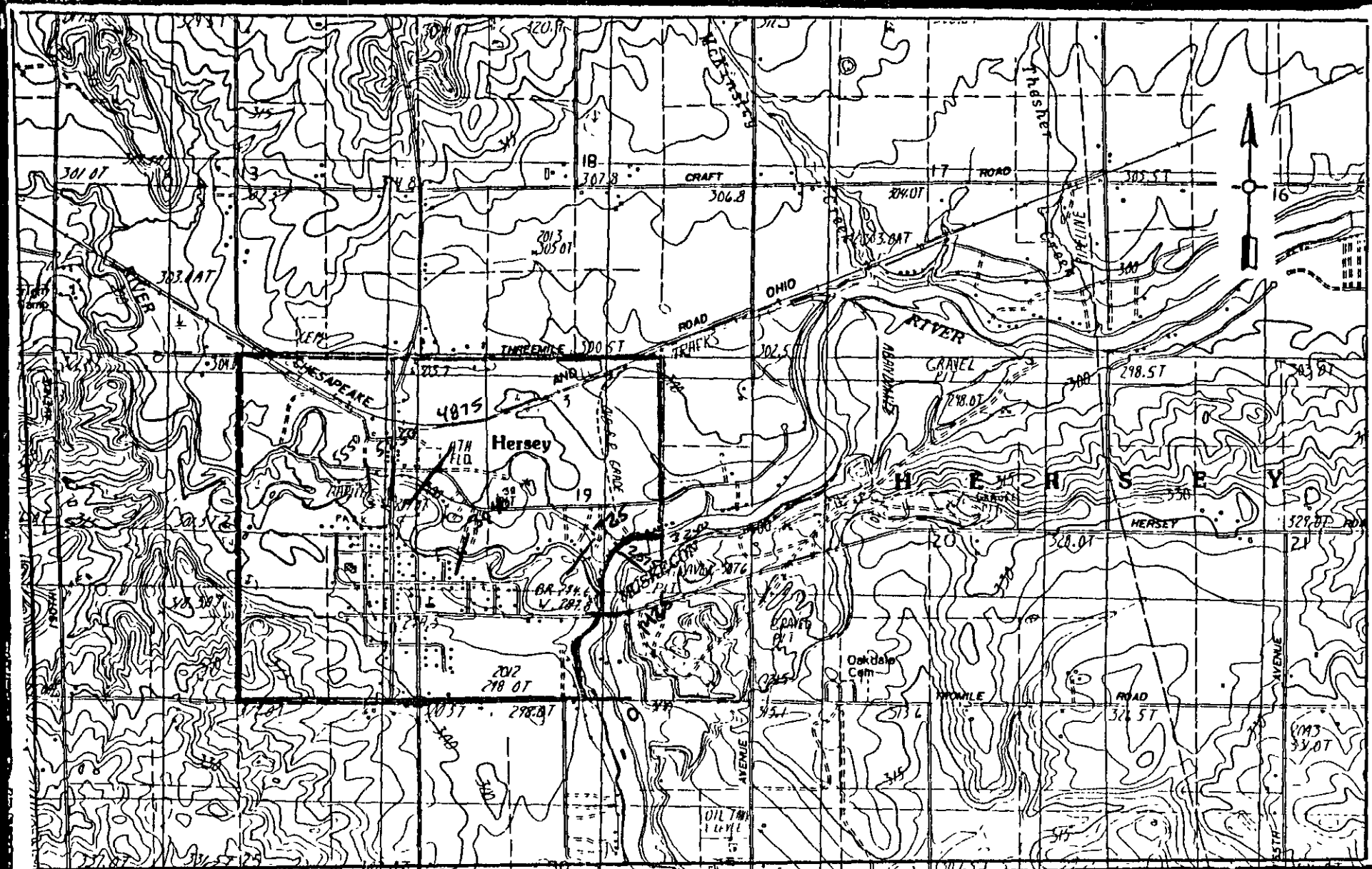


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

VILLAGE OF HERSEY, MI
(OSCEOLA CO.)

APPROXIMATE SCALE

5 0 1
MILES

VICINITY MAP

COMPUTATION SHEET

PROJECT: VILLAGE OF HERSEY, MI. FIS — SHEET NO. 1 OF ___ SHEET

ITEM: RATING CURVE FOR SPILLWAYS AT STA. 55+50 (HERSEY RIVER) FIELD SECTION #9 — DATE ___ 19__

FILE ___

COMPUTED BY ___ CHECKED BY ___ REF. DRWG. NO. ___

$Q_1 = C L_1 H_1^{3/2}$, WHERE $C = 3.03$, $L_1 = 88'$, CREST ELEV = 975.3'

1. SPILLWAY AT STA. 55+50

ELEV. (FT)	H_1 (FT)	L_1 (FT)	Q_1 (CFS)
975.3	0	88	0
975.5	0.2	↓	24
975.7	0.4		67
976.0	0.7		156
976.5	1.2		351
977.0	1.7		591
977.1	1.8	88	644
977.5	2.2	114	1,127
977.6	2.3	115	1,215
978.0	2.7	125	1,680

2. OVERFLOW SPILLWAY

$Q_2 = C L_2 H_2^{3/2}$, WHERE $C = 3.03$, $L_2 = 52.5'$, CREST ELEV = 975.7'

$T_w = 973$ → No sub

ELEV.	H_2	L_2	Q_2
975.7	0	52.5	0
976.0	0.3	↓	26
976.5	0.8		114
977.0	1.3	52.5	236
977.5	1.8	95	695
977.6	1.9	125	992
978.0	2.3	125	1,321

NCE Form 6
22 Aug 77

COMPUTATION SHEET

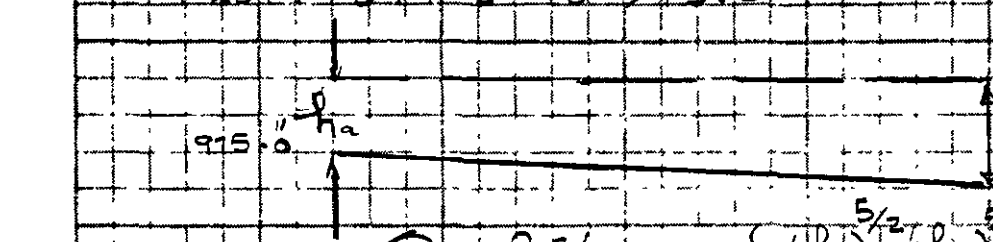
PROJECT VILLAGE OF HERSEY, MI. FIS — SHEET NO. 2 OF ___ SHEET

ITEM RATING CURVE FOR HERSEY DAM (100± WEST OF MAIN STREET) FIELD SECTION #12 — DATE ___ 19__

FILE ___

COMPUTED BY ___ CHECKED BY ___ REF. DRWG. NO. ___

4 SPILLWAY GATES (OUT OF COMMISSION AT PRESENT) HAVE COMBINED LENGTH OF 25.3 FT AND CREST ELEVATION VARIES FROM 974.5 TO 975.0'



$$Q = \frac{2CL}{5(h_b - h_a)}\left\{(h_b)^{5/2} - (h_a)^{5/2}\right\}$$

WHERE $C = 3.03$, $L = 25.3$

B. HERSEY DAM

TW = 973 ⇒ No sub

ELEV.	L	h_b	h_a	$h_b - h_a$	$h_b^{5/2}$	$h_a^{5/2}$	Q_3
974.5	25.3	0	0	0	0	0	0
974.8		0.3	0	0.3	0.05	0	5
975.0		0.5	0	0.5	0.18	0	11
975.3		0.8	0.3	0.5	0.57	0.05	32
975.5		1.0	0.5	0.5	1.0	0.18	50
975.7		1.2	0.7	0.5	1.58	0.41	72
976.0		1.5	1.0	0.5	2.76	1.0	108
976.5		2.0	1.5	0.5	5.66	2.76	178
977.0		2.5	2.0	0.5	9.88	5.66	259
977.4		2.9	2.4	0.5	14.32	8.92	331
977.5	25.3	3.0	2.5	0.5	15.59	9.88	350
977.6	TO	3.1	2.6	0.5	16.92	10.90	102
978.0	TO	3.5	3.0	0.5	22.92	15.59	1,244

NCE Form 6
22 Aug 77

COMPUTATION SHEET

PROJECT VILLAGE OF HERSEY, MI. FIS

SHEET NO. 3 OF ___ SHEETS

ITEM RATING CURVE FOR FLOW THROUGH LOW RIGHT BANK OF HERSEY POND (APPR. STA 66+50)

DATE _____, 19 ___

FILE _____

COMPUTED BY _____ CHECKED BY _____

REF. DRWG. NO. _____

REFER: STAGE-DISCHARGE CURVE ON FIG. # 1

ELEVATION (FT.)	DISCHARGE (Q4) (CFS)
975.6	0
975.7	13
976.0	170
976.5	205
977.0	225
977.5	240
977.6	245
978.0	255

NCE Form 6
22 Aug 77

COMPUTATION SHEET

PROJECT VILLAGE OF HERSEY, MI FIS

ITEM COMBINED RATING CURVE FOR SPILLWAYS ON HERSEY RIVER

SHEET NO. ___ OF ___ SHEE

DATE _____ 19__

FILE _____

COMPUTED BY _____ CHECKED BY _____ REF. DRWG. NO. _____

ELEVATION	Q_1	Q_2	Q_3	Q_4	TOTAL
974.5			0		
974.8			5		5
975.0			11		11
975.3	0		32		32
975.5	24		50	0	74
975.7	67	0	72	13	152
976.0	156	26	108	170	460
976.5	351	114	178	205	848
977.0	591	236	259	225	1,311
977.5	1,127	695	350	240	2,412
	1,142	759	494	241	2,636
977.6	1,215	992	1,021	245	3,473
978.0	1,680	1,321	1,244	255	4,500

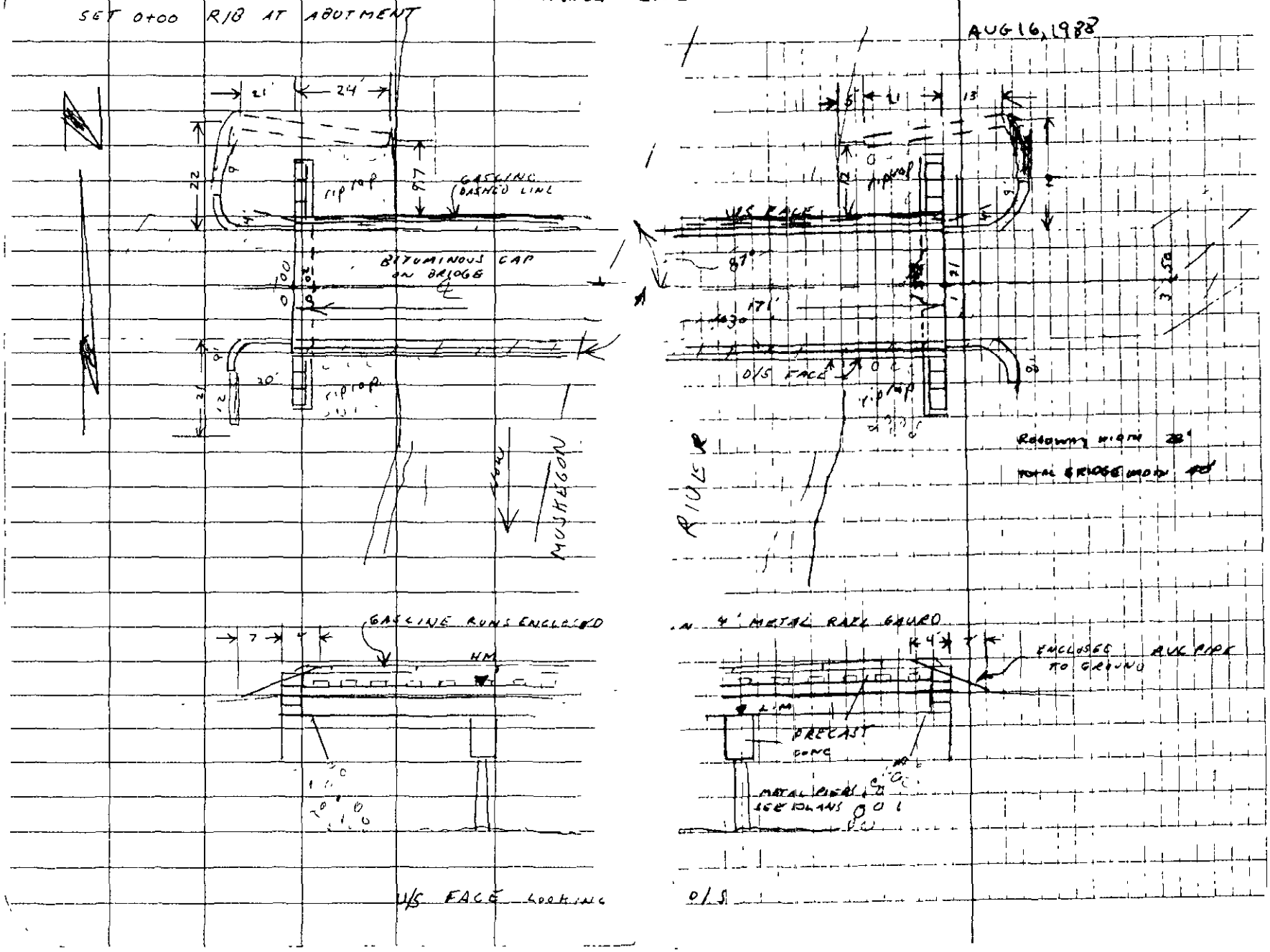
NCE Form 6
22 Aug 77

(35) DRIVE X-SEC ~ 3 (FOURTH ST) BRIDGE OVER MUSKEGON RIVER (35)

*SEE CONSTRUCTION PLAN AS PER MID-MICHIGAN ENG FOR DETAIL

SET 0+00 R/B AT ABUTMENT

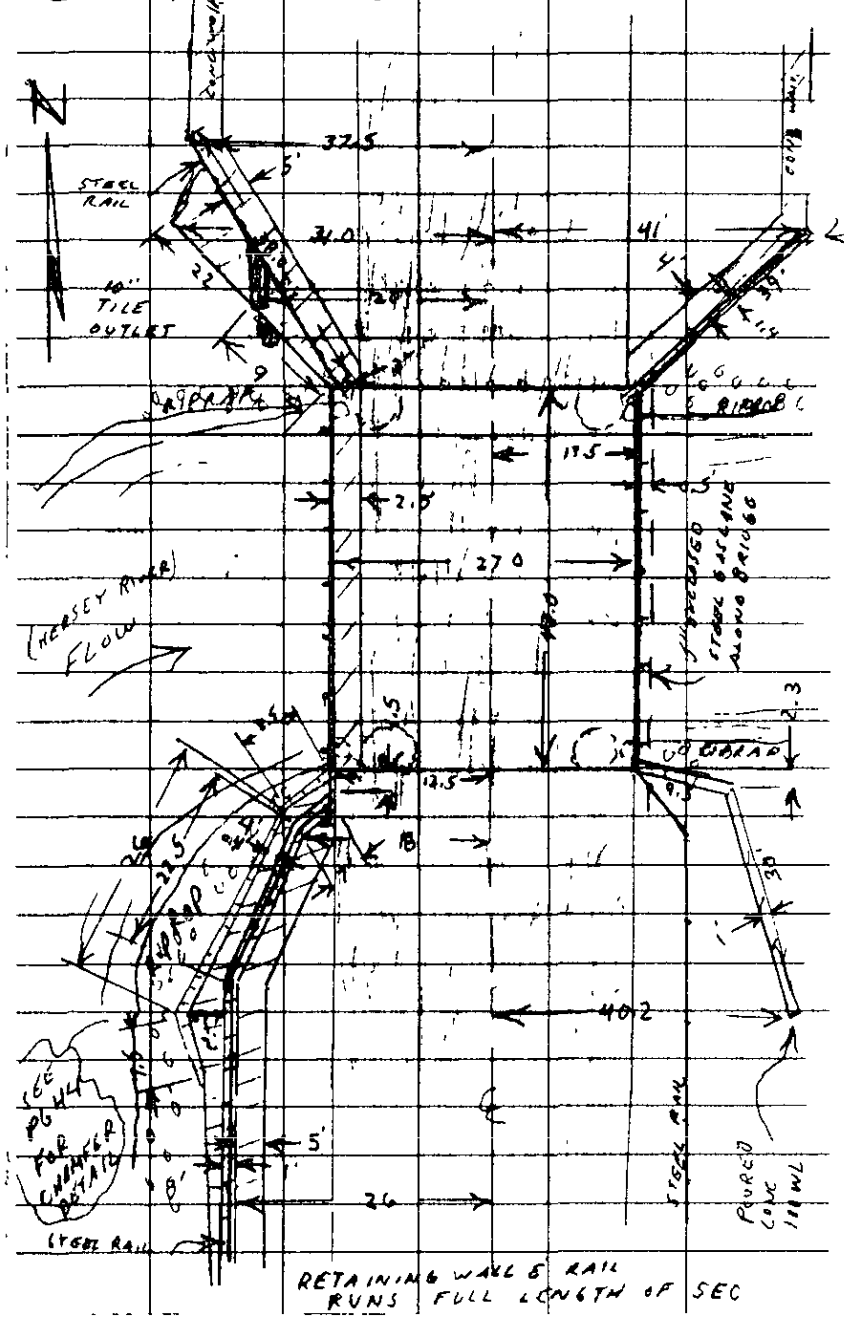
AUG 16, 1988



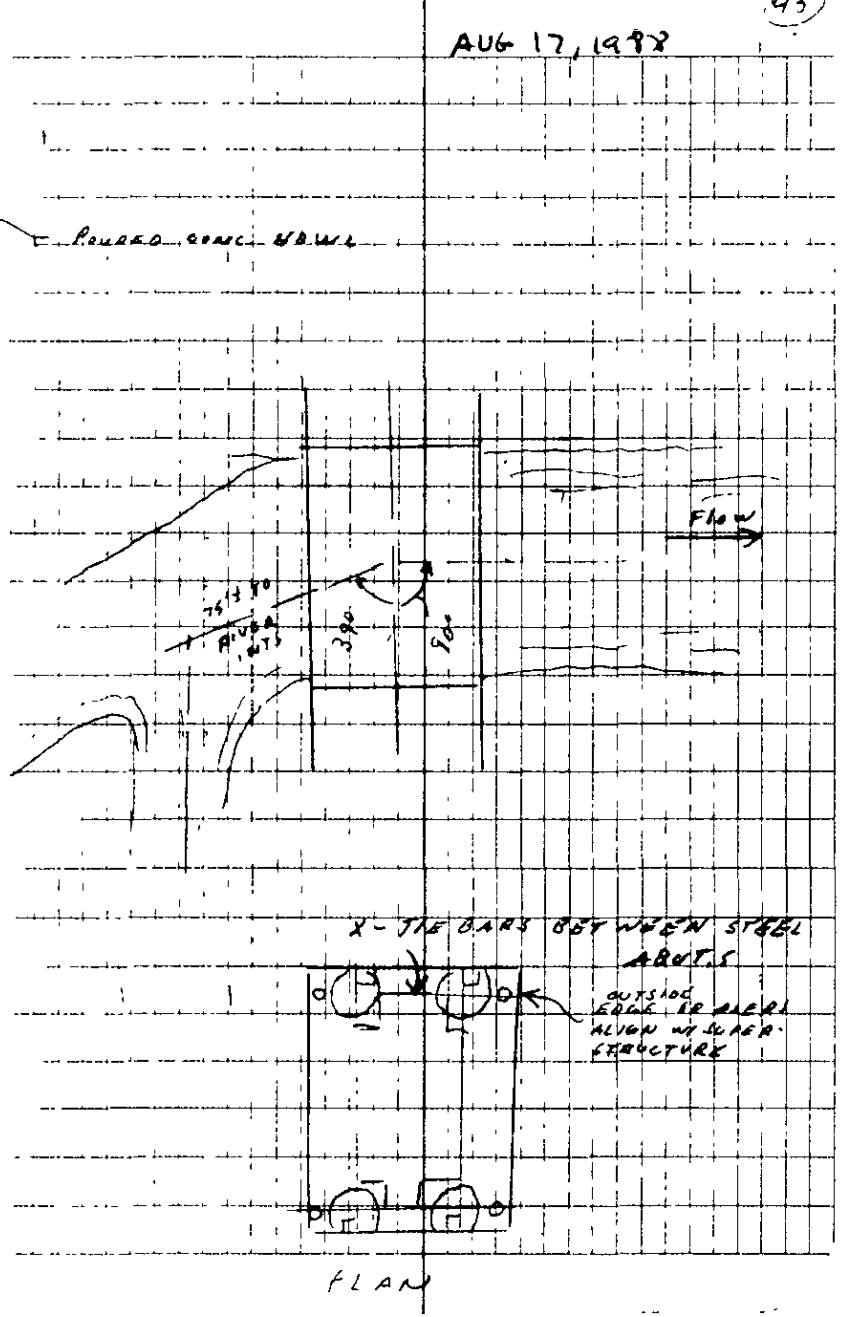
(43) SET QUO AT L/O ABUTMENT OF BRIDGE A - SEC - 6 MERSEY RIVER MAIN ST. BRIDGE

(43)

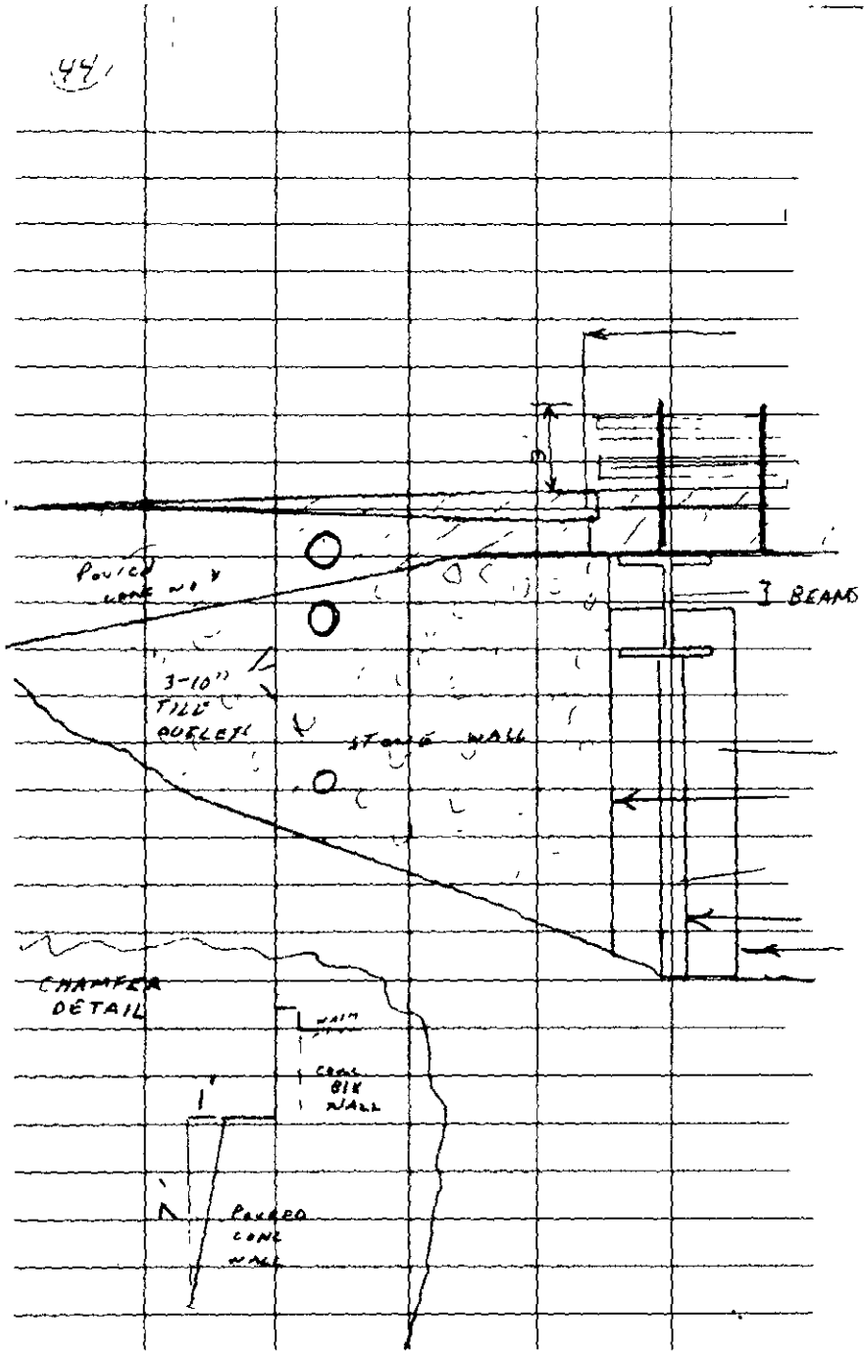
AUG 17, 1988

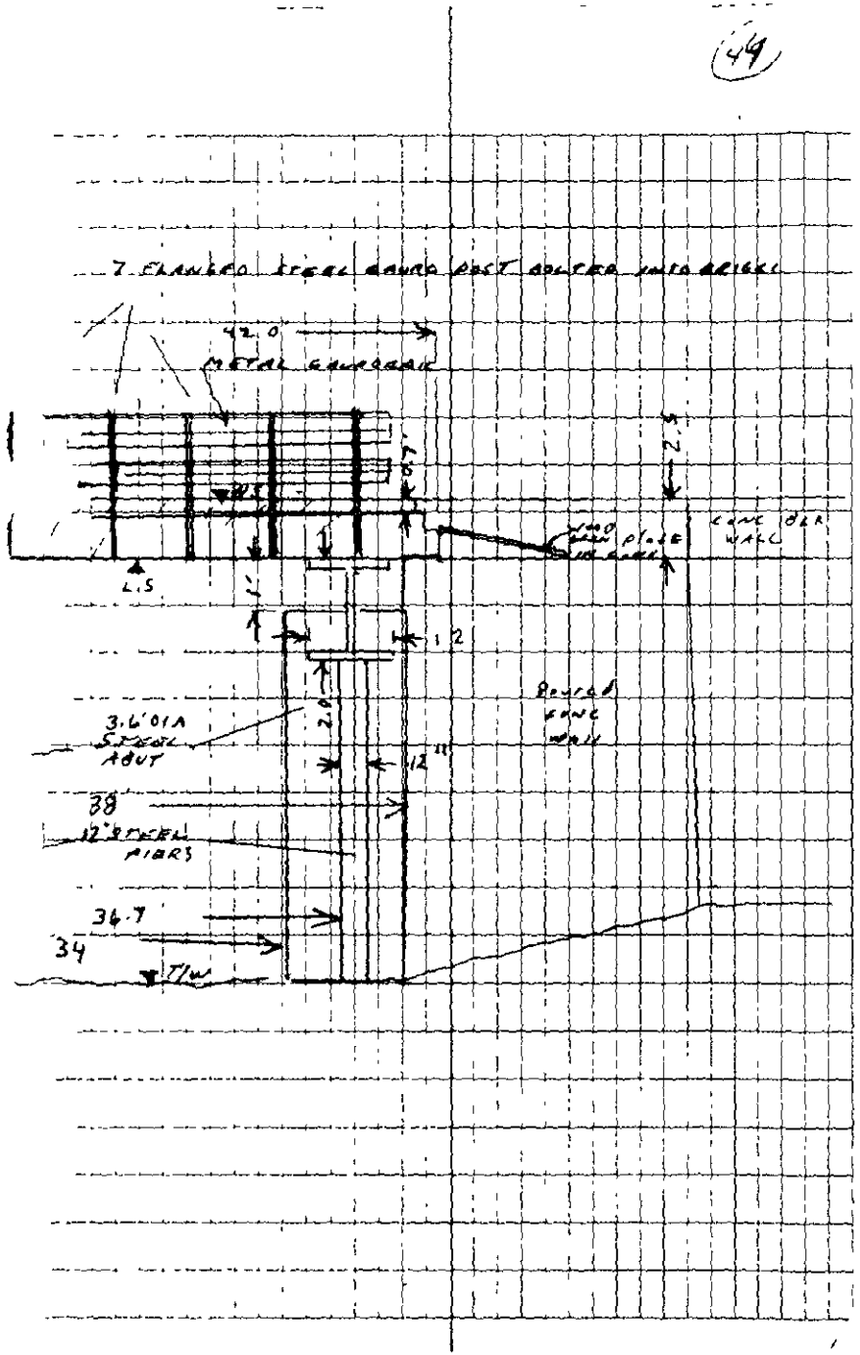


RETAINING WALL & RAIL RUNS FULL LENGTH OF SEC



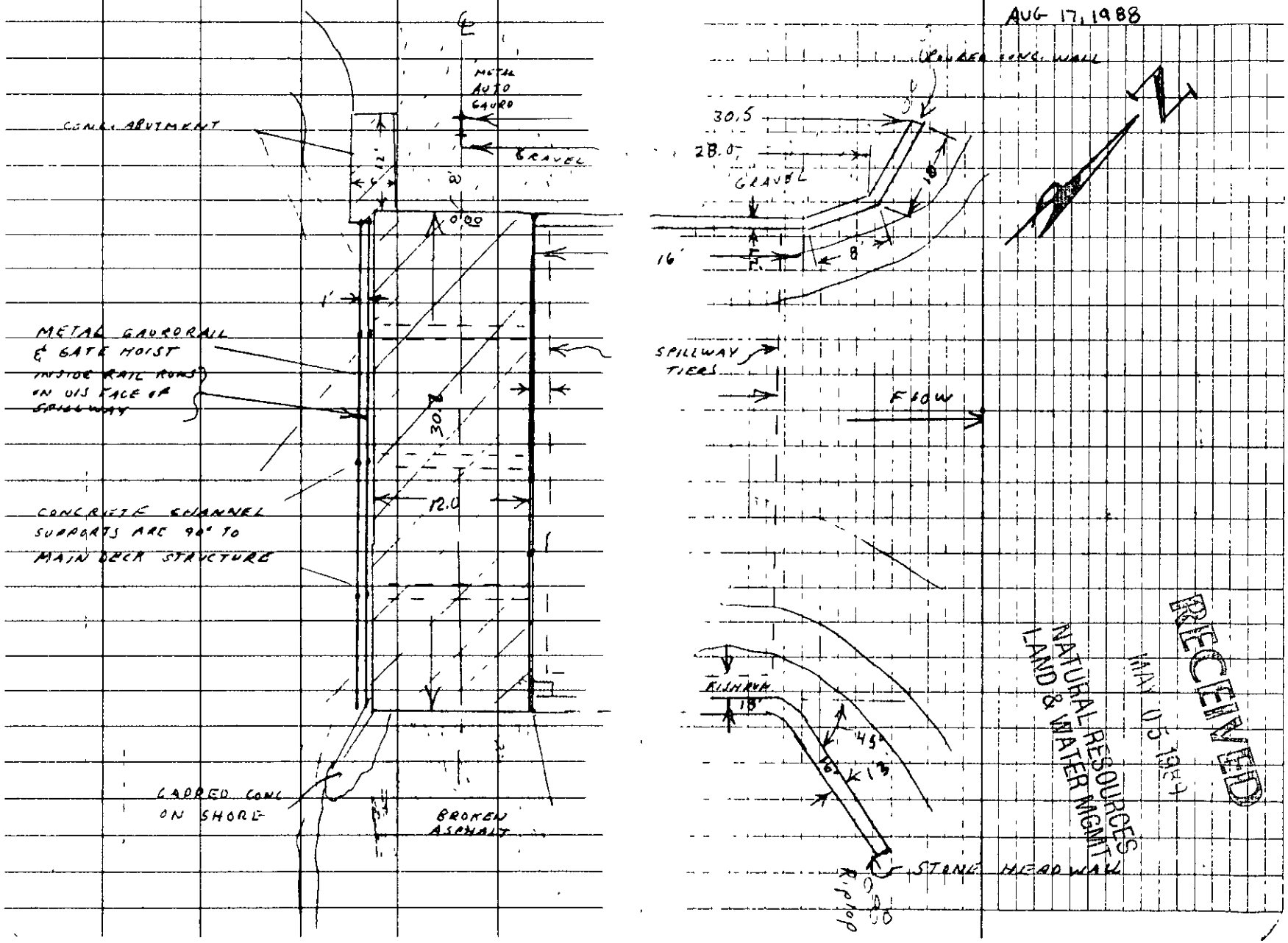
PLAN


BEAMS
3-10" TILE OUTLETS
STONE WALL
CHAMFER DETAIL
CONC BLK WALL
POURED CONC WALL


7 FLANGED STEEL DOWEL POST ADJTED INTO BRICK
42.0
METAL GUARDRAIL
L.S.
3.6' DIA STEEL ABUT
12"
38
12" STEEL PIERS
34.7
34
T/W
POURED CONC WALL

48) X-SEC 12 SPILLWAY SET 0+00 AT ℄ STRUCTURE ℄ L18 (48)
HERSEY RIVER 100'± WEST OF MAIN ST

AUG 17, 1988



RECEIVED
MAY 05 1994
NATURAL RESOURCES
LAND & WATER MGMT

RECEIVED
MAY 05 1989
NATURAL RESOURCES
LAND & WATER MGMT

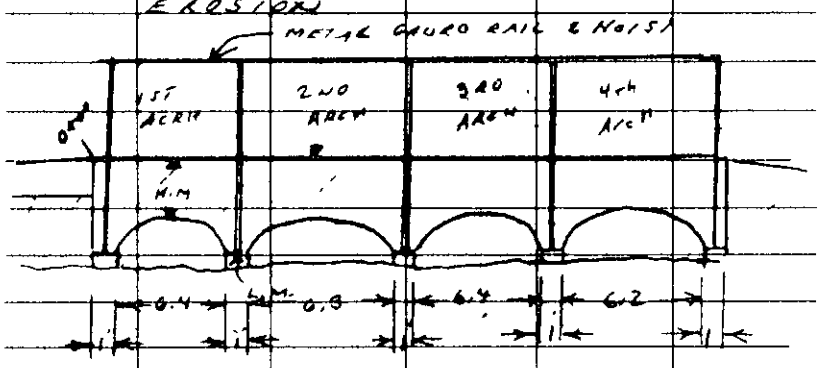
49

CONCRETE OF SPILLWALL FAIR

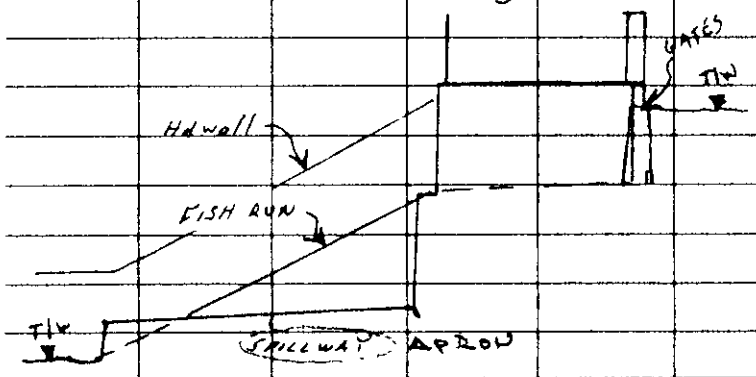
POURED CONC HEADWALL ON L/B
UPRIGHT FRACTURE AT END OF

STONE HEADWALL APPEARS IN FAIR

BANKS ON D/S FACE OF SPILL
EROSION



U/S FACE LOOKING D/S



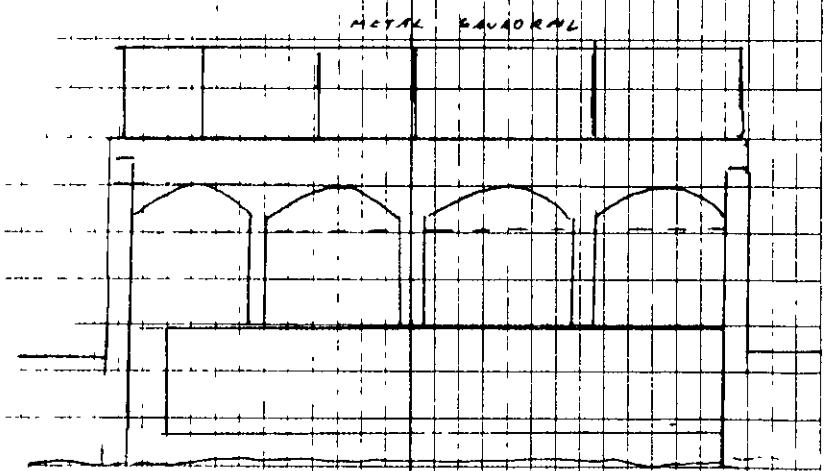
X-SEC LOOKING ℄ RIB

SHARE WEATHERED IN SURFACE

R. D/S FACE IS IN POOR CONDITION
SPILLWAY - APPEARS TO HAVE SETTLED

CONDITION

WAY SHOW EVIDENCE OF

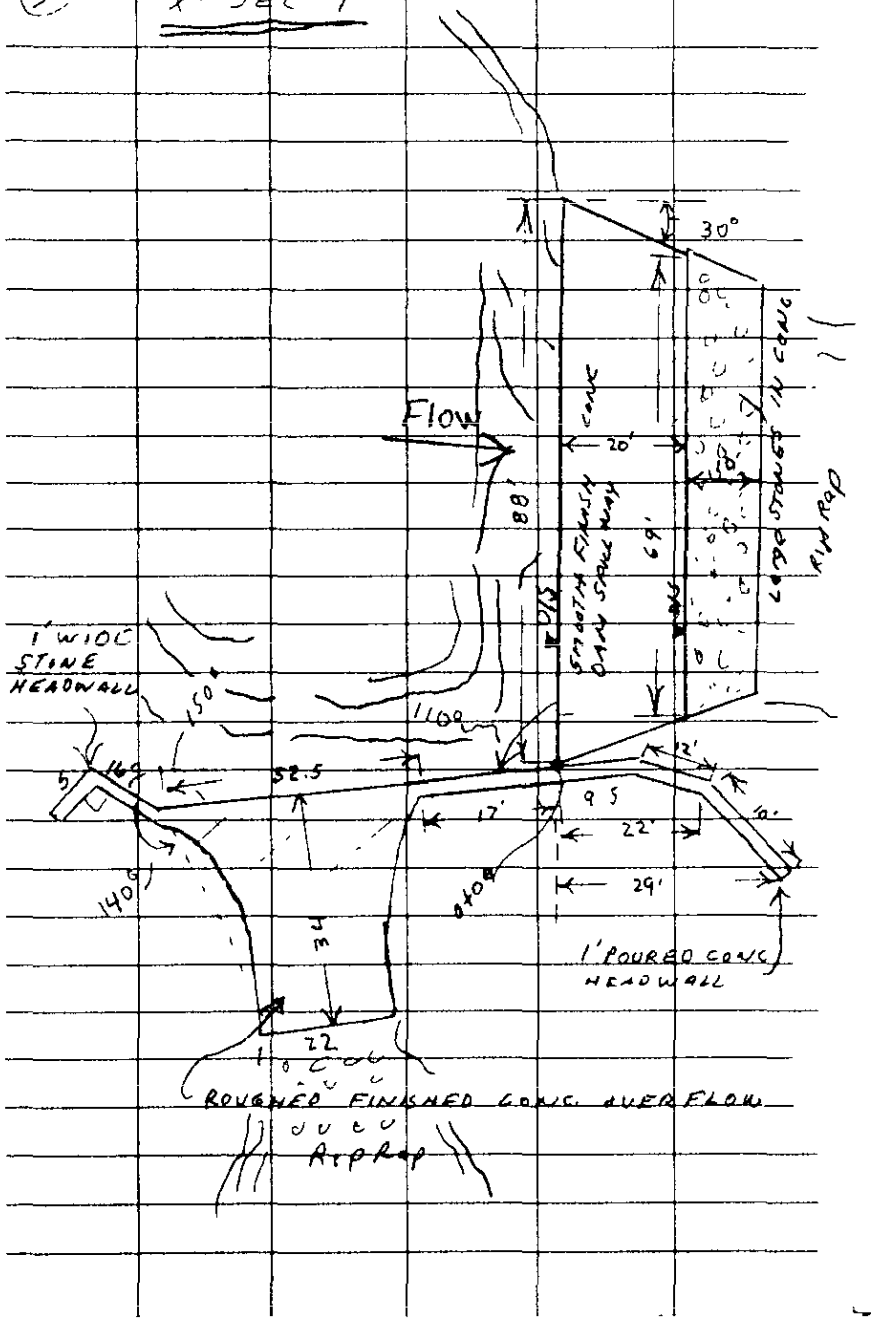


D/S FACE LOOKING UPS

(54)

SET 0+00 ON R/W AT COR OF DAM

X-SEC 9



(54)

AUG 17, 1988

DAM SURFACE CONC - good condition

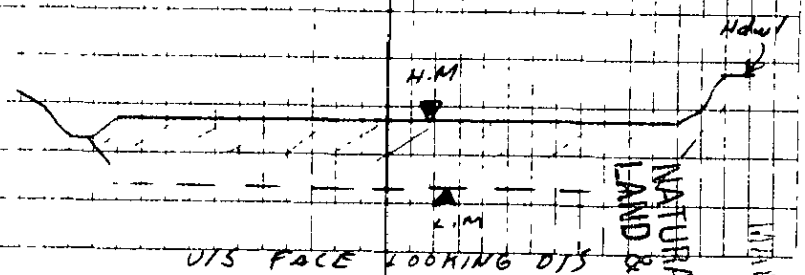
LOWER DAM SURFACE - large stones w. conc. - good condition

Head walls appear in poor condition - stone & poured condition - cracked & settled - U/S of DAM

U/S of DAM HEADWALLS appear in fair condition

CONC. OVERFLOW (Rough finished) appears in fair condition

ERODED BANK conditions D/S of DAM - appear stable U/S of DAM



U/S FACE LOOKING D/S

RECEIVED
MAY 05 1994
NATURAL RESOURCES
LAND & WATER MGMT

COMPUTATION SHEET

PROJECT Village of Hersey, Mi. FIS

ITEM Combined Rating Curve for Spillways on Hersey River

SHEET NO. 1 OF 1 SHEETS

DATE _____ 19 ____

FILE _____

COMPUTED BY _____ CHECKED BY _____

REF. DRWG. NO. _____

Elevation	Q_{1-2}	Q_3	Q_4	Total
974.5		0		0
974.8		3		3
975.0		11		11
975.3	5	32	0	37
975.5	29	50	50	129
975.7	67	72	100	239
976.0	172	108	170	450
976.5	443	153	205	801
977.0	798	182	225	1,205
977.1	881	202	230	1,313
977.5	1,265	207	240	1,712
977.6	1,377	235	245	1,857
977.9	1,742	417	252	2,411
978.0	1,875	497	255	2,627

NCE Form 6
22 Aug 77

COMPUTATION SHEET

PROJECT: VILLAGE OF HERSEY, MI, FIS

ITEM: RATING CURVE FOR SPILLWAYS AT STA. 58+85 (HERSEY RIVER)

COMPUTED BY _____ CHECKED BY _____

SHEET NO. 1 OF 5 SHEETS

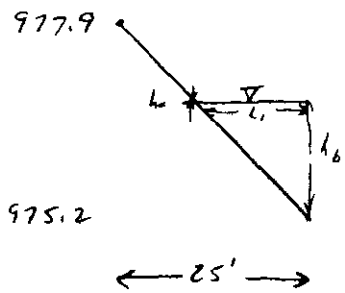
DATE _____ 19 ____

FILE _____

REF. DRWG. NO. _____

SPILLWAYS 1 & 2 WERE BROKEN INTO 7 WEIRS
(SPILLWAY @ STA 58+85, OVERFLOW SPILLWAY)

①

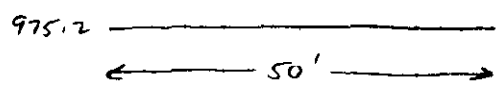


$$Q_1 = \frac{2 C L_1}{5(h_b - h_a)} \left(h_b^{5/2} - h_a^{5/2} \right)$$

$C = 3.03$

ELEV	L_1	h_b	h_a	$h_b - h_a$	$h_b^{5/2}$	$h_a^{5/2}$	Q_1
975.2	0	0	0	0	0	0	0
975.3	.9	0.1	0	0.1	.0032	0	0
975.5	2.6	0.3	0	0.3	.05	0	1
975.7	4.6	0.5	0	0.5	.18	0	2
976.0	7.4	0.8	0	0.8	.57	0	6
976.5	12.0	1.3	0	1.3	1.93	0	22
977.0	16.7	1.8	0	1.8	4.35	0	49
977.1	17.6	1.9	0	1.9	4.98	0	56
977.5	21.3	2.3	0	2.3	8.03	0	90
977.6	22.2	2.4	0	2.4	8.92	0	100
978.0	25.0	2.8	0.1	2.7	13.12	.0032	147

②



$$Q_2 = C L_2 h_2^{3/2}$$

$$= (3.03)(50)\, h_2^{3/2}$$

NCE Form 6
22 Aug 77

COMPUTATION SHEET

PROJECT Village Of Hersey, Mi, FIS

ITEM Rating Curve For Spillways At Sta. 58+85 (Hersey River)

COMPUTED BY _____ CHECKED BY _____

SHEET NO. 2 OF 5 SHEETS

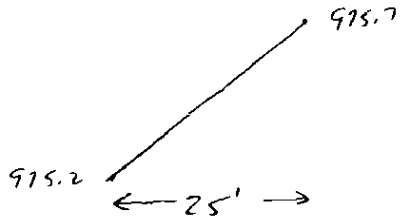
DATE _____, 19 ____

FILE _____

REF. DRWG. NO. _____

ELEV	h_2	Q_2
975.2	0	0
975.3	0.1	5
975.5	0.3	25
975.7	0.5	54
976.0	0.8	108
976.5	1.3	225
977.0	1.8	366
977.1	1.9	397
977.5	2.3	528
977.6	2.4	563
978.0	2.8	710

(3)



$$Q_3 = \frac{2CL_3}{5(h_b - h_a)}\left(h_b^{5/2} - h_a^{5/2}\right)$$

ELEV	L_3	h_b	h_a	$h_b - h_a$	$h_b^{5/2}$	$h_a^{5/2}$	Q_3
975.2	0	0	0	0	0	0	0
975.3	5	0.1	0	0.1	.0032	0	0
975.5	15	0.3	0	0.3	.05	0	3
975.7	25	0.5	0	0.5	.18	0	11
976.0	25	0.8	0.3	0.5	.57	.05	32
976.5	25	1.3	0.8	0.5	1.93	.57	82
977.0	25	1.8	1.3	0.5	4.35	1.93	147
977.1	25	1.9	1.4	0.5	4.98	2.32	161
977.5	25	2.3	1.8	0.5	8.02	4.35	222
977.6	25	2.4	1.9	0.5	8.92	4.98	239
978.0	25	2.8	2.3	0.5	13.12	8.02	309

COMPUTATION SHEET

PROJECT Village Of Hersey, Mi, FIS

ITEM Rating Curve For Spillways At Sta 58+85 (Hersey River)

COMPUTED BY _____ CHECKED BY _____

SHEET NO. 3 OF 5 SHEETS

DATE _____ 19 ____

FILE _____

REF. DRWG. NO. _____

(4)

977.0

← 17' →

$$Q_4 = C L_4 h_4^{3/2}$$

$$= (3.03)(17) h_4^{3/2}$$

Elev	h_4	Q_4
977.0	0	0
977.1	.1	2
977.5	.5	18
977.6	.6	24
978.0	1.0	52

(5)

975.7

← 52.5' →

$$Q_5 = C L_5 h_5^{3/2}$$

$$= (3.03)(52.5) h_5^{3/2}$$

Elev	h_5	Q_5
975.7	0	0
976.0	.3	26
976.5	.8	114
977.0	1.3	236
977.1	1.4	264
977.5	1.8	384
977.6	1.9	417
978.0	2.3	555

COMPUTATION SHEET

PROJECT: VILLAGE OF HERSEY, MI, FIS

ITEM: RATING CURVE FOR SPILLWAYS AT STA 58+05 (HERSEY RIVER)

COMPUTED BY _____ CHECKED BY _____

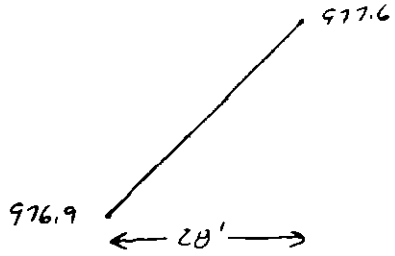
SHEET NO. 4 OF 5 SHEETS

DATE _____ 19 ____

FILE _____

REF. DRWG. NO. _____

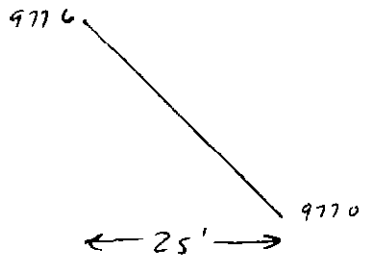
(6)



$$Q_6 = \frac{2 c L_6}{5(h_b - h_a)} \left(h_b^{5/2} - h_a^{5/2} \right)$$

ELEV	L_6	h_b	h_a	$h_b - h_a$	$h_b^{5/2}$	$h_a^{5/2}$	Q_6
976.9	0	0	0	0	0	0	0
977.0	4	.1	0	.1	.0032	0	0
977.1	8	.2	0	.2	.018	0	1
977.5	24	.6	0	.6	.28	0	14
977.6	28	.7	0	.7	.41	0	20
978.0	28	1.1	.4	.7	1.27	.10	57

(7)



$$Q_7 = \frac{2 c L_7}{5(h_b - h_a)} \left(h_b^{5/2} - h_a^{5/2} \right)$$

ELEV	L_7	h_b	h_a	$h_b - h_a$	$h_b^{5/2}$	$h_a^{5/2}$	Q_7
977.0	0	0	0	0	0	0	0
977.1	4	.1	0	.1	.0032	0	0
977.5	21	.5	0	.5	.18	0	9
977.6	25	.6	0	.6	.28	0	14
978.0	25	1.0	.4	.6	10	.10	45

COMPUTATION SHEET

PROJECT: Village Of Hersey, Mi, FIS

ITEM: Rating Curve For Spillways At Sta 58+88 (Hersey River)

COMPUTED BY _____ CHECKED BY _____

SHEET NO. 5 OF 5 SHEETS

DATE _____ 19 ____

FILE _____

REF. DRWG. NO. _____

Total Flow At Spillways 1 & 2 (Q_{1-2})

Elev	Q_1	Q_2	Q_3	Q_4	Q_5	Q_6	Q_7	Q_{1-2}
975.2	0	0	0	–	–	–	–	0
975.3	0	5	0	–	–	–	–	5
975.5	1	25	3	–	–	–	–	29
975.7	2	54	11	–	0	–	–	67
976.0	6	108	32	–	26	–	–	172
976.5	22	225	82	–	114	–	–	443
977.0	49	366	147	0	236	0	0	798
977.1	56	397	161	2	264	1	0	881
977.5	90	528	222	18	384	14	9	1,265
977.6	100	563	239	24	417	20	14	1,377
978.0	147	710	309	52	555	57	45	1,875

NCE Form 6
22 Aug 77

COMPUTATION SHEET

PROJECT: Village of Hersey, Mi, FIS

ITEM: Rating Curve for Hersey Dam (100 ± West of Main Street)

COMPUTED BY _____ CHECKED BY _____

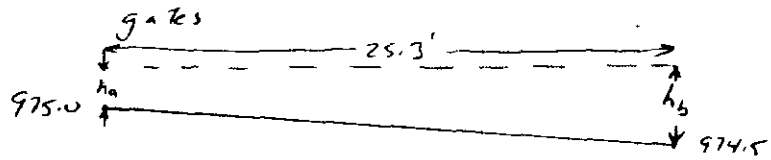
SHEET NO. 1 OF 1 SHEETS

DATE _____ 19 ____

FILE _____

REF. DRWG. NO. _____

① From Elevation 974.5 to 976.0, weir flow occurs over gates



$$Q = \frac{2cL}{5(h_b - h_a)}\left(h_b^{5/2} - h_a^{5/2}\right) \qquad c = 3.03$$

Elev	L	h_b	h_a	$h_b - h_a$	$h_b^{5/2}$	$h_a^{5/2}$	Q_3
974.5	0	0	0	0	0	0	0
974.8	15.2	.3	0	.3	.05	0	3
975.0	25.3	.5	0	.5	.18	0	11
975.3	25.3	.8	.3	.5	.57	.05	32
975.5	25.3	1.0	.5	.5	1.0	.18	50
975.7	25.3	1.2	.7	.5	1.58	.41	72
976.0	25.3	1.5	1.0	.5	2.76	1.0	108

② Above 976.0, flow is pressure flow thru gates, with weir flow over roadway above 977.5

$$Q = C_g A \sqrt{2gh_1} + C_w L H_2^{3/2}$$

$C_g = 0.62$ $\qquad C_w = 3.03$

$A = 28\ ft^2$ $\qquad L = 250'$

$h_1 = WSE - 975.3$ $\qquad h_2 = WSE - 977.5$

Elev	h_1	h_2	Q_g	Q_w	Q_3
976.5	1.2	—	153	0	153
977.0	1.7	—	182	0	182
977.1	2.1	—	202	0	202
977.5	2.2	0	207	0	207
977.6	2.3	0.1	211	24	235
978.0	2.7	0.5	229	268	497

COMPUTATION SHEET

PROJECT Village of Hersey, Mi., FIS

ITEM Rating Curve for Flow Through Low Right Bank of Hersey Pond (Appr Sta 66+50)

SHEET NO. 1 OF 1 SHEETS

DATE _____ 19 ____

FILE _____

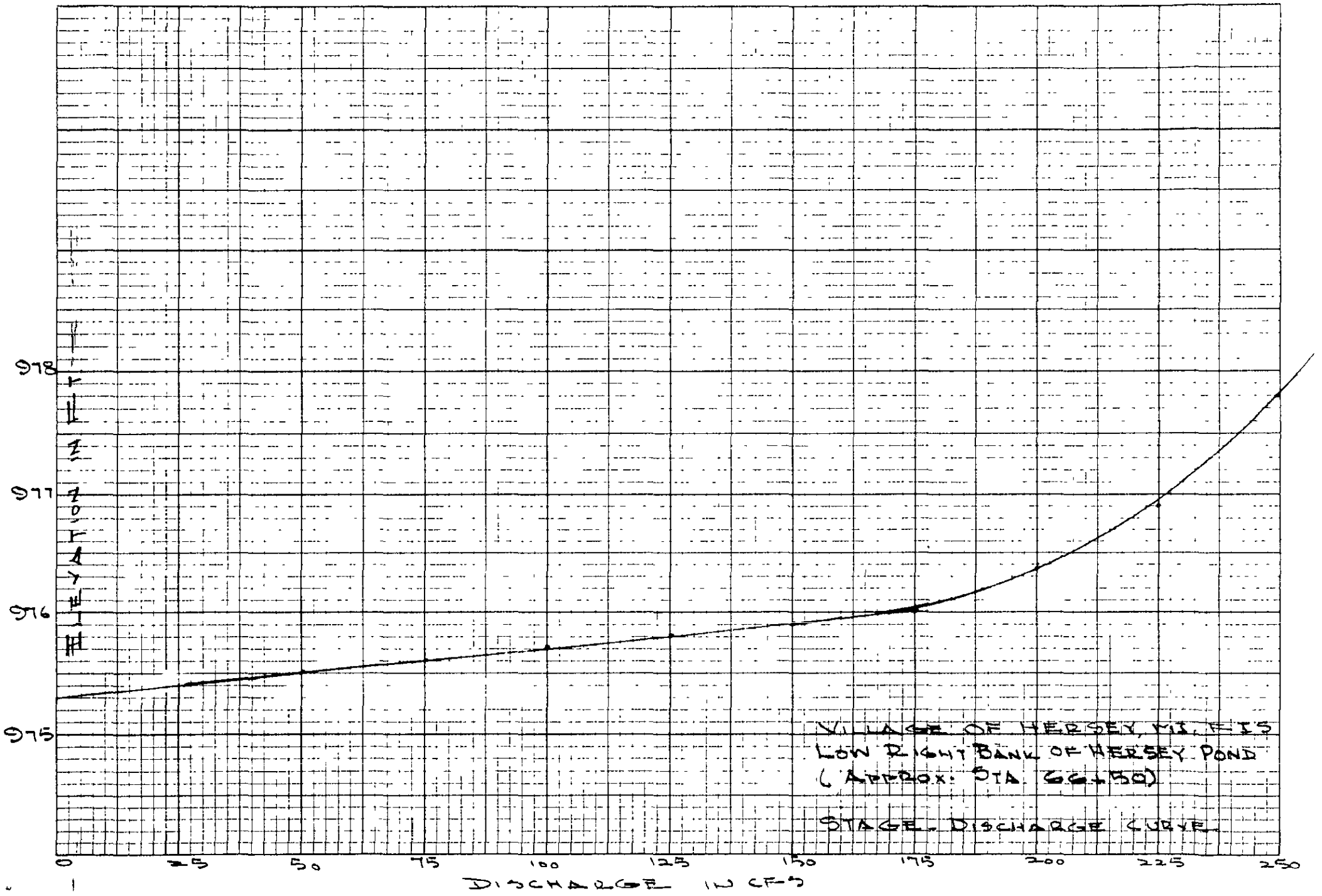
COMPUTED BY _____ CHECKED BY _____

REF. DRWG. NO. _____

Since the overflow channel would be controlled by backwater rather than producing weir flow, a stage-discharge curve was generated using HEC-2

Elevation (ft)	Q_4 (cfs)
975.3	0
975.5	50
975.7	100
976.0	170
976.5	205
977.0	225
977.1	230
977.5	240
977.6	245
978.0	255

NCE Form 6
22 Aug 77



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