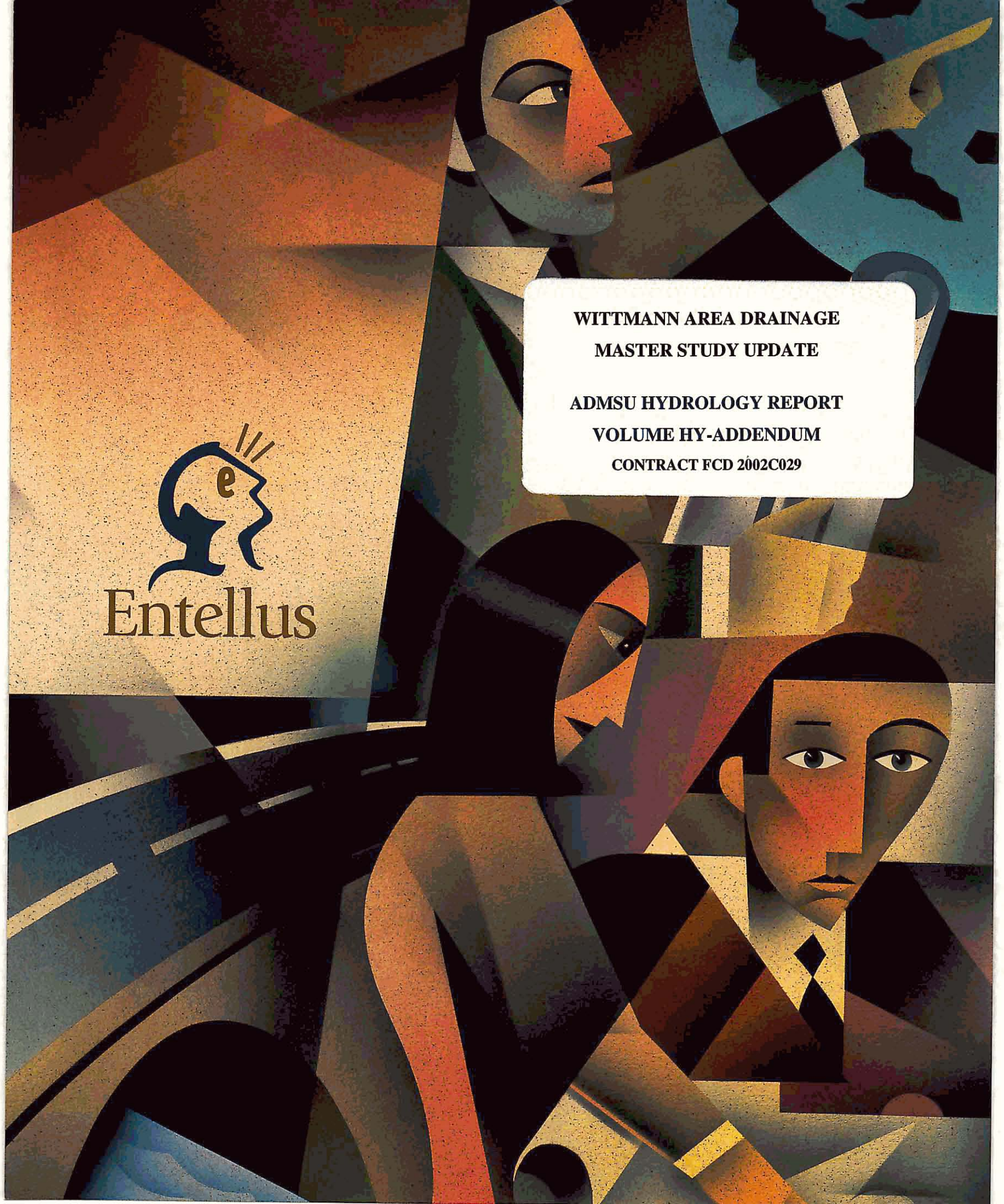

WITTMANN AREA DRAINAGE MASTER STUDY UPDATE

ADMSU HYDROLOGY REPORT
VOLUME HY-ADDENDUM

CONTRACT FCD 2002C029

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An **Addendum** for the Wittmann Area Drainage Master Study Update dated **June 2005** includes revisions to the HEC-1 models and other data contained in this volume of the Technical Data Notebook, Volume Hydrology. Without the Volume HY: Addendum, the Wittmann ADMSU Hydrology Report is incomplete.

WITTMANN AREA DRAINAGE MASTER STUDY UPDATE

CONTRACT 2002C029

VOLUME NAME	VOLUME ID
EXISTING CONDITIONS ANALYSIS (PART I)	EC
ADMSU HYDROLOGY	HY
GEOMORPHOLOGY REPORT	GR
SUBSIDENCE REPORT	SU
ALTERNATIVES IDENTIFICATION (PART II)	AI
RULES OF DEVELOPMENT (PART III)	RD
ALTERNATIVE ANALYSIS MCMICKEN DAM	MA
MCMICKEN DAM HYDROLOGY	MD
MCMICKEN DAM FINAL LANDSCAPE CHARACTER COMPATABILITY ANALYSIS REPORT	LA
FLOODPLAIN DELINEATION	HD
REPORT OF SURVEY	SR
SUN VALLEY PARKWAY CULVERT EVALUATION	SV
ADMINISTRATIVE REPORT	AR

Note: Volume ID will be used for Section, Plate, Figure, and Table Identifiers.

WITTMANN AREA DRAINAGE MASTER STUDY UPDATE

TECHNICAL DATA NOTEBOOK

ADMSU HYDROLOGY

VOLUME HY-ADDENDUM

Contract FCD 2002C029

July 2004

Revised October 2004

Addendum No. 1 June 2005

Prepared by:

Intelligent Engineering

Environmental *Solutions*

Registered Professional Engineer (Civil) CERTIFICATE NO. 29737 HERNAN A. ARISTIZABAL Date Signed 4/27/05 ARIZONA, U.S.A.

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WITTMANN AREA DRAINAGE MASTER STUDY UPDATE
FCD 2002C029

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Registered Professional Engineer (Civil) CERTIFICATE NO. 29737 HERNAN A. ARISTIZABAL Date Signed 4/2/20 ARIZONA, U.S.A.

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* **Replacement** = The entire contents of this section are superseded by this addendum
* **Modifications only** = Only the portion of the section contained in this addendum are superseded
* **Additions only** = These contents are additions (not replacements) to the section

WITTMANN AREA DRAINAGE MASTER STUDY UPDATE
TECHNICAL DATA NOTEBOOK
ADMSU HYDROLOGY – VOLUME HY

SECTION HY-1: INTRODUCTION

The purpose of this addendum to the Wittmann Area Drainage Master Study Update (ADMSU) Technical Data Notebook Hydrology Volume-HY is to alter some of the site specific modeling assumptions that were made in the October 2004 revision. Through the detailed hydraulic analysis it became apparent that the original hydrology modeling assumption was inadequate to describe the situation. This addendum will detail the modifications to the model and provided adjusted summary tables etc of all changes. This addendum supersedes any duplicate information provided in the Technical Data Notebook Hydrology Volume-HY October Revision. Modified items contained in this addendum are:

- ½ size plates of HY-1A to 1D (To show modified routes and diversion) (**M**)
- Appendix D.3.3 NSTEP Check Data: 100-yr 24-hr Existing Conditions (**R**)
- Appendix D.3.4 NSTEP Check Data: 100-yr 6-hr Existing Conditions (**R**)
- Appendix D.3.5 NSTEP Check Data: 100-yr 24-hr Future Conditions (**R**)
- Appendix D.3.6 NSTEP Check Data: 100-yr 6-hr Future Conditions (**R**)
- Appendix D.3.7 Routing Input Data Summary (**R**)
- Addition to Appendix D.5.3 Natural Diversion Data (**A**)
- Appendix D.6: Table D.6: Summary of Peak Discharges (**R**)
- Appendix D.6.1 100-yr, 24-hr Existing Conditions Model output (Modified portions of input and schematic included. Entire output included) (**M**)
- Appendix D.6.2 100-yr, 6-hr Existing Conditions Model output (Modified portions of input and schematic included. Entire output included) (**M**)
- Appendix D.6.3 100-yr, 24-hr Future Conditions Model output (Modified portions of input and schematic included. Entire output included) (**M**)
- Appendix D.6.4 100-yr, 6-hr Future Conditions Model output (Modified portions of input and schematic included. Entire output included) (**M**)

- Appendix G Digital Files- A new CD is included containing all hydrology reports and addendum files (**R**)
- Appendix H: Full size plates of HY-1A to 1D, HY-2 (**M**)

*** (R) = Replacement**

*** (M) = Modifications only**

*** (A) = Additions only**

SECTION HY-2: MODEL MODIFICATIONS

Three (3) main modifications were made to all the hydrology models. They are described in detail in the following sections.

2.1 CTW480

In the HEC-1 models dated October 2004, the assumption at concentration point CTW480 (just northwest of the CAP-US60 intersection) was that although a split occurs at this location the majority of the flow would go to CTW478. This was justified by the amount of vegetation and width of the wash leading to CTW478. Upon running a HEC-RAS optimization (see **Appendix D.5.3** for HEC-RAS optimization output) it became apparent that although the majority low flows pass to CTW478, in a large event the majority of the flow would actually end up at CWI584. A split was added following CTW480 in which 95% of the flow was diverted to CWI584 and 5% remained in the wash leading to CTW478. To accomplish this the following modifications were made to the models:

- Added diversion (D480) after CTW480
- Added diversion recovery
- Added route RD480 following diversion recovery
- Added concentration point CWI584 combining 2
- Route RWI584 was adjusted
- Storage route SCP050 was adjusted slightly
- Route R508* was adjusted
- Area hard coding was added to CTW478
- Area hard coding of CWI510 was adjusted

2.2 D618

In the HEC-1 models dated October 2004, the natural flow split FS11 or diversion D618 is located following CPI618 just south of the CAP Canal. Thus the flow being

diverted included flow from Basin PI618 and flow from CAP structures CAP110 (DCAP11) and CAP120 (DCAP12). This assumption was based on the fact that flow from the two CAP structures partially combines at the north portion of the basin, and small diversions occur all along the length of basin boundary PI618. This however, over estimated the flow being diverted to CPI615 and underestimated the flow routed beyond CPI618. Since the main split occurs very close to the CAP structure, for the hydrology addendum the modeling assumption was modified to assume that only flow coming through CAP structure CAP120 (DCAP12) is diverted. This included the following modifications to the models:

- Diversion D618 moved from after CPI618 to before RDCP12
- Route RD618 information was updated
- Area hard coding for CPI618 was adjusted
- Area hard coding for CPI615 was adjusted

2.3 RPI639

In the HEC-1 models dated October 2004, it was assumed that all flow from concentration point CPI639 flowed along the US60 to CPI636. The structure along the US60 and BNSF RR at concentration point CPI639 is sufficient to pass the flow. Thus the route RPI639 was modified from combining with CPI636 to combine with CWI506. This required the following modifications to the models:

- Cards PI639, D524, RD524, CPI639 and RPI639 were moved from below R624A to after RWI524
- Concentration point CPI636 was removed
- Route RPI639 was updated
- CWI506 was changed to combine 4 (RWI525, RWI524, RPI639 & WI506)
- Area hard coding for CWI506 was adjusted
- Area hard coding for CWI500 was adjusted

HALF SIZED PLATES

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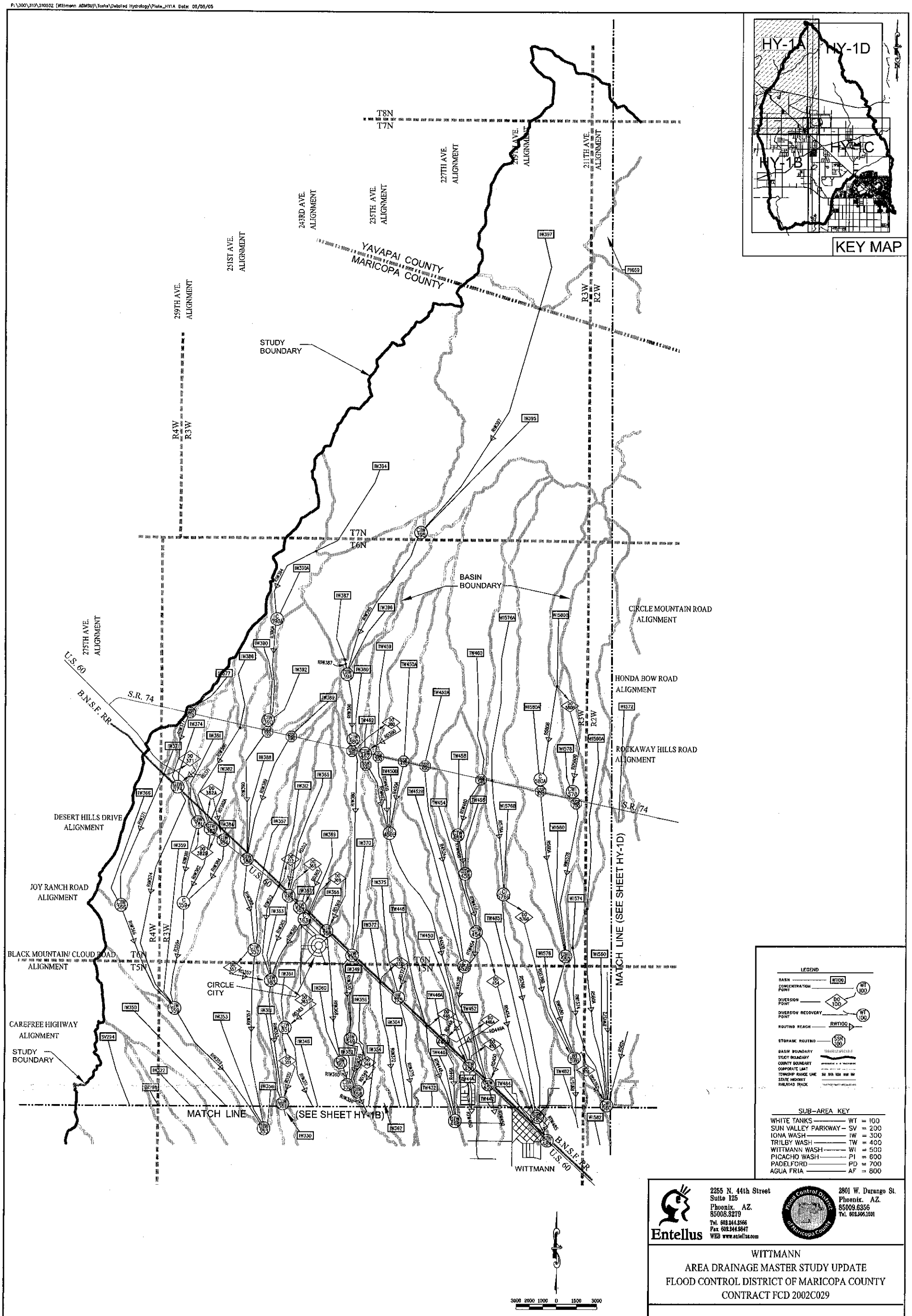

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PLATE HY-1A

HEC-1 SCHEMATIC

(1 of 4)

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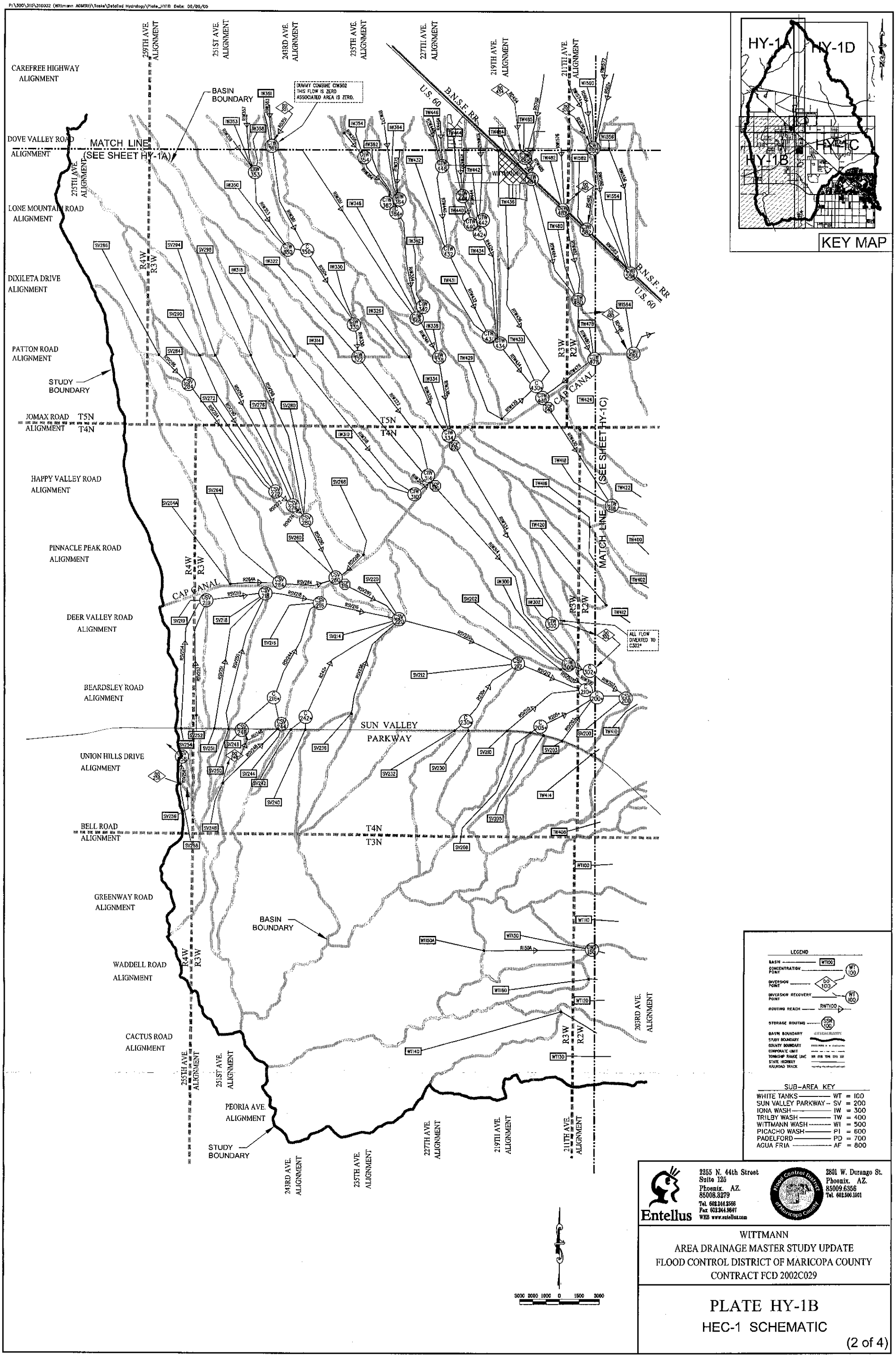

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PLATE HY-1B

HEC-1 SCHEMATIC

(2 of 4)

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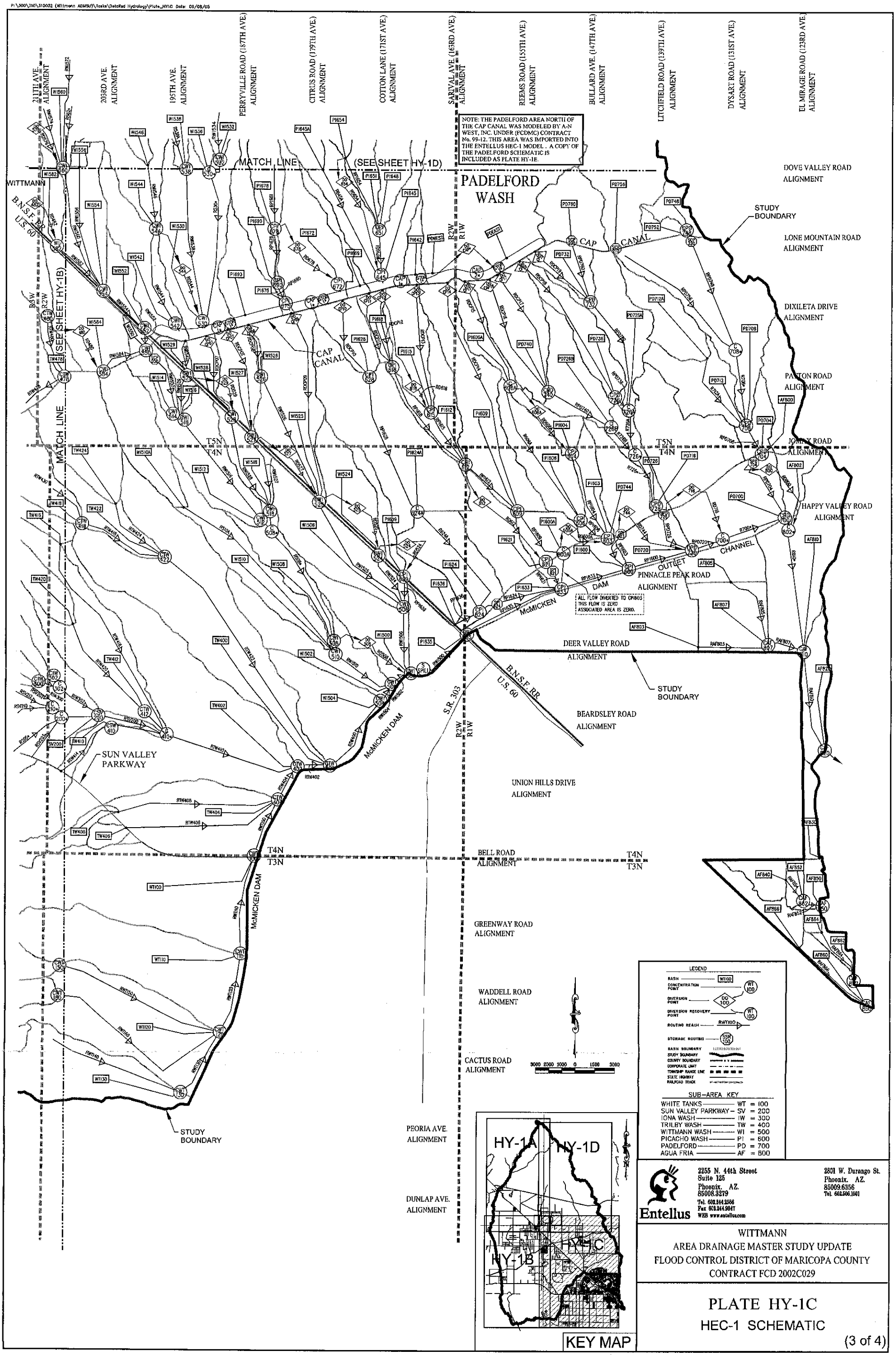

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PLATE HY-1C

HEC-1 SCHEMATIC

(3 of 4)

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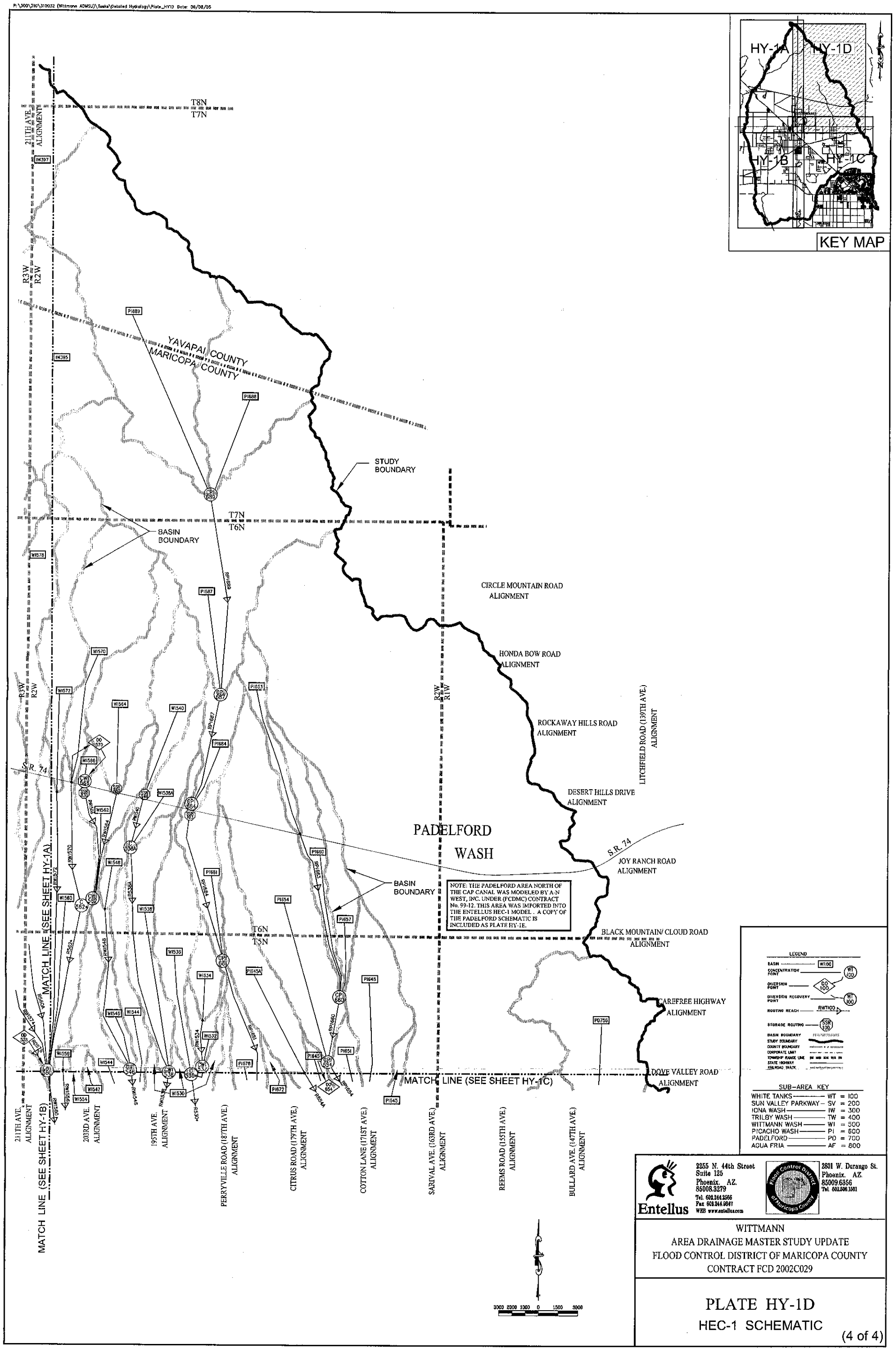

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PLATE HY-1D

HEC-1 SCHEMATIC

(4 of 4)

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D.3.7 Routing Input Data Summary

D.3.3 NSTEP Check Data: 100-yr 24-hr Existing Conditions

Appendix D.3

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CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RWT140	13.00	13.33	0.33	13053	10.99	6.41	1804	1811	WTTS20_1	0.019	0.035	4
RWT130	13.25	13.75	0.50	5750	3.19	4.16	2441	2450	Channel	0.001	0.035	5
RWT160	12.58	14.25	1.67	18961	3.15	2.35	376	384	WTTS10_1	0.012	0.035	12
R150A	12.92	13.17	0.25	9557	10.62	9.31	2601	2609	WTTS20_2	0.021	0.035	2
RWT150	13.08	13.50	0.42	16082	10.64	6.29	2875	2881	WTTS20_1	0.013	0.035	7
RWT120	13.50	14.08	0.58	6168	2.95	5.27	5726	5735	Channel	0.001	0.035	7
RWT110	14.08	14.75	0.67	7640	3.17	5.21	5507	5516	Channel	0.001	0.035	5
RWT100	14.75	15.08	0.33	4778	4.02	5.15	5251	5260	Channel	0.001	0.035	1
RTW406	12.08	16.67	4.59	16567	1.00	0.48	30	21	TSR408	0.007	0.04	6
RTW408 **	12.83	16.00	3.17	11703	1.03	1.35	213	222	TWTS50	0.005	0.04	10
RTW404	15.17	15.42	0.25	14969	16.63	3.63	5210	5210	TSR408	0.008	0.035	2
RIW371	12.08	14.58	2.50	20437	2.27	0.33	13	3	TSR371	0.008	0.04	15
RIW366	12.58	13.00	0.42	6797	4.50	4.56	771	780	TSR375	0.009	0.04	6
RIW377 **	12.42	13.25	0.83	4964	1.66	0.93	67	58	TSR371	0.010	0.04	6
RD371	12.08	12.33	0.25	1828	2.03	0.78	26	16	WITS130	0.003	0.035	1
RIW374	12.33	14.17	1.84	6588	0.99	1.48	279	286	TSR371	0.010	0.04	15
RIW386 **	12.67	13.75	1.08	7726	1.99	2.78	208	217	IWTS20_2	0.009	0.035	6
RIW382	12.33	12.83	0.50	10311	5.73	2.18	212	221	IWTS20_1	0.008	0.04	3
RD382A	12.33	12.42	0.09	2942	9.08	1.57	60	50	WITS130	0.009	0.035	1
RIW384	12.33	12.75	0.42	1005	0.66	1.90	120	129	TWTS20	0.014	0.04	3
RIW381	12.50	12.92	0.42	4694	3.10	1.86	460	467	TSR371	0.012	0.04	3
R359*	12.83	13.25	0.42	9280	6.14	4.96	719	728	IWTS30_2	0.010	0.04	4
RIW359	12.92	13.25	0.33	17152	14.44	5.79	2943	2951	IWTS30_1	0.006	0.04	5
RIW389	12.50	13.92	1.42	7697	1.51	2.81	76	66	IWTS10_1	0.013	0.04	6
RIW394	13.00	13.17	0.17	6512	10.64	5.89	2473	2478	TWTS10	0.014	0.035	3
R390A	13.17	13.42	0.25	8577	9.53	7.97	2827	2834	IWTS10_1	0.013	0.035	4

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

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BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RIW390	13.42	13.75	0.33	13324	11.22	6.56	2891	2896	TWTS10	0.017	0.035	5
RIW388	13.75	14.00	0.25	11626	12.92	6.01	3364	3371	IWTS20_1	0.010	0.04	4
RIW357 **	14.00	14.50	0.50	2593	1.44	3.32	2494	2499	TWTS20	0.008	0.04	9
RIW353	13.33	13.75	0.42	2643	1.75	2.99	4898	4900	TSR371	0.009	0.04	2
RIW312 **	12.92	13.75	0.83	17570	5.88	2.04	228	237	TSR294	0.005	0.04	1
RD312	12.92	13.00	0.08	4244	14.74	1.67	86	76	TWTS20	0.011	0.035	1
RIW365	13.00	13.50	0.50	11648	6.47	3.51	282	291	TSR375	0.010	0.04	5
RD365	13.00	13.17	0.17	1927	3.15	1.29	58	48	WITS130	0.005	0.035	2
RIW369 **	13.08	13.42	0.34	11583	9.46	1.42	266	274	TSR371	0.009	0.04	4
RD357	14.00	14.08	0.08	3820	13.26	5.02	926	935	IWTS30_1	0.009	0.04	2
RIW363	14.00	14.33	0.33	7351	6.19	5.13	1098	1107	IWTS30_1	0.009	0.04	4
RD369	13.00	13.25	0.25	1409	1.57	1.23	205	214	WITS130	0.001	0.035	1
RIW368	13.17	13.75	0.58	7248	3.47	2.03	270	279	TWTS20	0.010	0.04	6
RIW360	12.25	12.42	0.17	11127	18.18	4.69	635	644	IWTS30_1	0.008	0.035	1
RIW397	12.83	13.42	0.59	2780	1.31	3.92	3396	3401	PDTS40_1	0.006	0.035	8
RIW395	13.17	13.42	0.25	21294	23.66	9.43	7399	7400	TWTS10	0.021	0.035	4
RIW387 +	12.67	12.67	0.08	11459	38.20	2.58	1106	1112	TSR371	0.012	0.035	1
RIW396	13.33	13.50	0.17	5924	9.68	4.74	7858	7860	PDTS40_1	0.006	0.035	2
RIW380	13.50	14.58	1.08	4964	1.28	3.86	5542	5542	TSR371	0.012	0.035	11
RIW370	14.58	15.08	0.50	15367	8.54	9.11	5390	5397	TSR375	0.010	0.035	3
RIW349	15.08	15.17	0.09	7496	23.14	3.37	2047	2053	IWTS40_1	0.005	0.035	2
RD349	15.08	15.42	0.34	6586	5.38	6.97	3194	3202	IWTS30_1	0.008	0.035	1
RIW356 **	15.25	15.42	0.17	13031	21.29	8.49	5244	5252	IWTS30_2	0.006	0.04	1
RIW354	15.42	15.75	0.33	16693	14.05	7.21	5141	5149	IWTS30_1	0.008	0.04	2
RIW372	12.33	13.50	1.17	13330	3.16	2.68	129	139	TSR375	0.010	0.04	9
RD372	12.33	12.50	0.17	1142	1.87	1.21	101	110	TWTS20	0.004	0.035	1

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

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BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RIW375	13.00	13.75	0.75	16914	6.26	2.30	280	289	TWTS20	0.013	0.04	8
RIW364	15.75	16.42	0.67	9657	4.00	8.92	5152	5159	IWTS30_2	0.007	0.04	7
RD363	14.00	14.08	0.08	1700	5.90	2.98	514	522	WITS130	0.011	0.04	1
RIW351	13.42	16.50	3.08	4523	0.41	0.85	68	59	TSR371	0.007	0.04	10
RIW346	16.42	16.58	0.16	24311	42.21	9.21	5213	5220	IWTS30_2	0.008	0.04	2
RIW338	16.58	17.00	0.42	4331	2.86	5.20	5156	5159	TWTS20	0.016	0.04	5
RIW326	12.42	13.00	0.58	21501	10.30	2.13	235	244	TWTS40	0.007	0.04	5
RIW334	17.08	17.92	0.84	3706	1.23	4.28	5060	5067	TWTS30	0.005	0.04	12
RD351	13.42	13.83	0.41	2791	1.89	3.99	475	485	IWTS30_1	0.008	0.04	3
RIW361	14.17	14.83	0.66	10402	4.38	2.13	1591	1596	TSR371	0.007	0.04	12
R350*	13.83	14.08	0.25	8310	9.23	4.57	6462	6467	IWTS40_1	0.006	0.04	3
RIW330	14.08	14.25	0.17	7227	11.81	4.88	6525	6530	TWTS30	0.006	0.04	1
RIW322	14.25	14.92	0.67	2771	1.15	3.86	6912	6917	IWTS40_2	0.005	0.04	12
RIW318	12.75	14.58	1.83	8066	1.22	2.11	295	304	TWTS30	0.006	0.04	15
RIW310	12.92	13.00	0.08	20068	69.68	2.23	703	712	IWTS50	0.005	0.04	1
RIW314	15.17	16.42	1.25	12886	2.86	3.94	6916	6918	IWTS40_2	0.005	0.04	15
RIW300	16.42	16.83	0.41	860	0.58	2.79	6759	6762	IWTS50	0.002	0.04	3
RIW302	17.25	17.58	0.33	8292	6.98	9.92	10637	10642	TSR375	0.010	0.04	3
R264A	13.08	13.50	0.42	4042	2.67	2.12	1353	1360	TSR264A	0.003	0.04	1
RSV264	13.33	13.75	0.42	2946	1.95	2.41	1931	1940	SVTS50_1	0.001	0.04	1
RSV298	13.08	14.42	1.34	6826	1.42	3.52	450	460	Channel	0.004	0.04	14
RSV286	12.75	13.00	0.25	13500	15.00	3.27	1023	1031	TSR294	0.006	0.04	1
RSV284	12.92	13.75	0.83	3544	1.19	3.14	931	939	TSR294	0.006	0.04	4
RSV290	12.58	13.75	1.17	14316	3.40	2.56	385	394	TSR294	0.006	0.04	5
RSV272	13.67	13.75	0.08	1016	3.53	3.45	1550	1558	SVTS50_1	0.004	0.04	1
RSV294	12.92	13.83	0.91	15129	4.62	3.52	1466	1474	TSR294	0.006	0.04	5

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RSV276	13.75	13.83	0.08	6288	21.83	3.74	3233	3241	SVTS50_1	0.003	0.04	1
RSV280	13.92	14.25	0.33	12013	10.11	4.53	3625	3631	TSR294	0.006	0.04	3
RSV268	12.67	12.92	0.25	1628	1.81	3.60	1081	1090	SVTS50_1	0.006	0.04	1
RSV260	14.92	15.17	0.25	4870	5.41	2.87	4052	4057	TSR264A	0.003	0.04	5
RSV252	12.33	13.42	1.09	10928	2.78	1.46	62	52	SVTS10	0.010	0.04	5
RSV254	12.25	13.42	1.17	2155	0.51	1.39	45	36	TSR248	0.018	0.04	6
RSV219	12.42	12.83	0.41	10623	7.20	2.89	786	795	SVTS50_2	0.004	0.04	3
RSV251	12.42	13.42	1.00	9744	2.71	1.87	126	135	SVTS10	0.009	0.04	8
RSV250	12.33	13.50	1.17	12592	2.99	1.46	61	51	SVTS10	0.010	0.04	8
RSV218	12.75	13.17	0.42	5058	3.35	2.57	1409	1417	SVTS10	0.004	0.04	2
RSV248	12.67	13.25	0.58	11765	5.63	2.76	324	333	SVTS10	0.011	0.035	3
RD248	12.67	12.92	0.25	1034	1.15	2.35	324	333	WITS130	0.008	0.04	2
RSV244	13.00	13.75	0.75	7772	2.88	3.71	977	984	TSR248	0.014	0.04	8
RSV216	13.33	13.75	0.42	4698	3.11	2.83	2308	2315	SVTS10	0.004	0.04	5
RSV236	12.42	13.75	1.33	11106	2.32	2.25	258	267	SVTS10	0.010	0.04	8
R242*	12.67	13.42	0.75	13351	4.94	4.01	2310	2317	SVTS10	0.010	0.04	9
RSV220	13.67	14.17	0.50	9734	5.41	4.24	6674	6680	SVTS20_1	0.003	0.04	6
R230*	12.50	12.83	0.33	8744	7.36	4.26	3214	3220	SVTS30	0.009	0.04	6
RSV212 **	14.00	14.67	0.67	7196	2.98	3.90	7179	7185	SVTS10	0.004	0.04	6
RSV202	12.75	13.25	0.50	7461	4.15	3.41	977	985	SVTS40	0.009	0.04	5
RSV210	12.17	13.17	1.00	9922	2.76	1.50	642	649	TSR408	0.005	0.04	11
R205*	12.25	13.00	0.75	9517	3.52	2.98	585	594	SVTS40	0.008	0.04	1
RSV203	12.17	12.67	0.50	12156	6.75	1.56	73	63	SVTS40	0.007	0.04	7
RSV200	17.33	17.58	0.25	6617	7.35	4.08	14045	14040	TWTS50	0.004	0.04	5
RTW416	12.50	13.75	1.25	7044	1.57	2.26	359	368	WITS30	0.006	0.04	15
RTW420	12.67	13.58	0.91	22821	6.97	2.04	460	469	WITS30	0.004	0.04	10

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation
** Modified Typical X-Section
x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RTW414	12.17	13.25	1.08	18065	4.65	2.62	760	769	WITS30	0.005	0.04	8
RTW410	17.58	18.25	0.67	10139	4.20	4.26	13989	14002	TSR408	0.007	0.04	8
RTW402	15.58	15.75	0.17	2936	4.80	6.92	16000	16007	Channel	0.001	0.035	1
RTW448	12.83	13.83	1.00	7274	2.02	1.92	152	161	WITS10	0.009	0.035	5
RD448	12.83	13.00	0.17	2017	3.30	1.17	40	30	WITS130	0.006	0.035	1
R446A	12.92	13.58	0.66	6777	2.85	2.40	211	220	WITS130	0.009	0.035	4
RTW446	13.50	13.92	0.42	8794	5.82	2.36	455	464	WITS10	0.010	0.04	4
RTW432	12.75	13.33	0.58	7363	3.53	2.54	734	742	TWTS30	0.005	0.04	7
RTW459	13.08	13.42	0.34	4935	4.03	3.06	384	392	WITS10	0.017	0.035	2
RD380 **	13.50	13.67	0.17	1172	1.92	3.94	1954	1961	WITS130	0.007	0.035	1
RTW462	13.67	13.83	0.16	5969	10.36	2.15	2018	2025	TSR478	0.001	0.035	2
R450A	12.83	13.25	0.42	5936	3.93	3.20	538	546	WITS10	0.015	0.035	1
R450B	13.83	14.50	0.67	18811	7.80	4.42	2499	2504	WITS10	0.012	0.035	8
RD446A +	0.00	0.00	0.08	1591	5.30	0.22	0	0	WITS130	0.013	0.035	1
RTW450	14.42	14.75	0.33	8151	6.86	4.39	2604	2609	WITS20	0.010	0.035	4
RTW444	14.75	14.92	0.17	6941	11.34	3.75	2556	2561	WITS20	0.009	0.04	1
RTW460	13.00	13.17	0.17	6520	10.65	3.69	1152	1160	TWTS20	0.014	0.035	2
RTW458	13.08	13.25	0.17	6625	10.83	3.89	1457	1463	TWTS20	0.013	0.035	2
RTW456	13.25	13.42	0.17	3227	5.27	4.00	1461	1466	WITS10	0.014	0.035	2
RTW454	13.42	14.33	0.91	4821	1.47	2.92	509	517	WITS10	0.012	0.035	10
R452A	12.75	13.75	1.00	16523	4.59	3.33	675	682	WITS10	0.014	0.035	11
R452B	13.75	14.42	0.67	9296	3.85	3.23	1257	1264	WITS10	0.008	0.035	4
RD450	14.42	14.67	0.25	3342	3.71	2.95	120	130	WITS90_2	0.014	0.035	1
RTW452	14.50	15.00	0.50	13093	7.27	3.25	1415	1422	WITS10	0.010	0.04	6
R442*	14.92	15.50	0.58	9088	4.35	3.81	3623	3629	WITS20	0.007	0.04	6
RTW434	15.50	16.00	0.50	13449	7.47	4.12	3790	3798	TWTS30	0.005	0.04	5

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RTW436	12.25	13.17	0.92	2739	0.83	2.64	563	572	WITS20	0.009	0.04	10
RTW429	12.33	13.17	0.84	10141	3.35	2.20	320	329	WITS30	0.006	0.04	2
RD454	13.42	13.58	0.16	5985	10.39	2.64	978	986	TSR482	0.007	0.035	1
R576A	12.83	13.42	0.59	18394	8.66	2.93	558	565	WITS10	0.011	0.035	6
R576B	13.33	15.25	1.92	21213	3.07	2.39	347	355	WITS10	0.009	0.035	16
RTW485	12.92	13.00	0.08	5659	19.65	3.52	1903	1912	Channel	0.001	0.04	1
RTW484	13.00	13.67	0.67	1831	0.76	2.89	1959	1966	TSR482	0.007	0.04	7
R580B	12.50	12.92	0.42	12583	8.32	2.73	237	247	PDTS30	0.008	0.035	5
R580A	12.75	13.83	1.08	8181	2.10	4.92	1804	1808	WITS10	0.020	0.035	14
RD580B	12.50	13.00	0.50	4775	2.65	1.20	200	209	TSBEAR	0.001	0.035	6
RWI578	13.08	13.67	0.59	12424	5.85	3.69	411	420	WITS90_1	0.013	0.035	8
RWI580	13.83	14.25	0.42	8541	5.65	4.11	2114	2121	WITS10	0.011	0.035	5
RD576B	13.33	14.25	0.92	9430	2.85	3.80	248	256	WITS90_1	0.020	0.035	9
RWI576	14.25	14.67	0.42	8726	5.77	3.24	1019	1027	WITS10	0.010	0.035	5
RTW482	14.67	15.17	0.50	10402	5.78	2.66	1001	1009	TSR482	0.009	0.04	6
RTW480	13.67	14.42	0.75	7471	2.77	1.45	124	133	TSR482	0.008	0.04	2
RTW478	12.17	13.50	1.33	4817	1.01	1.47	120	129	TSR482	0.008	0.04	3
RTW430	16.83	17.33	0.50	8990	4.99	4.07	2755	2762	TWTS30	0.006	0.04	1
RTW418	17.25	17.58	0.33	12733	10.72	3.47	2737	2743	WITS30	0.005	0.04	1
RTW424	12.25	12.50	0.25	3703	4.11	1.90	1773	1782	TSR429	0.001	0.04	3
RTW422	12.58	20.67	8.09	5625	0.19	3.52	2486	2493	WITS30	0.005	0.04	17
RTW400	15.83	16.08	0.25	2375	2.64	7.05	17199	17206	Channel	0.001	0.035	2
RWI504	16.08	16.17	0.09	5235	16.16	5.24	17161	17163	WITS70	0.004	0.035	1
RD576	14.25	14.50	0.25	13552	15.06	3.72	1331	1338	WITS10	0.012	0.035	3
RWI574	12.33	13.50	1.17	14010	3.33	1.90	118	127	WITS10	0.011	0.035	7
RWI572	12.50	13.25	0.75	23543	8.72	4.98	1567	1574	WITS90_1	0.012	0.035	12

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation
** Modified Typical X-Section
x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RWI570	12.83	13.25	0.42	12212	8.08	4.86	1160	1168	WITS90_1	0.014	0.035	4
RWI566	12.83	13.33	0.50	10390	5.77	3.52	379	388	WITS90_1	0.012	0.035	8
RWI564	13.17	13.67	0.50	9364	5.20	4.13	748	757	WITS90_1	0.012	0.035	3
R562*	13.33	14.00	0.67	8797	3.65	4.90	2344	2348	WITS10	0.017	0.035	8
R560A	13.00	14.00	1.00	14581	4.05	3.22	780	788	WITS40	0.011	0.035	9
RWI560	14.08	14.67	0.59	16408	7.73	5.18	5105	5108	WITS10	0.012	0.035	8
RD482 +	0.00	0.00	0.08	5200	17.33	0.16	0	0	WITS70	0.007	0.035	1
RWI582	12.42	13.00	0.58	5153	2.47	1.72	216	225	WITS10	0.005	0.035	2
RWI556	12.08	13.75	1.67	11699	1.95	0.92	25	15	WITS40	0.007	0.035	4
RWI554	14.67	14.75	0.08	11635	40.40	4.44	5155	5161	WITS40	0.007	0.035	2
RWI552 +	14.75	14.75	0.08	4538	15.13	8.40	5158	5164	WITS50	0.014	0.04	1
RD480	13.67	14.25	0.58	2439	1.17	4.26	2450	2457	WITS130	0.009	0.04	2
RWI584	14.17	14.75	0.58	3933	1.88	1.69	2435	2443	WITS70	0.001	0.04	2
RWI550	15.00	15.25	0.25	1732	1.92	5.60	7070	7075	WITS70	0.012	0.04	2
RWI548	12.33	13.25	0.92	6201	1.87	2.00	224	233	WITS70	0.008	0.035	7
RWI546	12.33	13.33	1.00	13444	3.73	3.81	440	449	WITS90_2	0.012	0.035	3
RWI544	12.50	13.33	0.83	5296	1.77	3.03	446	454	WITS90_3	0.009	0.035	5
RWI540	12.83	13.00	0.17	2706	4.42	3.38	781	789	WITS90_3	0.007	0.035	1
R538A	12.92	13.67	0.75	18226	6.75	5.06	1139	1148	WITS90_2	0.013	0.035	8
RWI538	13.58	14.25	0.67	4350	1.80	5.70	1643	1651	WITS90_1	0.017	0.035	9
RWI534	12.58	12.75	0.17	15096	24.67	2.70	379	388	WITS90_3	0.008	0.035	2
R530*	13.00	13.75	0.75	14751	5.46	3.78	1003	1010	WITS90_3	0.008	0.035	9
RD544	12.50	13.08	0.58	4830	2.31	3.18	993	1001	WITS10	0.010	0.035	6
RPI663	12.92	13.75	0.83	19831	6.64	2.87	304	313	WITS110_2	0.011	0.035	10
RPI660	13.50	13.75	0.25	14316	15.91	5.84	955	963	PITS10_1	0.015	0.035	1
RPI654	13.33	13.58	0.25	5729	6.37	6.97	2448	2456	PITS10_1	0.013	0.035	4

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RPI651 **	13.42	13.75	0.33	6847	5.76	6.45	3384	3392	PITS10_2	0.010	0.035	3
R645A	13.08	13.42	0.34	5757	4.70	3.07	876	885	Channel	0.001	0.035	5
RD654	13.33	13.83	0.50	6108	3.39	2.47	597	606	WITS110_2	0.004	0.035	6
RPI689 **	12.92	13.33	0.41	2826	1.91	4.20	6389	6395	WITS110_2	0.003	0.035	4
RPI687	13.25	13.42	0.17	18798	30.72	11.95	9861	9865	WITS100	0.017	0.035	3
RPI684	13.58	13.92	0.34	10777	8.80	11.63	9368	9373	WITS100	0.017	0.035	4
RPI681	13.83	14.50	0.67	14047	5.82	9.81	9000	9006	WITS110_1	0.014	0.035	7
RPI690 **	14.50	14.67	0.17	5688	9.29	3.79	6454	6455	TWTS50	0.005	0.035	1
RD678	14.50	14.92	0.42	3177	2.10	3.33	2162	2168	TSR606	0.006	0.035	1
RWI542	16.08	16.25	0.17	9910	16.19	2.43	397	405	WITS40	0.008	0.035	1
RWI529	16.00	16.25	0.25	3889	4.32	2.89	407	416	WITS90_3	0.011	0.04	1
RWI516	15.25	15.75	0.50	4526	2.51	4.79	7199	7204	WITS130	0.006	0.04	6
RDCP07	16.08	16.58	0.50	14618	8.12	2.97	407	416	WITS120	0.009	0.035	2
RD529 +	0.00	0.00	0.08	9401	31.34	0.18	0	0	WITS40	0.008	0.035	2
RWI528	16.33	16.92	0.59	3670	1.73	2.34	417	425	WITS70	0.010	0.04	1
RDCPOT +	0.00	0.00	0.08	5720	19.07	0.11	0	0	TWTS50	0.004	0.04	2
RWI527	12.50	12.92	0.42	8240	5.45	2.23	501	510	WITS70	0.007	0.04	3
R508*	15.83	16.33	0.50	12366	6.87	5.03	7402	7405	WITS130	0.005	0.035	7
R510A	12.58	13.75	1.17	17257	4.10	2.02	553	561	WITS70	0.005	0.04	8
RWI510	16.25	16.67	0.42	11711	7.75	3.90	6035	6038	WITS70	0.005	0.04	2
RWI502	16.58	16.67	0.09	1494	4.61	7.46	21344	21351	Channel	0.001	0.035	1
RDCP08	16.08	16.33	0.25	6701	7.45	2.85	408	417	WITS120	0.008	0.035	1
RWI526	16.08	16.92	0.84	5909	1.95	2.26	417	425	WITS70	0.007	0.035	6
RDCP09	16.08	17.00	0.92	6377	1.93	3.68	410	419	PITS10_2	0.009	0.035	8
RD527	12.50	13.33	0.83	4871	1.63	0.17	4	0	WITS130	0.008	0.035	2
RWI525	12.58	13.33	0.75	11922	4.42	3.49	1184	1193	WITS120	0.007	0.035	6

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RD525	12.58	13.58	1.00	7666	2.13	1.44	63	53	WITS130	0.007	0.035	6
RWI524	12.58	13.00	0.42	11015	7.29	2.81	577	586	WITS130	0.006	0.035	2
RD524	12.58	12.83	0.25	6496	7.22	0.16	3	0	WITS130	0.007	0.035	3
RPI639 **	12.75	13.08	0.33	5658	4.76	2.48	149	139	PITS10_2	0.007	0.035	2
RWI506	13.17	13.42	0.25	6492	7.21	2.94	2263	2269	WITS70	0.005	0.04	3
RD508	16.33	16.58	0.25	2235	2.48	2.32	1389	1397	WITS130	0.003	0.04	6
RWI500	26.83	27.33	0.50	1679	0.93	6.14	2908	2917	Channel	0.003	0.035	5
RPI635	27.33	28.08	0.75	728	0.27	5.66	2907	2911	WITS130	0.014	0.035	2
RDCP11	16.08	16.33	0.25	11034	12.26	3.11	424	433	PITS30	0.009	0.035	5
RDCP12	16.08	16.33	0.25	20386	22.65	2.52	193	202	PITS30	0.009	0.035	6
RPI618	16.17	16.75	0.58	2775	1.33	3.19	628	637	TSR621	0.008	0.035	2
RDCP13	16.08	16.67	0.59	9602	4.52	3.31	420	429	PITS30	0.011	0.035	2
RD618	16.08	16.42	0.34	11215	9.16	3.21	217	226	PITS10_2	0.010	0.035	5
RPI615	12.33	16.75	4.42	10443	0.66	3.50	653	662	PITS20	0.008	0.035	12
RPI612	12.67	12.92	0.25	5109	5.68	3.02	335	344	PITS20	0.008	0.035	2
RDCP14	16.08	17.25	1.17	10754	2.55	3.43	362	371	PDTS30	0.011	0.035	8
RPI609	12.75	12.92	0.17	5754	9.40	3.74	1181	1190	PITS20	0.006	0.035	1
RD612	12.67	17.33	4.66	9630	0.57	4.15	960	968	PITS20	0.009	0.035	4
RPI621 **	13.33	13.42	0.09	5060	15.62	2.99	1177	1186	TSR621	0.004	0.035	6
RDCP10	16.08	16.50	0.42	6159	4.07	3.16	420	429	PITS30	0.009	0.035	6
RPI628	12.33	13.08	0.75	5834	2.16	2.59	507	517	Channel	0.001	0.035	1
R624A	12.83	13.83	1.00	8664	2.41	5.58	1528	1536	PITS10_2	0.012	0.035	2
RPI636 +	12.50	12.50	0.08	2635	8.78	2.47	377	386	WITS130	0.006	0.035	1
RPI624	13.83	14.17	0.34	14427	11.79	4.30	1743	1751	PITS20	0.007	0.035	3
RPI633	24.50	25.08	0.58	7557	3.62	4.74	3903	3912	Channel	0.001	0.035	4
RDCP15	14.00	14.42	0.42	10400	6.88	3.14	248	257	PDTS30	0.012	0.035	6

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
R606A	12.50	17.92	5.42	11809	0.61	1.63	166	175	PDTS40_1	0.004	0.035	7
RPI606	12.42	12.67	0.25	4513	5.01	4.94	578	587	PITS40	0.006	0.035	1
RD606A	12.50	12.83	0.33	11125	9.36	2.22	131	140	PITS20	0.007	0.035	6
RPI604	12.67	12.92	0.25	2654	2.95	1.96	312	321	TSR606	0.006	0.035	4
RD600A	12.58	13.33	0.75	7507	2.78	3.93	1120	1128	PITS30	0.009	0.035	2
RPI603	13.17	13.42	0.25	7442	8.27	4.58	2239	2247	PDTS30	0.007	0.035	1
RPI600	24.33	24.83	0.50	3427	1.90	3.78	4429	4434	PDTS40_1	0.004	0.035	2
RDCP16	14.00	14.50	0.50	14927	8.29	4.16	907	916	PDTS30	0.010	0.035	8
RDCP17	14.00	14.42	0.42	5902	3.90	3.64	303	312	PDTS30	0.015	0.035	5
RPD740	14.33	14.67	0.34	6476	5.29	6.01	1269	1277	PDTS40_2	0.015	0.035	5
R726B	13.25	14.75	1.50	10685	1.98	3.07	1292	1300	PDTS40_1	0.006	0.035	2
RDCP18	14.00	14.58	0.58	8638	4.14	2.13	311	320	WITS70	0.007	0.035	8
RPD736	14.17	14.33	0.16	5434	9.43	2.93	449	458	PDTS30	0.006	0.035	1
RDCP19	14.00	14.25	0.25	6125	6.81	2.21	955	963	TWTS50	0.004	0.035	4
RPD760	12.75	12.92	0.17	4937	8.07	2.32	364	374	Channel	0.001	0.035	2
RPD732	13.83	14.42	0.59	1894	0.89	3.51	1179	1188	PDTS30	0.005	0.035	6
R726A	14.25	14.42	0.17	4094	6.69	4.62	1805	1812	PDTS30	0.008	0.035	2
R726*	14.50	15.17	0.67	3986	1.65	4.91	2943	2951	PDTS30	0.007	0.035	2
RPD726	15.08	15.42	0.34	10623	8.68	4.51	2405	2412	PDTS30	0.006	0.035	2
RD744 +	0.00	0.00	0.08	6956	23.19	0.11	0	0	WITS120	0.008	0.035	1
RPD720	15.00	15.08	0.08	4959	17.22	4.05	5841	5844	PDTS40_1	0.004	0.035	1
RD716	15.08	15.25	0.17	5888	9.62	2.53	584	592	PDTS40_1	0.006	0.035	2
R700*	15.25	15.92	0.67	10484	4.35	7.12	6167	6174	PDTS40_2	0.008	0.035	2
RPD748	12.42	12.75	0.33	8775	7.39	4.32	440	449	PDTS40_2	0.013	0.035	3
RPD756	13.17	13.50	0.33	5149	4.33	4.71	1459	1467	PDTS30	0.010	0.035	4
R708*	13.50	13.92	0.42	6448	4.26	5.30	1504	1512	PDTS40_2	0.009	0.035	6

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
R712A	12.92	13.25	0.33	4179	3.52	2.72	389	398	PDTS30	0.006	0.035	6
RPD708	12.92	13.08	0.16	1840	3.19	9.54	2672	2680	Channel	0.010	0.035	1
RPD704	13.17	13.42	0.25	4300	4.78	4.47	2930	2937	PDTS40_1	0.009	0.035	4
RD800 +	0.00	0.00	0.08	4229	14.10	0.13	0	0	WITS120	0.011	0.035	2
R810*	15.50	15.92	0.42	5287	3.50	6.31	7022	7030	TSAF10	0.002	0.035	8
RAF803	12.50	12.75	0.25	6821	7.58	3.34	1744	1751	PDTS40_1	0.006	0.035	3
RAF805	12.58	12.92	0.34	2485	2.03	3.94	506	515	TSAF10	0.004	0.035	6
RAF807	12.67	12.75	0.08	8372	29.07	4.17	2496	2503	PDTS40_1	0.008	0.035	1
RAF810	15.83	16.08	0.25	1378	1.53	8.64	7154	7162	TSAF10	0.004	0.035	5
RAF854	12.08	12.17	0.09	2136	6.59	4.20	527	537	TSAF20	0.005	0.035	1
RAF852 +	12.17	12.17	0.08	2113	7.04	4.75	783	792	TSAF10	0.005	0.035	1
RAF864	12.25	12.75	0.50	6743	3.75	1.79	50	40	TSAF20	0.004	0.035	1
RAF862	12.00	12.08	0.08	4666	16.20	3.03	294	304	TSAF20	0.003	0.035	1
RAF866	12.17	12.50	0.33	4588	3.86	3.41	406	415	SVTS10	0.016	0.035	1
RSV258	12.42	12.58	0.16	6946	12.06	2.72	313	322	SVTS50_1	0.005	0.035	0

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation
** Modified Typical X-Section
x Modified Time To Peak Used

D.3.4 NSTEP Check Data: 100-yr 6-hr Existing Conditions

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RWT140	5.17	5.42	0.25	13053	14.50	6.45	1849	1857	WTTS20_1	0.019	0.035	3
RWT130	5.25	5.83	0.58	5750	2.75	4.18	2498	2507	Channel	0.001	0.035	5
RWT160	4.58	6.25	1.67	18961	3.15	2.55	501	509	WTTS10_1	0.012	0.035	12
R150A	5.08	5.25	0.17	9557	15.62	9.29	2582	2590	WTTS20_2	0.021	0.035	3
RWT150	5.17	5.58	0.41	16082	10.90	6.22	2752	2758	WTTS20_1	0.013	0.035	5
RWT120	5.67	6.17	0.50	6168	3.43	5.13	5198	5206	Channel	0.001	0.035	7
RWT110	6.17	6.83	0.66	7640	3.22	5.06	4924	4932	Channel	0.001	0.035	5
RWT100	6.75	7.17	0.42	4778	3.16	4.97	4614	4623	Channel	0.001	0.035	1
RTW406	4.08	8.42	4.34	16567	1.06	0.56	40	31	TSR408	0.007	0.04	6
RTW408	4.83	7.75	2.92	11703	1.11	1.49	298	306	TWTS50	0.005	0.04	10
RTW404	7.17	7.50	0.33	14969	12.60	3.48	4499	4500	TSR408	0.008	0.035	2
RIW371	4.08	6.50	2.42	20437	2.35	0.39	15	5	TSR371	0.008	0.04	15
RIW366	4.58	5.00	0.42	6797	4.50	4.87	957	966	TSR375	0.009	0.04	4
RIW377	4.50	5.25	0.75	4964	1.84	1.06	98	89	TSR371	0.010	0.04	6
RD371	4.08	4.33	0.25	1828	2.03	0.96	40	30	WITS130	0.003	0.035	1
RIW374	4.25	5.92	1.67	6588	1.10	1.64	404	411	TSR371	0.010	0.04	15
RIW386	4.58	5.42	0.84	7726	2.55	3.13	301	310	IWTS20_2	0.009	0.035	6
RIW382	4.33	4.83	0.50	10311	5.73	2.31	253	262	IWTS20_1	0.008	0.04	3
RD382A	4.33	4.42	0.09	2942	9.08	2.38	196	205	WITS130	0.009	0.035	1
RIW384	4.33	4.67	0.34	1005	0.82	2.42	310	319	TWTS20	0.014	0.04	3
RIW381	4.50	4.83	0.33	4694	3.95	1.97	574	581	TSR371	0.012	0.04	3
R359*	4.83	5.17	0.34	9280	7.58	5.48	937	946	IWTS30_2	0.010	0.04	4
RIW359 **	5.00	5.33	0.33	17152	14.44	5.93	3233	3241	IWTS30_1	0.006	0.04	4
RIW389	4.42	5.75	1.33	7697	1.61	3.05	102	92	IWTS10_1	0.013	0.04	6
RIW394	5.08	5.25	0.17	6512	10.64	6.00	2613	2620	TWTS10	0.014	0.035	2
R390A	5.25	5.42	0.17	8577	14.01	8.04	2925	2933	IWTS10_1	0.013	0.035	2

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation
** Modified Typical X-Section
x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RIW390	5.50	5.75	0.25	13324	14.80	6.62	2969	2975	TWTS10	0.017	0.035	3
RIW388	5.67	5.92	0.25	11626	12.92	6.06	3450	3456	IWTS20_1	0.010	0.04	2
RIW357 **	5.92	6.42	0.50	2593	1.44	3.36	2608	2614	TWTS20	0.008	0.04	9
RIW353	5.50	5.75	0.25	2643	2.94	3.06	5328	5326	TSR371	0.009	0.04	2
RIW312	4.75	5.83	1.08	17570	4.52	2.06	238	248	TSR294	0.005	0.04	1
RD312	4.75	4.92	0.17	4244	6.93	2.26	223	232	TWTS20	0.011	0.035	1
RIW365	4.83	5.42	0.59	11648	5.48	3.58	298	307	TSR375	0.010	0.04	5
RD365	4.83	5.00	0.17	1927	3.15	2.13	268	277	WITS130	0.005	0.035	2
RIW369	5.00	5.33	0.33	11583	9.75	1.64	463	471	TSR371	0.009	0.04	4
RD357	5.92	6.00	0.08	3820	13.26	5.03	930	939	IWTS30_1	0.009	0.04	2
RIW363	5.50	6.08	0.58	7351	3.52	5.33	1281	1290	IWTS30_1	0.009	0.04	4
RD369	4.92	5.17	0.25	1409	1.57	1.41	344	353	WITS130	0.001	0.035	1
RIW368	5.08	5.67	0.59	7248	3.41	2.29	438	447	TWTS20	0.010	0.04	6
RIW360	4.33	4.42	0.09	11127	34.34	4.89	751	760	IWTS30_1	0.008	0.035	1
RIW397	4.92	5.42	0.50	2780	1.54	3.99	3662	3668	PDTS40_1	0.006	0.035	8
RIW395	5.25	5.50	0.25	21294	23.66	9.49	7558	7561	TWTS10	0.021	0.035	3
RIW387 +	4.67	4.67	0.08	11459	38.20	2.71	1332	1338	TSR371	0.012	0.035	1
RIW396	5.42	5.58	0.16	5924	10.28	4.75	7911	7917	PDTS40_1	0.006	0.035	1
RIW380 **	5.58	6.67	1.09	4964	1.27	3.87	5586	5582	TSR371	0.012	0.035	11
RIW370 **	6.58	7.17	0.59	15367	7.23	9.16	5504	5511	TSR375	0.010	0.035	3
RIW349	7.17	7.25	0.08	7496	26.03	3.39	2088	2094	IWTS40_1	0.005	0.035	1
RD349 **	7.17	7.42	0.25	6586	7.32	7.04	3318	3326	IWTS30_1	0.008	0.035	1
RIW356 **	7.33	7.42	0.09	13031	40.22	8.57	5405	5413	IWTS30_2	0.006	0.04	1
RIW354 **	7.42	7.75	0.33	16693	14.05	7.27	5317	5324	IWTS30_1	0.008	0.04	2
RIW372	4.33	5.50	1.17	13330	3.16	2.84	153	162	TSR375	0.010	0.04	9
RD372	4.33	4.50	0.17	1142	1.87	1.44	203	212	TWTS20	0.004	0.035	1

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RIW375	4.92	5.58	0.66	16914	7.12	2.53	413	421	TWTS20	0.013	0.04	8
RIW364 **	7.67	8.33	0.66	9657	4.06	9.01	5302	5309	IWTS30_2	0.007	0.04	7
RD363	5.50	5.75	0.25	1700	1.89	3.10	598	606	WITS130	0.011	0.04	1
RIW351	5.42	8.25	2.83	4523	0.44	0.90	80	71	TSR371	0.007	0.04	10
RIW346	8.25	8.50	0.25	24311	27.01	9.23	5250	5258	IWTS30_2	0.008	0.04	2
RIW338	8.50	8.92	0.42	4331	2.86	5.20	5177	5177	TWTS20	0.016	0.04	5
RIW326	4.33	4.92	0.59	21501	10.12	2.40	355	364	TWTS40	0.007	0.04	5
RIW334	9.00	9.83	0.83	3706	1.24	4.28	5042	5048	TWTS30	0.005	0.04	12
RD351	5.42	5.75	0.33	2791	2.35	4.22	595	604	IWTS30_1	0.008	0.04	3
RIW361 **	5.92	6.58	0.66	10402	4.38	2.21	1870	1872	TSR371	0.007	0.04	12
R350*	5.92	6.25	0.33	8310	6.99	4.66	6886	6888	IWTS40_1	0.006	0.04	3
RIW330	6.17	6.33	0.16	7227	12.55	4.95	6885	6888	TWTS30	0.006	0.04	1
RIW322	6.33	7.00	0.67	2771	1.15	3.89	7151	7152	IWTS40_2	0.005	0.04	12
RIW318	4.67	6.33	1.66	8066	1.35	2.33	415	424	TWTS30	0.006	0.04	15
RIW310	4.92	5.00	0.08	20068	69.68	2.36	880	888	IWTS50	0.005	0.04	1
RIW314 **	7.42	8.50	1.08	12886	3.31	3.90	6625	6627	IWTS40_2	0.005	0.04	15
RIW300	8.50	8.83	0.33	860	0.72	2.76	6532	6535	IWTS50	0.002	0.04	3
RIW302	9.33	9.67	0.34	8292	6.77	9.70	9794	9800	TSR375	0.010	0.04	3
R264A	5.08	5.50	0.42	4042	2.67	2.26	1691	1699	TSR264A	0.003	0.04	1
RSV264	5.25	5.75	0.50	2946	1.64	2.53	2353	2362	SVTS50_1	0.001	0.04	1
RSV298	5.00	6.25	1.25	6826	1.52	3.85	591	601	Channel	0.004	0.04	14
RSV286	4.75	5.00	0.25	13500	15.00	3.48	1299	1308	TSR294	0.006	0.04	1
RSV284	4.92	5.58	0.66	3544	1.49	3.36	1213	1221	TSR294	0.006	0.04	4
RSV290	4.58	5.67	1.09	14316	3.65	2.79	543	552	TSR294	0.006	0.04	5
RSV272	5.58	5.67	0.09	1016	3.14	3.65	1949	1957	SVTS50_1	0.004	0.04	1
RSV294	5.00	5.75	0.75	15129	5.60	3.71	1815	1822	TSR294	0.006	0.04	5

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RSV276 **	5.67	5.75	0.08	6288	21.83	3.87	3729	3736	SVTS50_1	0.003	0.04	1
RSV280 **	5.83	6.08	0.25	12013	13.35	4.69	4153	4159	TSR294	0.006	0.04	3
RSV268	4.67	4.92	0.25	1628	1.81	3.82	1363	1371	SVTS50_1	0.006	0.04	1
RSV260 **	6.92	7.17	0.25	4870	5.41	2.93	4358	4362	TSR264A	0.003	0.04	5
RSV252	4.33	5.25	0.92	10928	3.30	1.68	95	85	SVTS10	0.010	0.04	5
RSV254	4.25	5.25	1.00	2155	0.60	1.69	71	62	TSR248	0.018	0.04	6
RSV219	4.50	5.00	0.50	10623	5.90	3.00	903	912	SVTS50_2	0.004	0.04	3
RSV251	4.33	5.33	1.00	9744	2.71	2.09	196	205	SVTS10	0.009	0.04	8
RSV250	4.33	5.33	1.00	12592	3.50	1.68	94	85	SVTS10	0.010	0.04	8
RSV218 **	4.83	5.25	0.42	5058	3.35	2.67	1634	1642	SVTS10	0.004	0.04	2
RSV248	4.67	5.17	0.50	11765	6.54	2.96	423	431	SVTS10	0.011	0.035	3
RD248	4.67	5.00	0.33	1034	0.87	2.49	407	416	WITS130	0.008	0.04	2
RSV244	5.08	5.75	0.67	7772	3.22	3.93	1194	1200	TSR248	0.014	0.04	8
RSV216 **	5.33	5.83	0.50	4698	2.61	2.91	2571	2578	SVTS10	0.004	0.04	5
RSV236	4.33	5.58	1.25	11106	2.47	2.50	386	395	SVTS10	0.010	0.04	8
R242* **	4.75	5.33	0.58	13351	6.39	4.08	2472	2478	SVTS10	0.010	0.04	9
RSV220 **	5.92	6.42	0.50	9734	5.41	4.19	6369	6374	SVTS20_1	0.003	0.04	6
R230*	4.50	4.92	0.42	8744	5.78	4.23	3153	3158	SVTS30	0.009	0.04	6
RSV212 **	6.08	6.67	0.59	7196	3.39	3.84	6708	6710	SVTS10	0.004	0.04	6
RSV202	4.75	5.17	0.42	7461	4.93	3.62	1237	1245	SVTS40	0.009	0.04	5
RSV210	4.17	5.08	0.91	9922	3.03	1.67	897	903	TSR408	0.005	0.04	11
R205*	4.50	5.00	0.50	9517	5.29	3.19	760	768	SVTS40	0.008	0.04	1
RSV203	4.08	4.67	0.59	12156	5.72	1.85	111	121	SVTS40	0.007	0.04	7
RSV200 **	9.50	9.83	0.33	6617	5.57	3.91	11835	11835	TWTS50	0.004	0.04	5
RTW416	4.42	5.58	1.16	7044	1.69	2.49	532	541	WITS30	0.006	0.04	15
RTW420	4.67	5.42	0.75	22821	8.45	2.22	647	656	WITS30	0.004	0.04	10

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RTW414	4.17	5.17	1.00	18065	5.02	2.82	1019	1028	WITS30	0.005	0.04	8
RTW410 **	9.75	10.42	0.67	10139	4.20	4.04	11555	11549	TSR408	0.007	0.04	8
RTW402	10.33	10.42	0.09	2936	9.06	6.25	10817	10826	Channel	0.001	0.035	1
RTW448	4.75	5.75	1.00	7274	2.02	1.93	155	164	WITS10	0.009	0.035	5
RD448	4.75	4.92	0.17	2017	3.30	1.80	118	128	WITS130	0.006	0.035	1
R446A	4.75	5.33	0.58	6777	3.25	2.76	356	365	WITS130	0.009	0.035	4
RTW446	5.25	5.67	0.42	8794	5.82	2.54	603	611	WITS10	0.010	0.04	4
RTW432	4.83	5.42	0.59	7363	3.47	2.72	925	934	TWTS30	0.005	0.04	7
RTW459	5.17	5.33	0.16	4935	8.57	3.32	524	533	WITS10	0.017	0.035	3
RD380 **	5.58	5.75	0.17	1172	1.92	3.95	1967	1975	WITS130	0.007	0.035	1
RTW462	5.67	6.00	0.33	5969	5.02	2.30	2659	2667	TSR478	0.001	0.035	2
R450A	4.83	5.08	0.25	5936	6.60	3.54	796	803	WITS10	0.015	0.035	2
R450B	5.92	6.58	0.66	18811	7.92	4.63	2994	2999	WITS10	0.012	0.035	8
RD446A	4.75	4.92	0.17	1591	2.60	0.22	7	0	WITS130	0.013	0.035	1
RTW450	6.50	6.83	0.33	8151	6.86	4.51	2904	2909	WITS20	0.010	0.035	3
RTW444	6.83	6.92	0.09	6941	21.42	3.86	2877	2884	WITS20	0.009	0.04	1
RTW460	4.83	5.25	0.42	6520	4.31	3.72	1201	1207	TWTS20	0.014	0.035	2
RTW458	5.08	5.25	0.17	6625	10.83	4.02	1670	1675	TWTS20	0.013	0.035	2
RTW456	5.25	5.42	0.17	3227	5.27	4.16	1701	1708	WITS10	0.014	0.035	2
RTW454	5.42	6.25	0.83	4821	1.61	3.06	611	619	WITS10	0.012	0.035	10
R452A	4.75	5.58	0.83	16523	5.53	3.59	907	914	WITS10	0.014	0.035	11
R452B	5.92	6.33	0.41	9296	6.30	3.42	1578	1584	WITS10	0.008	0.035	4
RD450	6.50	6.67	0.17	3342	5.46	3.28	206	197	WITS90_2	0.014	0.035	1
RTW452	6.42	6.92	0.50	13093	7.27	3.46	1796	1801	WITS10	0.010	0.04	6
R442*	6.92	7.50	0.58	9088	4.35	3.89	3934	3941	WITS20	0.007	0.04	6
RTW434	7.50	7.92	0.42	13449	8.89	4.18	3981	3988	TWTS30	0.005	0.04	5

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RTW436	4.25	5.17	0.92	2739	0.83	2.86	775	783	WITS20	0.009	0.04	10
RTW429	4.33	5.00	0.67	10141	4.20	2.39	450	459	WITS30	0.006	0.04	2
RD454	5.42	5.58	0.16	5985	10.39	2.75	1139	1147	TSR482	0.007	0.035	1
R576A	4.83	5.33	0.50	18394	10.22	3.18	755	764	WITS10	0.011	0.035	6
R576B	5.25	6.67	1.42	21213	4.15	2.51	420	428	WITS10	0.009	0.035	16
RTW485	5.08	5.25	0.17	5659	9.25	3.65	2168	2177	Channel	0.001	0.04	1
RTW484	5.17	5.92	0.75	1831	0.68	2.98	2206	2211	TSR482	0.007	0.04	7
R580B	4.42	4.92	0.50	12583	6.99	2.99	336	345	PDTS30	0.008	0.035	5
R580A	4.83	5.83	1.00	8181	2.27	5.13	2131	2135	WITS10	0.020	0.035	14
RD580B	4.42	4.92	0.50	4775	2.65	1.32	288	297	TSBEAR	0.001	0.035	6
RWI578	5.00	5.50	0.50	12424	6.90	4.01	576	585	WITS90_1	0.013	0.035	8
RWI580	5.83	6.17	0.34	8541	6.98	4.24	2408	2414	WITS10	0.011	0.035	5
RD576B	5.25	6.50	1.25	9430	2.10	3.94	304	295	WITS90_1	0.020	0.035	9
RWI576	6.17	6.67	0.50	8726	4.85	3.62	1562	1569	WITS10	0.010	0.035	5
RTW482	6.58	7.00	0.42	10402	6.88	3.01	1596	1601	TSR482	0.009	0.04	6
RTW480	5.83	6.58	0.75	7471	2.77	1.51	141	150	TSR482	0.008	0.04	2
RTW478	4.17	7.58	3.41	4817	0.39	1.61	167	176	TSR482	0.008	0.04	3
RTW430	8.75	9.42	0.67	8990	3.73	4.04	2687	2693	TWTS30	0.006	0.04	1
RTW418	9.42	9.58	0.16	12733	22.11	3.43	2616	2622	WITS30	0.005	0.04	1
RTW424	4.25	4.50	0.25	3703	4.11	1.97	2063	2071	TSR429	0.001	0.04	3
RTW422	9.58	12.50	2.92	5625	0.54	3.50	2432	2438	WITS30	0.005	0.04	17
RTW400	10.50	10.75	0.25	2375	2.64	6.33	11372	11380	Channel	0.001	0.035	2
RWI504	10.75	10.83	0.08	5235	18.18	4.71	11303	11301	WITS70	0.004	0.035	1
RD576	6.17	6.50	0.33	13552	11.41	3.48	1020	1028	WITS10	0.012	0.035	2
RWI574	4.33	5.33	1.00	14010	3.89	2.13	180	189	WITS10	0.011	0.035	7
RWI572	4.50	5.25	0.75	23543	8.72	5.11	1732	1740	WITS90_1	0.012	0.035	8

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RWI570	4.83	5.17	0.34	12212	9.98	5.13	1439	1446	WITS90_1	0.014	0.035	5
RWI566	4.83	5.25	0.42	10390	6.87	3.80	519	528	WITS90_1	0.012	0.035	8
RWI564	5.25	5.58	0.33	9364	7.88	4.40	970	978	WITS90_1	0.012	0.035	4
R562*	5.33	6.00	0.67	8797	3.65	5.10	2748	2752	WITS10	0.017	0.035	8
R560A	5.08	5.92	0.84	14581	4.82	3.43	994	1001	WITS40	0.011	0.035	9
RWI560	5.92	6.50	0.58	16408	7.86	5.23	5269	5273	WITS10	0.012	0.035	8
RD482 +	0.00	0.00	0.08	5200	17.33	0.16	0	0	WITS70	0.007	0.035	1
RWI582	4.33	4.83	0.50	5153	2.86	1.91	321	330	WITS10	0.005	0.035	2
RWI556	4.08	5.58	1.50	11699	2.17	1.08	36	26	WITS40	0.007	0.035	4
RWI554	6.50	6.58	0.08	11635	40.40	4.46	5262	5265	WITS40	0.007	0.035	2
RWI552	6.58	6.67	0.09	4538	14.01	8.44	5245	5251	WITS50	0.014	0.04	1
RD480	5.83	6.42	0.59	2439	1.15	4.38	2734	2741	WITS130	0.009	0.04	2
RWI584	6.33	6.92	0.59	3933	1.85	1.74	2723	2731	WITS70	0.001	0.04	2
RWI550	6.92	7.50	0.58	1732	0.83	5.44	6327	6332	WITS70	0.012	0.04	2
RWI548	4.33	5.17	0.84	6201	2.05	2.25	324	333	WITS70	0.008	0.035	7
RWI546	5.00	5.17	0.17	13444	21.97	4.13	617	626	WITS90_2	0.012	0.035	3
RWI544	4.58	5.33	0.75	5296	1.96	3.24	545	553	WITS90_3	0.009	0.035	5
RWI540	4.75	4.92	0.17	2706	4.42	3.67	1025	1033	WITS90_3	0.007	0.035	1
R538A	4.92	5.58	0.66	18226	7.67	5.39	1462	1469	WITS90_2	0.013	0.035	8
RWI538	5.50	6.08	0.58	4350	2.08	6.02	2041	2048	WITS90_1	0.017	0.035	9
RWI534	4.50	4.75	0.25	15096	16.77	3.03	544	552	WITS90_3	0.008	0.035	2
R530*	4.92	5.58	0.66	14751	6.21	4.07	1279	1286	WITS90_3	0.008	0.035	9
RD544	4.58	5.17	0.59	4830	2.27	3.33	1182	1190	WITS10	0.010	0.035	6
RPI663	4.83	5.58	0.75	19831	7.34	3.20	428	436	WITS110_2	0.011	0.035	10
RPI660	5.42	5.58	0.16	14316	24.85	6.23	1231	1239	PITS10_1	0.015	0.035	1
RPI654 **	5.33	5.67	0.34	5729	4.68	7.23	2828	2835	PITS10_1	0.013	0.035	4

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RPI651 **	5.50	5.75	0.25	6847	7.61	6.65	3828	3835	PITS10_2	0.010	0.035	3
R645A	5.08	5.42	0.34	5757	4.70	3.31	1127	1137	Channel	0.001	0.035	5
RD654	5.33	5.92	0.59	6108	2.88	2.58	692	701	WITS110_2	0.004	0.035	6
RPI689	5.00	5.33	0.33	2826	2.38	4.19	6362	6367	WITS110_2	0.003	0.035	5
RPI687	5.33	5.50	0.17	18798	30.72	11.69	9166	9170	WITS100	0.017	0.035	2
RPI684	5.67	5.92	0.25	10777	11.97	11.45	8893	8899	WITS100	0.017	0.035	4
RPI681 **	5.92	6.50	0.58	14047	6.73	9.72	8711	8714	WITS110_1	0.014	0.035	7
RPI690 **	6.50	6.67	0.17	5688	9.29	3.79	6474	6479	TWTS50	0.005	0.035	1
RD678	6.50	6.92	0.42	3177	2.10	3.32	2122	2129	TSR606	0.006	0.035	1
RWI542	8.33	8.50	0.17	9910	16.19	2.42	388	397	WITS40	0.008	0.035	1
RWI529	7.67	7.75	0.08	3889	13.50	2.98	447	455	WITS90_3	0.011	0.04	1
RWI516	7.50	8.08	0.58	4526	2.17	4.62	6235	6238	WITS130	0.006	0.04	6
RDCP07	8.33	8.83	0.50	14618	8.12	2.95	396	405	WITS120	0.009	0.035	2
RD529	7.67	7.75	0.08	9401	32.64	0.18	0	0	WITS40	0.008	0.035	1
RWI528	7.83	8.25	0.42	3670	2.43	2.37	437	445	WITS70	0.010	0.04	1
RDCPOT +	0.00	0.00	0.08	5720	19.07	0.11	0	0	TWTS50	0.004	0.04	2
RWI527	4.50	4.83	0.33	8240	6.94	2.41	651	660	WITS70	0.007	0.04	3
R508* **	8.25	8.75	0.50	12366	6.87	4.82	6248	6254	WITS130	0.005	0.035	7
R510A	4.58	5.67	1.09	17257	4.40	2.21	751	759	WITS70	0.005	0.04	8
RWI510	8.67	9.33	0.66	11711	4.93	3.70	4927	4930	WITS70	0.005	0.04	2
RWI502	10.75	10.83	0.08	1494	5.19	6.51	12640	12648	Channel	0.001	0.035	1
RDCP08	8.33	8.58	0.25	6701	7.45	2.83	396	405	WITS120	0.008	0.035	1
RWI526	7.67	8.58	0.91	5909	1.80	2.28	429	437	WITS70	0.007	0.035	6
RDCP09	8.33	9.25	0.92	6377	1.93	3.66	399	408	PITS10_2	0.009	0.035	8
RD527	4.50	5.08	0.58	4871	2.33	1.14	31	21	WITS130	0.008	0.035	2
RWI525	4.67	5.42	0.75	11922	4.42	3.34	988	996	WITS120	0.007	0.035	6

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RD525	4.67	5.50	0.83	7666	2.57	1.32	50	40	WITS130	0.007	0.035	6
RWI524	4.58	4.92	0.34	11015	9.00	2.98	715	724	WITS130	0.006	0.035	2
RD524	4.58	4.83	0.25	6496	7.22	0.70	16	6	WITS130	0.007	0.035	3
RPI639	4.67	5.00	0.33	5658	4.76	2.92	261	271	PITS10_2	0.007	0.035	2
RWI506	5.25	5.50	0.25	6492	7.21	2.85	2007	2014	WITS70	0.005	0.04	2
RD508	8.75	9.00	0.25	2235	2.48	2.22	1167	1175	WITS130	0.003	0.04	6
RWI500	18.67	19.33	0.66	1679	0.71	5.06	1523	1532	Channel	0.003	0.035	5
RPI635	19.33	20.08	0.75	728	0.27	4.79	1521	1527	WITS130	0.014	0.035	2
RDCP11	8.33	8.67	0.34	11034	9.01	3.09	416	425	PITS30	0.009	0.035	5
RDCP12	8.33	8.58	0.25	20386	22.65	2.51	188	198	PITS30	0.009	0.035	6
RPI618	7.83	8.42	0.59	2775	1.31	3.22	647	656	TSR621	0.008	0.035	2
RDCP13	8.33	9.00	0.67	9602	3.98	3.29	409	418	PITS30	0.011	0.035	2
RD618	8.33	8.75	0.42	11215	7.42	3.19	212	221	PITS10_2	0.010	0.035	5
RPI615	4.42	8.33	3.91	10443	0.74	3.54	678	687	PITS20	0.008	0.035	12
RPI612	8.58	8.83	0.25	5109	5.68	2.98	319	328	PITS20	0.008	0.035	2
RDCP14	8.33	9.50	1.17	10754	2.55	3.40	352	361	PDTS30	0.011	0.035	8
RPI609	4.83	4.92	0.09	5754	17.76	3.68	1101	1110	PITS20	0.006	0.035	1
RD612	8.58	9.33	0.75	9630	3.57	4.15	958	967	PITS20	0.009	0.035	4
RPI621	5.33	5.42	0.09	5060	15.62	2.87	1009	1017	TSR621	0.004	0.035	6
RDCP10	8.33	8.75	0.42	6159	4.07	3.14	409	418	PITS30	0.009	0.035	6
RPI628	4.33	8.67	4.34	5834	0.37	2.52	468	478	Channel	0.001	0.035	1
R624A	5.00	5.92	0.92	8664	2.62	5.41	1342	1350	PITS10_2	0.012	0.035	2
RPI636	4.42	4.50	0.08	2635	9.15	2.76	573	581	WITS130	0.006	0.035	1
RPI624 **	5.92	6.25	0.33	14427	12.14	4.14	1499	1508	PITS20	0.007	0.035	3
RPI633	14.42	15.00	0.58	7557	3.62	4.03	2200	2209	Channel	0.001	0.035	4
RDCP15	6.08	6.50	0.42	10400	6.88	3.02	213	222	PDTS30	0.012	0.035	6

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
R606A	4.50	10.17	5.67	11809	0.58	1.69	192	201	PDTS40_1	0.004	0.035	7
RPI606	4.50	4.83	0.33	4513	3.80	5.15	668	677	PITS40	0.006	0.035	1
RD606A	4.50	4.83	0.33	11125	9.36	2.27	142	151	PITS20	0.007	0.035	6
RPI604	4.58	4.92	0.34	2654	2.17	2.12	414	422	TSR606	0.006	0.035	4
RD600A	4.75	5.33	0.58	7507	3.60	3.86	1049	1058	PITS30	0.009	0.035	2
RPI603	5.25	5.42	0.17	7442	12.16	4.47	2033	2041	PDTS30	0.007	0.035	1
RPI600	13.25	14.17	0.92	3427	1.03	3.30	2594	2602	PDTS40_1	0.004	0.035	2
RDCP16	6.08	6.50	0.42	14927	9.87	4.05	814	823	PDTS30	0.010	0.035	8
RDCP17	6.08	6.50	0.42	5902	3.90	3.53	271	280	PDTS30	0.015	0.035	4
RPD740	9.42	9.67	0.25	6476	7.20	5.98	1248	1256	PDTS40_2	0.015	0.035	5
R726B	9.67	9.92	0.25	10685	11.87	3.03	1227	1235	PDTS40_1	0.006	0.035	2
RDCP18	6.08	6.67	0.59	8638	4.07	2.05	279	288	WITS70	0.007	0.035	7
RPD736	6.17	6.25	0.08	5434	18.87	2.91	439	448	PDTS30	0.006	0.035	1
RDCP19	6.08	6.33	0.25	6125	6.81	2.14	859	866	TWTS50	0.004	0.035	4
RPD760	4.83	5.00	0.17	4937	8.07	2.39	396	406	Channel	0.001	0.035	2
RPD732	5.75	6.33	0.58	1894	0.91	3.43	1073	1081	PDTS30	0.005	0.035	6
R726A	6.08	6.33	0.25	4094	4.55	4.52	1650	1657	PDTS30	0.008	0.035	2
R726*	6.58	7.25	0.67	3986	1.65	4.74	2568	2576	PDTS30	0.007	0.035	2
RPD726	7.67	7.92	0.25	10623	11.80	4.46	2306	2314	PDTS30	0.006	0.035	2
RD744 +	0.00	0.00	0.08	6956	23.19	0.11	0	0	WITS120	0.008	0.035	1
RPD720	9.25	9.33	0.08	4959	17.22	3.69	4030	4036	PDTS40_1	0.004	0.035	1
RD716	7.67	7.25	-0.42	5888	-3.89	1.93	198	207	PDTS40_1	0.006	0.035	2
R700*	9.33	9.92	0.59	10484	4.94	6.38	3980	3986	PDTS40_2	0.008	0.035	2
RPD748	4.50	4.75	0.25	8775	9.75	4.51	518	527	PDTS40_2	0.013	0.035	3
RPD756	5.25	5.58	0.33	5149	4.33	4.82	1599	1607	PDTS30	0.010	0.035	4
R708*	5.50	5.92	0.42	6448	4.26	5.41	1638	1646	PDTS40_2	0.009	0.035	6

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation
** Modified Typical X-Section
x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Existing Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
R712A	4.83	5.17	0.34	4179	3.41	2.98	551	560	PDTS30	0.006	0.035	6
RPD708	5.00	5.17	0.17	1840	3.01	9.79	2911	2919	Channel	0.010	0.035	1
RPD704	5.25	5.50	0.25	4300	4.78	4.55	3146	3153	PDTS40_1	0.009	0.035	4
RD800 +	0.00	0.00	0.08	4229	14.10	0.13	0	0	WITS120	0.011	0.035	2
R810*	9.75	10.17	0.42	5287	3.50	5.46	4053	4062	TSAF10	0.002	0.035	8
RAF803	4.67	4.83	0.16	6821	11.84	3.45	2001	2008	PDTS40_1	0.006	0.035	3
RAF805	4.50	5.17	0.67	2485	1.03	4.19	618	627	TSAF10	0.004	0.035	6
RAF807	4.67	4.75	0.08	8372	29.07	4.33	2904	2911	PDTS40_1	0.008	0.035	1
RAF810	10.17	10.50	0.33	1378	1.16	7.41	4039	4048	TSAF10	0.004	0.035	3
RAF854	4.08	4.17	0.09	2136	6.59	4.71	792	801	TSAF20	0.005	0.035	1
RAF852	4.08	4.17	0.09	2113	6.52	5.35	1167	1176	TSAF10	0.005	0.035	1
RAF864	4.25	4.67	0.42	6743	4.46	2.11	74	64	TSAF20	0.004	0.035	1
RAF862	4.00	4.08	0.08	4666	16.20	3.44	457	467	TSAF20	0.003	0.035	1
RAF866	4.17	4.42	0.25	4588	5.10	3.81	616	624	SVTS10	0.016	0.035	1
RSV258	4.42	4.58	0.16	6946	12.06	2.92	420	429	SVTS50_1	0.005	0.035	1

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation
** Modified Typical X-Section
x Modified Time To Peak Used

D.3.5 NSTEP Check Data: 100-yr 24-hr Future Conditions

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RWT140	13.00	13.33	0.33	13053	10.99	6.56	1981	1988	WTTS20_1	0.019	0.035	4
RWT130	13.17	13.75	0.58	5750	2.75	4.28	2705	2714	Channel	0.001	0.035	5
RWT160	12.58	14.25	1.67	18961	3.15	2.41	409	417	WTTS10_1	0.012	0.035	12
R150A	12.92	13.17	0.25	9557	10.62	9.53	2850	2857	WTTS20_2	0.021	0.035	2
RWT150	13.08	13.50	0.42	16082	10.64	6.44	3161	3166	WTTS20_1	0.013	0.035	7
RWT120	13.50	14.08	0.58	6168	2.95	5.41	6330	6339	Channel	0.001	0.035	7
RWT110	14.08	14.75	0.67	7640	3.17	5.36	6116	6125	Channel	0.001	0.035	5
RWT100	14.67	15.08	0.41	4778	3.24	5.30	5872	5881	Channel	0.001	0.035	1
RTW406	12.08	16.67	4.59	16567	1.00	0.49	31	22	TSR408	0.007	0.04	6
RTW408 **	12.83	15.92	3.09	11703	1.05	1.39	235	244	TWTS50	0.005	0.04	10
RTW404	15.08	15.33	0.25	14969	16.63	3.76	5878	5878	TSR408	0.008	0.035	2
RIW371	12.08	14.67	2.59	20437	2.19	0.22	11	1	TSR371	0.008	0.04	15
RIW366	12.33	12.83	0.50	6797	3.78	4.41	693	702	TSR375	0.009	0.04	6
RIW377 **	12.33	13.17	0.84	4964	1.64	0.94	68	59	TSR371	0.010	0.04	6
RD371	12.08	12.33	0.25	1828	2.03	0.71	22	12	WITS130	0.003	0.035	1
RIW374	12.17	14.08	1.91	6588	0.96	1.47	272	280	TSR371	0.010	0.04	15
RIW386 **	12.67	13.75	1.08	7726	1.99	2.75	201	210	IWTS20_2	0.009	0.035	6
RIW382	12.33	12.83	0.50	10311	5.73	2.20	218	227	IWTS20_1	0.008	0.04	3
RD382A	12.33	12.42	0.09	2942	9.08	1.66	70	60	WITS130	0.009	0.035	1
RIW384	12.33	12.75	0.42	1005	0.66	1.91	123	132	TWTS20	0.014	0.04	3
RIW381	12.42	12.75	0.33	4694	3.95	1.85	452	458	TSR371	0.012	0.04	3
R359*	12.83	13.17	0.34	9280	7.58	4.99	729	738	IWTS30_2	0.010	0.04	4
RIW359	12.83	13.17	0.34	17152	14.01	5.57	2516	2525	IWTS30_1	0.006	0.04	4
RIW389	12.33	13.83	1.50	7697	1.43	2.77	72	62	IWTS10_1	0.013	0.04	6
RIW394	13.00	13.25	0.25	6512	7.24	5.90	2479	2484	TWTS10	0.014	0.035	2
R390A	13.17	13.42	0.25	8577	9.53	7.97	2824	2833	IWTS10_1	0.013	0.035	4

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation
** Modified Typical X-Section
x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RIW390	13.42	13.75	0.33	13324	11.22	6.51	2814	2821	TWTS10	0.017	0.035	5
RIW388	13.75	14.00	0.25	11626	12.92	5.92	3194	3200	IWTS20_1	0.010	0.04	4
RIW357	14.08	14.58	0.50	2593	1.44	3.28	2382	2388	TWTS20	0.008	0.04	9
RIW353	13.33	13.58	0.25	2643	2.94	2.94	4564	4566	TSR371	0.009	0.04	2
RIW312 **	12.67	13.50	0.83	17570	5.88	2.04	229	239	TSR294	0.005	0.04	1
RD312	12.67	12.83	0.16	4244	7.37	1.59	74	65	TWTS20	0.011	0.035	1
RIW365	12.75	13.25	0.50	11648	6.47	3.51	282	291	TSR375	0.010	0.04	5
RD365	12.75	12.92	0.17	1927	3.15	1.12	40	30	WITS130	0.005	0.035	2
RIW369 **	12.92	13.17	0.25	11583	12.87	1.41	257	266	TSR371	0.009	0.04	4
RD357	14.00	14.08	0.08	3820	13.26	4.88	828	837	IWTS30_1	0.009	0.04	2
RIW363	13.08	13.58	0.50	7351	4.08	5.05	1032	1041	IWTS30_1	0.009	0.04	4
RD369	12.75	13.08	0.33	1409	1.19	1.22	195	205	WITS130	0.001	0.035	1
RIW368	12.83	13.50	0.67	7248	3.00	2.04	279	288	TWTS20	0.010	0.04	6
RIW360	12.25	12.42	0.17	11127	18.18	4.69	636	645	IWTS30_1	0.008	0.035	1
RIW397	12.83	13.42	0.59	2780	1.31	3.95	3498	3505	PDTS40_1	0.006	0.035	6
RIW395	13.17	13.42	0.25	21294	23.66	9.57	7775	7775	TWTS10	0.021	0.035	3
RIW387 +	12.67	12.67	0.08	11459	38.20	2.57	1080	1086	TSR371	0.012	0.035	1
RIW396	13.33	13.50	0.17	5924	9.68	4.80	8246	8247	PDTS40_1	0.006	0.035	2
RIW380	13.50	14.58	1.08	4964	1.28	3.88	5653	5651	TSR371	0.012	0.035	11
RIW370	14.58	15.08	0.50	15367	8.54	9.16	5501	5508	TSR375	0.010	0.035	3
RIW349	15.08	15.17	0.09	7496	23.14	3.39	2089	2097	IWTS40_1	0.005	0.035	2
RD349	15.08	15.42	0.34	6586	5.38	7.01	3262	3270	IWTS30_1	0.008	0.035	1
RIW356 **	15.25	15.42	0.17	13031	21.29	8.53	5333	5341	IWTS30_2	0.006	0.04	1
RIW354	15.42	15.75	0.33	16693	14.05	7.24	5226	5233	IWTS30_1	0.008	0.04	2
RIW372	12.17	13.42	1.25	13330	2.96	2.68	129	139	TSR375	0.010	0.04	9
RD372	12.17	12.42	0.25	1142	1.27	1.15	100	91	TWTS20	0.004	0.035	1

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation
** Modified Typical X-Section
x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RIW375	12.58	13.42	0.84	16914	5.59	2.33	294	303	TWTS20	0.013	0.04	8
RIW364	15.75	16.50	0.75	9657	3.58	8.97	5221	5229	IWTS30_2	0.007	0.04	7
RD363	13.08	13.25	0.17	1700	2.78	2.94	486	495	WITS130	0.011	0.04	1
RIW351	13.08	16.33	3.25	4523	0.39	0.85	68	59	TSR371	0.007	0.04	10
RIW346	16.42	16.67	0.25	24311	27.01	9.25	5289	5297	IWTS30_2	0.008	0.04	2
RIW338	16.67	17.08	0.41	4331	2.93	5.22	5234	5237	TWTS20	0.016	0.04	5
RIW326	12.25	12.92	0.67	21501	8.91	2.14	239	248	TWTS40	0.007	0.04	5
RIW334	17.08	17.92	0.84	3706	1.23	4.30	5178	5183	TWTS30	0.005	0.04	12
RD351	13.08	13.42	0.34	2791	2.28	4.00	481	490	IWTS30_1	0.008	0.04	3
RIW361	13.50	14.25	0.75	10402	3.85	2.11	1557	1561	TSR371	0.007	0.04	12
R350*	13.67	14.00	0.33	8310	6.99	4.53	6253	6257	IWTS40_1	0.006	0.04	3
RIW330	14.00	14.17	0.17	7227	11.81	4.84	6314	6318	TWTS30	0.006	0.04	1
RIW322	14.08	14.75	0.67	2771	1.15	3.83	6681	6686	IWTS40_2	0.005	0.04	12
RIW318	12.50	14.42	1.92	8066	1.17	2.12	299	308	TWTS30	0.006	0.04	15
RIW310	12.67	12.75	0.08	20068	69.68	2.21	683	692	IWTS50	0.005	0.04	1
RIW314	14.92	16.08	1.16	12886	3.09	3.95	6992	6993	IWTS40_2	0.005	0.04	15
RIW300	16.08	16.50	0.42	860	0.57	2.80	6894	6897	IWTS50	0.002	0.04	3
RIW302	17.25	17.50	0.25	8292	9.21	9.91	10613	10620	TSR375	0.010	0.04	3
R264A	12.75	13.25	0.50	4042	2.25	2.17	1460	1467	TSR264A	0.003	0.04	1
RSV264	13.00	13.50	0.50	2946	1.64	2.48	2153	2162	SVTS50_1	0.001	0.04	1
RSV298	12.83	14.17	1.34	6826	1.42	3.55	460	470	Channel	0.004	0.04	14
RSV286	12.50	12.75	0.25	13500	15.00	3.32	1082	1091	TSR294	0.006	0.04	1
RSV284	12.67	13.42	0.75	3544	1.31	3.26	1076	1085	TSR294	0.006	0.04	4
RSV290	12.42	13.58	1.16	14316	3.43	2.66	453	462	TSR294	0.006	0.04	5
RSV272	13.33	13.42	0.09	1016	3.14	3.59	1825	1834	SVTS50_1	0.004	0.04	1
RSV294	12.67	13.50	0.83	15129	5.06	3.56	1541	1549	TSR294	0.006	0.04	5

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RSV276 **	13.42	13.50	0.08	6288	21.83	3.85	3627	3635	SVTS50_1	0.003	0.04	1
RSV280	13.58	13.83	0.25	12013	13.35	4.68	4120	4128	TSR294	0.006	0.04	3
RSV268	12.42	12.75	0.33	1628	1.37	3.60	1073	1082	SVTS50_1	0.006	0.04	1
RSV260	14.67	14.92	0.25	4870	5.41	2.95	4514	4521	TSR264A	0.003	0.04	5
RSV252	12.25	13.25	1.00	10928	3.04	1.52	70	60	SVTS10	0.010	0.04	5
RSV254	12.17	13.25	1.08	2155	0.55	1.62	64	55	TSR248	0.018	0.04	6
RSV219	12.25	12.75	0.50	10623	5.90	2.94	834	843	SVTS50_2	0.004	0.04	3
RSV251	12.25	13.33	1.08	9744	2.51	1.90	134	143	SVTS10	0.009	0.04	8
RSV250	12.25	13.42	1.17	12592	2.99	1.48	64	55	SVTS10	0.010	0.04	8
RSV218	12.58	13.00	0.42	5058	3.35	2.59	1456	1465	SVTS10	0.004	0.04	2
RSV248	12.67	13.17	0.50	11765	6.54	2.85	364	373	SVTS10	0.011	0.035	3
RD248	12.67	12.92	0.25	1034	1.15	2.41	358	367	WITS130	0.008	0.04	2
RSV244	13.00	13.75	0.75	7772	2.88	3.83	1087	1094	TSR248	0.014	0.04	8
RSV216	13.42	13.75	0.33	4698	3.95	2.84	2346	2353	SVTS10	0.004	0.04	5
RSV236	12.25	13.58	1.33	11106	2.32	2.29	275	284	SVTS10	0.010	0.04	8
R242* **	12.67	13.33	0.66	13351	5.62	4.12	2572	2580	SVTS10	0.010	0.04	9
RSV220	13.58	14.00	0.42	9734	6.44	4.41	7777	7783	SVTS20_1	0.003	0.04	6
R230*	12.50	12.83	0.33	8744	7.36	4.26	3225	3230	SVTS30	0.009	0.04	6
RSV212 **	13.75	14.33	0.58	7196	3.45	4.09	8668	8672	SVTS10	0.004	0.04	6
RSV202	12.50	13.00	0.50	7461	4.15	3.40	971	980	SVTS40	0.009	0.04	5
RSV210 **	12.08	13.08	1.00	9922	2.76	1.55	706	713	TSR408	0.005	0.04	11
R205*	12.25	13.08	0.83	9517	3.19	3.01	606	614	SVTS40	0.008	0.04	1
RSV203	12.17	12.75	0.58	12156	5.82	1.49	63	53	SVTS40	0.007	0.04	7
RSV200	17.00	17.25	0.25	6617	7.35	4.14	14818	14815	TWTS50	0.004	0.04	5
RTW416	12.50	13.75	1.25	7044	1.57	2.32	398	407	WITS30	0.006	0.04	15
RTW420	12.42	13.33	0.91	22821	6.97	2.17	589	598	WITS30	0.004	0.04	10

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RTW414	12.08	13.17	1.09	18065	4.60	2.67	809	818	WITS30	0.005	0.04	8
RTW410	17.25	17.92	0.67	10139	4.20	4.32	14917	14923	TSR408	0.007	0.04	8
RTW402	15.42	15.50	0.08	2936	10.19	7.27	19357	19365	Channel	0.001	0.035	1
RTW448	12.67	13.58	0.91	7274	2.22	1.92	152	161	WITS10	0.009	0.035	5
RD448	12.67	12.83	0.16	2017	3.50	1.10	35	25	WITS130	0.006	0.035	1
R446A	12.75	13.33	0.58	6777	3.25	2.40	209	218	WITS130	0.009	0.035	4
RTW446	13.25	13.67	0.42	8794	5.82	2.38	471	479	WITS10	0.010	0.04	4
RTW432	12.75	13.17	0.42	7363	4.87	2.56	748	757	TWTS30	0.005	0.04	7
RTW459	12.83	13.08	0.25	4935	5.48	2.96	339	347	WITS10	0.017	0.035	2
RD380 **	13.50	13.67	0.17	1172	1.92	4.05	2185	2193	WITS130	0.007	0.035	1
RTW462	13.58	13.92	0.34	5969	4.88	2.19	2167	2175	TSR478	0.001	0.035	2
R450A	12.83	13.25	0.42	5936	3.93	3.17	518	526	WITS10	0.015	0.035	1
R450B	13.83	14.50	0.67	18811	7.80	4.46	2593	2597	WITS10	0.012	0.035	8
RD446A +	0.00	0.00	0.08	1591	5.30	0.22	0	0	WITS130	0.013	0.035	1
RTW450	14.50	14.75	0.25	8151	9.06	4.40	2634	2639	WITS20	0.010	0.035	4
RTW444	14.75	14.92	0.17	6941	11.34	3.76	2586	2592	WITS20	0.009	0.04	1
RTW460	12.92	13.17	0.25	6520	7.24	3.65	1108	1115	TWTS20	0.014	0.035	2
RTW458	13.08	13.25	0.17	6625	10.83	3.86	1410	1416	TWTS20	0.013	0.035	2
RTW456	13.25	13.42	0.17	3227	5.27	3.97	1410	1415	WITS10	0.014	0.035	2
RTW454	13.42	14.33	0.91	4821	1.47	2.89	488	496	WITS10	0.012	0.035	10
R452A	12.75	13.75	1.00	16523	4.59	3.32	667	675	WITS10	0.014	0.035	11
R452B	13.75	14.42	0.67	9296	3.85	3.19	1188	1196	WITS10	0.008	0.035	4
RD450	14.50	14.67	0.17	3342	5.46	2.99	128	137	WITS90_2	0.014	0.035	1
RTW452	14.58	15.08	0.50	13093	7.27	3.20	1328	1335	WITS10	0.010	0.04	6
R442*	15.00	15.58	0.58	9088	4.35	3.79	3553	3557	WITS20	0.007	0.04	6
RTW434	15.50	16.00	0.50	13449	7.47	4.10	3717	3724	TWTS30	0.005	0.04	5

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RTW436	12.25	13.17	0.92	2739	0.83	2.65	567	576	WITS20	0.009	0.04	10
RTW429	12.33	13.17	0.84	10141	3.35	2.22	333	342	WITS30	0.006	0.04	2
RD454	13.42	13.58	0.16	5985	10.39	2.61	940	948	TSR482	0.007	0.035	1
R576A	12.83	13.42	0.59	18394	8.66	2.87	513	521	WITS10	0.011	0.035	6
R576B	13.42	15.25	1.83	21213	3.22	2.34	321	330	WITS10	0.009	0.035	16
RTW485	12.92	13.00	0.08	5659	19.65	3.42	1719	1728	Channel	0.001	0.04	1
RTW484	12.75	13.42	0.67	1831	0.76	2.85	1864	1870	TSR482	0.007	0.04	7
R580B	12.33	12.83	0.50	12583	6.99	2.67	218	227	PDTS30	0.008	0.035	5
R580A	12.58	13.75	1.17	8181	1.94	4.78	1617	1624	WITS10	0.020	0.035	14
RD580B	12.33	12.83	0.50	4775	2.65	1.18	184	193	TSBEAR	0.001	0.035	6
RWI578	12.92	13.50	0.58	12424	5.95	3.60	370	379	WITS90_1	0.013	0.035	8
RWI580	13.67	14.08	0.41	8541	5.79	4.02	1938	1945	WITS10	0.011	0.035	5
RD576B	13.42	14.25	0.83	9430	3.16	3.74	230	239	WITS90_1	0.020	0.035	9
RWI576	14.08	14.50	0.42	8726	5.77	3.18	949	957	WITS10	0.010	0.035	5
RTW482	14.50	15.00	0.50	10402	5.78	2.65	990	997	TSR482	0.009	0.04	6
RTW480	13.42	14.17	0.75	7471	2.77	1.48	132	141	TSR482	0.008	0.04	2
RTW478	12.17	15.08	2.91	4817	0.46	1.52	135	144	TSR482	0.008	0.04	3
RTW430	16.75	17.42	0.67	8990	3.73	4.08	2777	2783	TWTS30	0.006	0.04	1
RTW418	17.25	17.58	0.33	12733	10.72	3.48	2761	2768	WITS30	0.005	0.04	1
RTW424	12.25	12.50	0.25	3703	4.11	1.91	1844	1853	TSR429	0.001	0.04	3
RTW422	12.50	20.42	7.92	5625	0.20	3.60	2726	2733	WITS30	0.005	0.04	17
RTW400	15.58	15.83	0.25	2375	2.64	7.44	21097	21105	Channel	0.001	0.035	3
RWI504	15.83	15.92	0.09	5235	16.16	5.52	21072	21067	WITS70	0.004	0.035	1
RD576	14.08	14.33	0.25	13552	15.06	3.65	1235	1243	WITS10	0.012	0.035	3
RWI574	12.25	13.33	1.08	14010	3.60	1.92	123	132	WITS10	0.011	0.035	7
RWI572	12.33	13.17	0.84	23543	7.79	4.84	1392	1399	WITS90_1	0.012	0.035	9

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RWI570	12.50	13.00	0.50	12212	6.78	4.74	1046	1054	WITS90_1	0.014	0.035	4
RWI566	12.50	13.08	0.58	10390	4.98	3.47	358	367	WITS90_1	0.012	0.035	8
RWI564	13.17	13.67	0.50	9364	5.20	4.11	737	746	WITS90_1	0.012	0.035	4
R562*	13.25	13.92	0.67	8797	3.65	4.75	2071	2076	WITS10	0.017	0.035	8
R560A	12.75	13.75	1.00	14581	4.05	3.16	722	730	WITS40	0.011	0.035	9
RWI560	13.58	14.33	0.75	16408	6.08	5.15	4955	4956	WITS10	0.012	0.035	8
RD482 +	0.00	0.00	0.08	5200	17.33	0.16	0	0	WITS70	0.007	0.035	1
RWI582	12.25	12.83	0.58	5153	2.47	1.82	269	278	WITS10	0.005	0.035	2
RWI556	12.00	13.42	1.42	11699	2.29	1.19	46	36	WITS40	0.007	0.035	4
RWI554	14.25	14.33	0.08	11635	40.40	4.44	5146	5151	WITS40	0.007	0.035	2
RWI552 +	14.33	14.33	0.08	4538	15.13	8.41	5170	5177	WITS50	0.014	0.04	1
RD480	13.42	14.00	0.58	2439	1.17	4.32	2575	2582	WITS130	0.009	0.04	2
RWI584	13.92	14.42	0.50	3933	2.19	1.73	2670	2678	WITS70	0.001	0.04	2
RWI550	14.58	14.83	0.25	1732	1.92	5.67	7414	7418	WITS70	0.012	0.04	2
RWI548	12.25	13.17	0.92	6201	1.87	2.01	228	237	WITS70	0.008	0.035	7
RWI546	13.00	13.17	0.17	13444	21.97	3.95	511	520	WITS90_2	0.012	0.035	3
RWI544	12.50	13.33	0.83	5296	1.77	3.17	509	518	WITS90_3	0.009	0.035	5
RWI540	12.83	13.00	0.17	2706	4.42	3.36	771	779	WITS90_3	0.007	0.035	1
R538A	12.92	13.67	0.75	18226	6.75	5.05	1128	1136	WITS90_2	0.013	0.035	8
RWI538	13.58	14.25	0.67	4350	1.80	5.66	1599	1607	WITS90_1	0.017	0.035	9
RWI534	12.33	12.58	0.25	15096	16.77	2.74	398	407	WITS90_3	0.008	0.035	2
R530*	12.58	13.25	0.67	14751	6.12	4.03	1241	1249	WITS90_3	0.008	0.035	9
RD544	12.50	13.08	0.58	4830	2.31	3.28	1117	1124	WITS10	0.010	0.035	6
RPI663	12.92	13.75	0.83	19831	6.64	2.85	298	306	WITS110_2	0.011	0.035	10
RPI660	13.50	13.67	0.17	14316	23.39	5.73	883	891	PITS10_1	0.015	0.035	1
RPI654	12.92	13.25	0.33	5729	4.82	6.82	2245	2252	PITS10_1	0.013	0.035	4

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RPI651 **	13.08	13.33	0.25	6847	7.61	6.39	3252	3259	PITS10_2	0.010	0.035	3
R645A	12.75	13.17	0.42	5757	3.81	3.07	876	885	Channel	0.001	0.035	5
RD654	12.92	13.58	0.66	6108	2.57	2.42	553	561	WITS110_2	0.004	0.035	6
RPI689 **	12.92	13.33	0.41	2826	1.91	4.27	6797	6803	WITS110_2	0.003	0.035	4
RPI687	13.25	13.42	0.17	18798	30.72	12.13	10371	10374	WITS100	0.017	0.035	2
RPI684	13.58	13.92	0.34	10777	8.80	11.76	9741	9745	WITS100	0.017	0.035	3
RPI681	13.83	14.50	0.67	14047	5.82	9.91	9383	9386	WITS110_1	0.014	0.035	7
RPI690 **	14.50	14.67	0.17	5688	9.29	3.84	6800	6802	TWTS50	0.005	0.035	1
RD678	14.50	14.92	0.42	3177	2.10	3.39	2306	2312	TSR606	0.006	0.035	1
RWI542	15.75	15.92	0.17	9910	16.19	2.45	407	415	WITS40	0.008	0.035	1
RWI529	15.42	15.58	0.16	3889	6.75	2.96	437	446	WITS90_3	0.011	0.04	1
RWI516	14.83	15.42	0.59	4526	2.13	4.86	7615	7617	WITS130	0.006	0.04	6
RDCP07	15.75	16.25	0.50	14618	8.12	2.99	420	429	WITS120	0.009	0.035	2
RD529	15.42	15.83	0.41	9401	6.37	0.18	7	0	WITS40	0.008	0.035	2
RWI528	15.67	16.00	0.33	3670	3.09	2.41	461	469	WITS70	0.010	0.04	1
RDCPOT +	0.00	0.00	0.08	5720	19.07	0.11	0	0	TWTS50	0.004	0.04	2
RWI527	12.33	12.75	0.42	8240	5.45	2.33	585	593	WITS70	0.007	0.04	3
R508* **	15.42	15.92	0.50	12366	6.87	5.13	7983	7988	WITS130	0.005	0.035	7
R510A	12.33	13.50	1.17	17257	4.10	2.14	672	680	WITS70	0.005	0.04	8
RWI510	15.83	16.25	0.42	11711	7.75	3.99	6600	6602	WITS70	0.005	0.04	2
RWI502	16.17	16.25	0.08	1494	5.19	7.87	26242	26248	Channel	0.001	0.035	1
RDCP08	15.75	16.00	0.25	6701	7.45	2.87	420	429	WITS120	0.008	0.035	1
RWI526	15.58	16.50	0.92	5909	1.78	2.28	431	439	WITS70	0.007	0.035	6
RDCP09	15.75	16.67	0.92	6377	1.93	3.71	421	430	PITS10_2	0.009	0.035	8
RD527	12.33	13.00	0.67	4871	2.02	0.50	12	2	WITS130	0.008	0.035	2
RWI525	12.42	13.08	0.66	11922	5.02	3.68	1453	1460	WITS120	0.007	0.035	6

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RD525	12.42	13.42	1.00	7666	2.13	1.59	83	73	WITS130	0.007	0.035	6
RWI524	12.42	12.83	0.41	11015	7.46	2.89	640	648	WITS130	0.006	0.035	2
RD524	12.42	12.67	0.25	6496	7.22	0.16	6	0	WITS130	0.007	0.035	3
RPI639 **	12.58	12.92	0.34	5658	4.62	2.57	171	161	PITS10_2	0.007	0.035	2
RWI506	12.92	13.00	0.08	6492	22.54	3.02	2516	2523	WITS70	0.005	0.04	3
RD508	15.92	16.17	0.25	2235	2.48	2.37	1502	1509	WITS130	0.003	0.04	6
RWI500	26.42	27.00	0.58	1679	0.80	6.60	3741	3750	Channel	0.003	0.035	5
RPI635	27.00	27.75	0.75	728	0.27	6.03	3740	3745	WITS130	0.014	0.035	2
RDCP11	15.75	16.08	0.33	11034	9.29	3.12	433	442	PITS30	0.009	0.035	5
RDCP12	15.75	16.00	0.25	20386	22.65	2.54	198	207	PITS30	0.009	0.035	6
RPI618	15.58	16.25	0.67	2775	1.15	3.22	650	658	TSR621	0.008	0.035	2
RDCP13	15.75	16.42	0.67	9602	3.98	3.33	431	440	PITS30	0.011	0.035	2
RD618	15.75	16.08	0.33	11215	9.44	3.23	223	233	PITS10_2	0.010	0.035	5
RPI615	12.33	12.75	0.42	10443	6.91	3.61	735	744	PITS20	0.008	0.035	12
RPI612	12.67	12.92	0.25	5109	5.68	3.13	384	393	PITS20	0.008	0.035	2
RDCP14	15.75	16.92	1.17	10754	2.55	3.45	371	380	PDTS30	0.011	0.035	8
RPI609	12.67	12.83	0.16	5754	9.99	3.89	1378	1386	PITS20	0.006	0.035	1
RD612	12.67	13.33	0.66	9630	4.05	4.31	1118	1126	PITS20	0.009	0.035	4
RPI621 **	13.25	13.42	0.17	5060	8.27	3.11	1376	1385	TSR621	0.004	0.035	6
RDCP10	15.75	16.17	0.42	6159	4.07	3.18	431	440	PITS30	0.009	0.035	6
RPI628	12.17	13.00	0.83	5834	1.95	2.66	552	562	Channel	0.001	0.035	1
R624A	12.58	13.50	0.92	8664	2.62	5.88	1874	1883	PITS10_2	0.012	0.035	2
RPI636 +	12.33	12.33	0.08	2635	8.78	2.46	370	379	WITS130	0.006	0.035	1
RPI624	13.50	13.75	0.25	14427	16.03	4.59	2248	2256	PITS20	0.007	0.035	3
RPI633	24.75	25.25	0.50	7557	4.20	5.03	4822	4831	Channel	0.001	0.035	4
RDCP15	17.00	17.42	0.42	10400	6.88	3.41	341	350	PDTS30	0.012	0.035	5

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
R606A	17.58	18.08	0.50	11809	6.56	1.75	221	230	PDTS40_1	0.004	0.035	6
RPI606	12.42	12.83	0.41	4513	3.06	5.19	686	695	PITS40	0.006	0.035	1
RD606A	17.58	17.92	0.34	11125	9.09	2.31	154	164	PITS20	0.007	0.035	4
RPI604	12.50	12.83	0.33	2654	2.23	2.04	364	373	TSR606	0.006	0.035	4
RD600A	12.67	13.33	0.66	7507	3.16	4.09	1321	1329	PITS30	0.009	0.035	2
RPI603	13.17	13.42	0.25	7442	8.27	4.71	2501	2507	PDTS30	0.007	0.035	1
RPI600	24.42	24.83	0.41	3427	2.32	3.97	5432	5435	PDTS40_1	0.004	0.035	2
RDCP16	17.00	17.42	0.42	14927	9.87	4.45	1184	1191	PDTS30	0.010	0.035	8
RDCP17	17.00	17.25	0.25	5902	6.56	3.88	391	400	PDTS30	0.015	0.035	4
RPD740	17.50	17.83	0.33	6476	5.45	6.43	1651	1659	PDTS40_2	0.015	0.035	5
R726B	17.83	18.00	0.17	10685	17.46	3.27	1653	1661	PDTS40_1	0.006	0.035	2
RDCP18	17.00	17.42	0.42	8638	5.71	2.28	394	402	WITS70	0.007	0.035	5
RPD736	14.17	14.25	0.08	5434	18.87	2.97	475	484	PDTS30	0.006	0.035	1
RDCP19	17.00	17.17	0.17	6125	10.01	2.35	1193	1200	TWTS50	0.004	0.035	2
RPD760	12.67	12.83	0.16	4937	8.57	2.34	372	382	Channel	0.001	0.035	2
RPD732	13.67	14.33	0.66	1894	0.80	3.62	1327	1336	PDTS30	0.005	0.035	6
R726A	14.17	14.33	0.16	4094	7.11	4.72	1963	1971	PDTS30	0.008	0.035	2
R726*	14.50	15.08	0.58	3986	1.91	5.06	3317	3323	PDTS30	0.007	0.035	2
RPD726	15.00	15.25	0.25	10623	11.80	4.55	2478	2485	PDTS30	0.006	0.035	2
RD744 +	0.00	0.00	0.08	6956	23.19	0.11	0	0	WITS120	0.008	0.035	1
RPD720	14.58	14.67	0.09	4959	15.31	4.30	7426	7429	PDTS40_1	0.004	0.035	1
RD716	15.00	15.42	0.42	5888	3.89	2.81	876	884	PDTS40_1	0.006	0.035	2
R700*	14.75	15.33	0.58	10484	5.02	7.57	7860	7867	PDTS40_2	0.008	0.035	2
RPD748	12.33	12.67	0.34	8775	7.17	4.35	450	459	PDTS40_2	0.013	0.035	3
RPD756	12.83	13.17	0.34	5149	4.21	4.75	1502	1510	PDTS30	0.010	0.035	3
R708*	13.00	13.42	0.42	6448	4.26	5.44	1669	1678	PDTS40_2	0.009	0.035	4

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation
** Modified Typical X-Section
x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 24-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
R712A	12.58	13.00	0.42	4179	2.76	2.70	374	383	PDTS30	0.006	0.035	6
RPD708	13.08	13.17	0.09	1840	5.68	10.04	3156	3164	Channel	0.010	0.035	1
RPD704	13.17	13.50	0.33	4300	3.62	4.62	3356	3363	PDTS40_1	0.009	0.035	3
RD800 +	0.00	0.00	0.08	4229	14.10	0.13	0	0	WITS120	0.011	0.035	2
R810*	15.17	15.50	0.33	5287	4.45	6.72	8948	8956	TSAF10	0.002	0.035	4
RAF803	12.50	12.75	0.25	6821	7.58	3.32	1715	1722	PDTS40_1	0.006	0.035	3
RAF805	12.33	12.75	0.42	2485	1.64	3.92	497	507	TSAF10	0.004	0.035	4
RAF807	12.67	12.75	0.08	8372	29.07	4.19	2567	2574	PDTS40_1	0.008	0.035	1
RAF810	15.42	15.67	0.25	1378	1.53	9.23	9187	9194	TSAF10	0.004	0.035	3
RAF854	12.08	12.17	0.09	2136	6.59	4.20	530	539	TSAF20	0.005	0.035	1
RAF852 +	12.17	12.17	0.08	2113	7.04	4.76	788	797	TSAF10	0.005	0.035	1
RAF864	12.25	12.83	0.58	6743	3.23	1.71	45	35	TSAF20	0.004	0.035	1
RAF862	12.00	12.08	0.08	4666	16.20	3.00	283	293	TSAF20	0.003	0.035	1
RAF866	12.17	12.50	0.33	4588	3.86	3.44	420	428	SVTS10	0.016	0.035	1
RSV258	12.42	12.58	0.16	6946	12.06	2.81	358	367	SVTS50_1	0.005	0.035	1

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation
** Modified Typical X-Section
x Modified Time To Peak Used

D.3.6 NSTEP Check Data: 100-yr 6-hr Future Conditions

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RWT140	5.17	5.42	0.25	13053	14.50	6.70	2148	2155	WTTS20_1	0.019	0.035	4
RWT130	5.25	5.75	0.50	5750	3.19	4.36	2889	2898	Channel	0.001	0.035	5
RWT160	4.58	6.25	1.67	18961	3.15	2.61	550	558	WTTS10_1	0.012	0.035	12
R150A	5.08	5.25	0.17	9557	15.62	9.59	2922	2929	WTTS20_2	0.021	0.035	2
RWT150	5.17	5.58	0.41	16082	10.90	6.43	3152	3158	WTTS20_1	0.013	0.035	5
RWT120	5.58	6.17	0.59	6168	2.90	5.34	6038	6047	Channel	0.001	0.035	7
RWT110	6.08	6.83	0.75	7640	2.83	5.28	5779	5788	Channel	0.001	0.035	5
RWT100	6.75	7.08	0.33	4778	4.02	5.20	5471	5480	Channel	0.001	0.035	1
RTW406	4.08	8.33	4.25	16567	1.08	0.57	41	32	TSR408	0.007	0.04	6
RTW408 **	4.83	7.58	2.75	11703	1.18	1.53	327	335	TWTS50	0.005	0.04	10
RTW404	7.17	7.42	0.25	14969	16.63	3.66	5371	5373	TSR408	0.008	0.035	2
RIW371	4.08	6.58	2.50	20437	2.27	0.33	13	3	TSR371	0.008	0.04	15
RIW366	4.33	4.83	0.50	6797	3.78	4.73	869	878	TSR375	0.009	0.04	4
RIW377 **	4.42	5.17	0.75	4964	1.84	1.07	100	91	TSR371	0.010	0.04	6
RD371	4.08	4.33	0.25	1828	2.03	0.91	36	26	WITS130	0.003	0.035	1
RIW374	4.17	5.83	1.66	6588	1.10	1.63	395	403	TSR371	0.010	0.04	15
RIW386	4.58	5.42	0.84	7726	2.55	3.11	294	303	IWTS20_2	0.009	0.035	6
RIW382	4.33	4.83	0.50	10311	5.73	2.33	258	267	IWTS20_1	0.008	0.04	3
RD382A	4.33	4.42	0.09	2942	9.08	2.44	217	226	WITS130	0.009	0.035	1
RIW384	4.33	4.67	0.34	1005	0.82	2.45	323	332	TWTS20	0.014	0.04	3
RIW381	4.33	4.67	0.34	4694	3.83	1.96	563	571	TSR371	0.012	0.04	3
R359*	4.75	5.08	0.33	9280	7.81	5.51	951	959	IWTS30_2	0.010	0.04	4
RIW359	4.83	5.17	0.34	17152	14.01	5.76	2865	2874	IWTS30_1	0.006	0.04	4
RIW389	4.33	5.67	1.34	7697	1.60	3.03	99	89	IWTS10_1	0.013	0.04	6
RIW394	5.08	5.25	0.17	6512	10.64	6.08	2722	2729	TWTS10	0.014	0.035	2
R390A	5.25	5.42	0.17	8577	14.01	8.09	3013	3020	IWTS10_1	0.013	0.035	2

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RIW390	5.50	5.75	0.25	13324	14.80	6.61	2958	2962	TWTS10	0.017	0.035	3
RIW388	5.75	6.00	0.25	11626	12.92	5.98	3305	3311	IWTS20_1	0.010	0.04	2
RIW357 **	5.92	6.50	0.58	2593	1.24	3.31	2465	2469	TWTS20	0.008	0.04	6
RIW353 **	5.33	5.58	0.25	2643	2.94	2.99	4906	4908	TSR371	0.009	0.04	2
RIW312 **	4.58	5.58	1.00	17570	4.88	2.07	239	249	TSR294	0.005	0.04	1
RD312	4.58	4.67	0.09	4244	13.10	2.21	206	215	TWTS20	0.011	0.035	1
RIW365	4.67	5.17	0.50	11648	6.47	3.57	297	306	TSR375	0.010	0.04	5
RD365	4.67	4.83	0.16	1927	3.35	2.09	245	254	WITS130	0.005	0.035	2
RIW369 **	4.75	5.17	0.42	11583	7.66	1.64	458	465	TSR371	0.009	0.04	4
RD357	5.92	6.08	0.16	3820	6.63	4.92	849	858	IWTS30_1	0.009	0.04	1
RIW363 **	5.08	5.67	0.59	7351	3.46	5.26	1211	1220	IWTS30_1	0.009	0.04	4
RD369	4.67	4.92	0.25	1409	1.57	1.39	331	340	WITS130	0.001	0.035	1
RIW368	4.75	5.33	0.58	7248	3.47	2.32	456	465	TWTS20	0.010	0.04	6
RIW360 **	4.33	4.42	0.09	11127	34.34	4.90	755	764	IWTS30_1	0.008	0.035	1
RIW397	4.92	5.42	0.50	2780	1.54	4.06	3910	3917	PDTS40_1	0.006	0.035	6
RIW395	5.17	5.42	0.25	21294	23.66	9.75	8270	8271	TWTS10	0.021	0.035	3
RIW387 +	4.67	4.67	0.08	11459	38.20	2.70	1312	1317	TSR371	0.012	0.035	1
RIW396	5.42	5.50	0.08	5924	20.57	4.85	8607	8611	PDTS40_1	0.006	0.035	1
RIW380	5.58	6.58	1.00	4964	1.38	3.91	5792	5792	TSR371	0.012	0.035	11
RIW370	6.58	7.08	0.50	15367	8.54	9.26	5721	5727	TSR375	0.010	0.035	3
RIW349	7.08	7.17	0.09	7496	23.14	3.43	2168	2173	IWTS40_1	0.005	0.035	1
RD349 **	7.08	7.33	0.25	6586	7.32	7.11	3450	3458	IWTS30_1	0.008	0.035	1
RIW356 **	7.25	7.42	0.17	13031	21.29	8.67	5595	5603	IWTS30_2	0.006	0.04	1
RIW354 **	7.42	7.67	0.25	16693	18.55	7.33	5506	5513	IWTS30_1	0.008	0.04	2
RIW372	4.17	5.33	1.16	13330	3.19	2.84	154	163	TSR375	0.010	0.04	9
RD372	4.17	4.42	0.25	1142	1.27	1.44	201	210	TWTS20	0.004	0.035	1

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RIW375	4.58	5.33	0.75	16914	6.26	2.58	442	450	TWTS20	0.013	0.04	8
RIW364	7.67	8.25	0.58	9657	4.63	9.11	5475	5482	IWTS30_2	0.007	0.04	7
RD363	5.08	5.25	0.17	1700	2.78	3.05	565	574	WITS130	0.011	0.04	1
RIW351	4.92	8.08	3.16	4523	0.40	0.89	79	70	TSR371	0.007	0.04	10
RIW346	8.25	8.50	0.25	24311	27.01	9.33	5427	5434	IWTS30_2	0.008	0.04	2
RIW338	8.50	8.92	0.42	4331	2.86	5.25	5353	5358	TWTS20	0.016	0.04	5
RIW326	4.25	4.83	0.58	21501	10.30	2.41	361	370	TWTS40	0.007	0.04	5
RIW334	9.00	9.83	0.83	3706	1.24	4.31	5220	5227	TWTS30	0.005	0.04	12
RD351	4.92	5.25	0.33	2791	2.35	4.24	605	614	IWTS30_1	0.008	0.04	3
RIW361	5.42	6.17	0.75	10402	3.85	2.20	1833	1838	TSR371	0.007	0.04	12
R350*	5.75	6.00	0.25	8310	9.23	4.60	6570	6573	IWTS40_1	0.006	0.04	3
RIW330	6.00	6.17	0.17	7227	11.81	4.90	6589	6594	TWTS30	0.006	0.04	1
RIW322	6.17	6.83	0.66	2771	1.17	3.85	6874	6880	IWTS40_2	0.005	0.04	12
RIW318	4.50	6.17	1.67	8066	1.34	2.34	421	430	TWTS30	0.006	0.04	15
RIW310	4.67	4.75	0.08	20068	69.68	2.36	887	895	IWTS50	0.005	0.04	1
RIW314	7.00	8.17	1.17	12886	3.06	3.93	6831	6832	IWTS40_2	0.005	0.04	15
RIW300	8.17	8.42	0.25	860	0.96	2.78	6703	6708	IWTS50	0.002	0.04	3
RIW302	9.17	9.50	0.33	8292	6.98	9.72	9849	9855	TSR375	0.010	0.04	3
R264A	4.83	5.25	0.42	4042	2.67	2.33	1855	1861	TSR264A	0.003	0.04	1
RSV264	5.00	5.42	0.42	2946	1.95	2.61	2648	2656	SVTS50_1	0.001	0.04	1
RSV298	4.75	5.92	1.17	6826	1.62	3.90	613	623	Channel	0.004	0.04	14
RSV286	4.50	4.75	0.25	13500	15.00	3.55	1412	1421	TSR294	0.006	0.04	1
RSV284	4.67	5.33	0.66	3544	1.49	3.49	1422	1431	TSR294	0.006	0.04	4
RSV290	4.42	5.42	1.00	14316	3.98	2.90	637	646	TSR294	0.006	0.04	5
RSV272 **	5.25	5.33	0.08	1016	3.53	3.81	2326	2334	SVTS50_1	0.004	0.04	1
RSV294	4.67	5.42	0.75	15129	5.60	3.78	1952	1961	TSR294	0.006	0.04	5

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RSV276 + **	5.42	5.42	0.08	6288	20.96	4.01	4299	4306	SVTS50_1	0.003	0.04	1
RSV280	5.50	5.75	0.25	12013	13.35	4.86	4807	4814	TSR294	0.006	0.04	3
RSV268	4.42	4.75	0.33	1628	1.37	3.83	1386	1394	SVTS50_1	0.006	0.04	1
RSV260	6.67	6.92	0.25	4870	5.41	3.03	4937	4943	TSR264A	0.003	0.04	5
RSV252	4.25	5.17	0.92	10928	3.30	1.83	106	116	SVTS10	0.010	0.04	5
RSV254	4.17	5.08	0.91	2155	0.66	1.91	96	87	TSR248	0.018	0.04	6
RSV219 **	4.33	4.83	0.50	10623	5.90	3.05	975	984	SVTS50_2	0.004	0.04	3
RSV251	4.25	5.25	1.00	9744	2.71	2.12	205	214	SVTS10	0.009	0.04	8
RSV250	4.17	5.25	1.08	12592	3.24	1.71	98	89	SVTS10	0.010	0.04	8
RSV218	4.75	5.08	0.33	5058	4.26	2.70	1726	1733	SVTS10	0.004	0.04	2
RSV248	4.67	5.17	0.50	11765	6.54	3.07	489	497	SVTS10	0.011	0.035	3
RD248	4.67	5.00	0.33	1034	0.87	2.57	460	469	WITS130	0.008	0.04	2
RSV244	5.00	5.75	0.75	7772	2.88	4.09	1374	1381	TSR248	0.014	0.04	8
RSV216 **	5.33	5.75	0.42	4698	3.11	2.95	2722	2729	SVTS10	0.004	0.04	5
RSV236	4.25	5.50	1.25	11106	2.47	2.55	414	423	SVTS10	0.010	0.04	8
R242* **	4.75	5.33	0.58	13351	6.39	4.20	2794	2801	SVTS10	0.010	0.04	9
RSV220	5.83	6.25	0.42	9734	6.44	4.40	7745	7749	SVTS20_1	0.003	0.04	6
R230*	4.50	4.92	0.42	8744	5.78	4.27	3271	3276	SVTS30	0.009	0.04	6
RSV212 **	5.83	6.42	0.59	7196	3.39	4.07	8505	8508	SVTS10	0.004	0.04	6
RSV202	4.58	4.92	0.34	7461	6.10	3.63	1253	1261	SVTS40	0.009	0.04	5
RSV210 **	4.08	5.00	0.92	9922	3.00	1.73	1000	1006	TSR408	0.005	0.04	11
R205*	4.50	5.00	0.50	9517	5.29	3.22	798	807	SVTS40	0.008	0.04	1
RSV203	4.08	4.67	0.59	12156	5.72	1.70	97	87	SVTS40	0.007	0.04	7
RSV200	9.17	9.42	0.25	6617	7.35	3.98	12703	12699	TWTS50	0.004	0.04	5
RTW416	4.42	5.58	1.16	7044	1.69	2.54	583	592	WITS30	0.006	0.04	15
RTW420	4.42	5.17	0.75	22821	8.45	2.36	830	838	WITS30	0.004	0.04	10

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RTW414	4.08	5.08	1.00	18065	5.02	2.88	1109	1117	WITS30	0.005	0.04	8
RTW410	9.42	10.00	0.58	10139	4.86	4.13	12502	12500	TSR408	0.007	0.04	8
RTW402	7.58	7.75	0.17	2936	4.80	6.69	14080	14089	Channel	0.001	0.035	1
RTW448	4.58	5.58	1.00	7274	2.02	1.93	155	164	WITS10	0.009	0.035	5
RD448	4.58	4.75	0.17	2017	3.30	1.78	113	122	WITS130	0.006	0.035	1
R446A	4.58	5.17	0.59	6777	3.19	2.77	359	368	WITS130	0.009	0.035	4
RTW446	5.00	5.50	0.50	8794	4.89	2.57	634	642	WITS10	0.010	0.04	4
RTW432	4.75	5.42	0.67	7363	3.05	2.74	957	966	TWTS30	0.005	0.04	7
RTW459	4.83	5.08	0.25	4935	5.48	3.22	466	474	WITS10	0.017	0.035	3
RD380 **	5.58	5.67	0.09	1172	3.62	4.17	2432	2438	WITS130	0.007	0.035	1
RTW462	5.58	6.00	0.42	5969	3.95	2.37	2987	2994	TSR478	0.001	0.035	2
R450A	4.83	5.08	0.25	5936	6.60	3.53	786	793	WITS10	0.015	0.035	2
R450B	5.92	6.58	0.66	18811	7.92	4.71	3206	3210	WITS10	0.012	0.035	7
RD446A	4.58	4.75	0.17	1591	2.60	0.22	3	0	WITS130	0.013	0.035	1
RTW450	6.50	6.83	0.33	8151	6.86	4.56	3040	3045	WITS20	0.010	0.035	3
RTW444	6.83	7.00	0.17	6941	11.34	3.91	3011	3016	WITS20	0.009	0.04	1
RTW460	4.83	5.25	0.42	6520	4.31	3.70	1176	1182	TWTS20	0.014	0.035	2
RTW458	5.08	5.25	0.17	6625	10.83	4.01	1641	1648	TWTS20	0.013	0.035	2
RTW456	5.25	5.42	0.17	3227	5.27	4.14	1660	1667	WITS10	0.014	0.035	2
RTW454	5.42	6.17	0.75	4821	1.79	3.03	589	597	WITS10	0.012	0.035	10
R452A	4.75	5.58	0.83	16523	5.53	3.60	918	925	WITS10	0.014	0.035	11
R452B	5.92	6.33	0.41	9296	6.30	3.39	1513	1520	WITS10	0.008	0.035	4
RD450	6.50	6.75	0.25	3342	3.71	3.42	243	234	WITS90_2	0.014	0.035	1
RTW452	6.50	6.92	0.42	13093	8.66	3.43	1743	1749	WITS10	0.010	0.04	6
R442*	7.00	7.50	0.50	9088	5.05	3.91	4032	4037	WITS20	0.007	0.04	6
RTW434	7.50	8.00	0.50	13449	7.47	4.20	4056	4062	TWTS30	0.005	0.04	5

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation
** Modified Typical X-Section
x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RTW436	4.25	5.17	0.92	2739	0.83	2.86	779	787	WITS20	0.009	0.04	10
RTW429	4.33	5.00	0.67	10141	4.20	2.42	476	485	WITS30	0.006	0.04	2
RD454	5.42	5.50	0.08	5985	20.78	2.73	1104	1112	TSR482	0.007	0.035	1
R576A	4.83	5.33	0.50	18394	10.22	3.13	716	724	WITS10	0.011	0.035	6
R576B	5.25	7.08	1.83	21213	3.22	2.46	388	397	WITS10	0.009	0.035	16
RTW485	4.92	5.17	0.25	5659	6.29	3.59	2038	2047	Channel	0.001	0.04	1
RTW484	5.00	5.67	0.67	1831	0.76	2.96	2164	2171	TSR482	0.007	0.04	7
R580B	4.33	4.75	0.42	12583	8.32	2.93	314	323	PDTS30	0.008	0.035	5
R580A	4.67	5.67	1.00	8181	2.27	4.97	1880	1886	WITS10	0.020	0.035	14
RD580B	4.33	4.75	0.42	4775	3.16	1.29	266	275	TSBEAR	0.001	0.035	6
RWI578	4.83	5.42	0.59	12424	5.85	3.92	525	534	WITS90_1	0.013	0.035	8
RWI580	5.67	6.08	0.41	8541	5.79	4.13	2156	2163	WITS10	0.011	0.035	5
RD576B	5.25	6.42	1.17	9430	2.24	3.87	283	274	WITS90_1	0.020	0.035	9
RWI576	6.08	6.50	0.42	8726	5.77	3.53	1421	1428	WITS10	0.010	0.035	5
RTW482	6.42	6.83	0.41	10402	7.05	2.96	1504	1510	TSR482	0.009	0.04	6
RTW480	5.58	6.25	0.67	7471	3.10	1.53	151	160	TSR482	0.008	0.04	2
RTW478	4.17	6.83	2.66	4817	0.50	1.67	190	199	TSR482	0.008	0.04	3
RTW430	8.75	9.50	0.75	8990	3.33	4.10	2838	2846	TWTS30	0.006	0.04	1
RTW418	9.50	9.83	0.33	12733	10.72	3.45	2659	2665	WITS30	0.005	0.04	1
RTW424	4.25	4.50	0.25	3703	4.11	1.99	2163	2171	TSR429	0.001	0.04	3
RTW422	4.58	11.83	7.25	5625	0.22	3.53	2518	2524	WITS30	0.005	0.04	17
RTW400	7.67	7.92	0.25	2375	2.64	6.74	14463	14472	Channel	0.001	0.035	2
RWI504	7.92	8.00	0.08	5235	18.18	5.01	14400	14399	WITS70	0.004	0.035	1
RD576	6.08	6.33	0.25	13552	15.06	3.40	935	943	WITS10	0.012	0.035	3
RWI574	4.17	5.25	1.08	14010	3.60	2.15	188	197	WITS10	0.011	0.035	7
RWI572	4.42	5.17	0.75	23543	8.72	5.04	1639	1646	WITS90_1	0.012	0.035	8

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation
** Modified Typical X-Section
x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RWI570	4.58	5.00	0.42	12212	8.08	5.00	1302	1311	WITS90_1	0.014	0.035	4
RWI566	4.50	5.00	0.50	10390	5.77	3.77	498	507	WITS90_1	0.012	0.035	8
RWI564	5.25	5.58	0.33	9364	7.88	4.37	941	950	WITS90_1	0.012	0.035	4
R562*	5.25	5.92	0.67	8797	3.65	4.94	2423	2428	WITS10	0.017	0.035	8
R560A	4.83	5.67	0.84	14581	4.82	3.35	909	917	WITS40	0.011	0.035	9
RWI560	5.58	6.25	0.67	16408	6.80	5.18	5096	5096	WITS10	0.012	0.035	8
RD482 +	0.00	0.00	0.08	5200	17.33	0.16	0	0	WITS70	0.007	0.035	1
RWI582	4.25	4.67	0.42	5153	3.41	2.05	428	437	WITS10	0.005	0.035	2
RWI556	4.00	5.25	1.25	11699	2.60	1.33	63	54	WITS40	0.007	0.035	4
RWI554	6.17	6.25	0.08	11635	40.40	4.46	5247	5249	WITS40	0.007	0.035	2
RWI552	6.25	6.33	0.08	4538	15.76	8.44	5249	5257	WITS50	0.014	0.04	1
RD480	5.58	6.17	0.59	2439	1.15	4.46	2928	2935	WITS130	0.009	0.04	2
RWI584	6.00	6.50	0.50	3933	2.19	1.78	2995	3001	WITS70	0.001	0.04	2
RWI550	6.58	6.92	0.34	1732	1.42	5.58	6959	6961	WITS70	0.012	0.04	2
RWI548	4.25	5.08	0.83	6201	2.08	2.26	331	340	WITS70	0.008	0.035	7
RWI546	4.83	5.00	0.17	13444	21.97	4.29	718	727	WITS90_2	0.012	0.035	3
RWI544	4.58	5.25	0.67	5296	2.20	3.40	638	646	WITS90_3	0.009	0.035	5
RWI540	4.83	4.92	0.09	2706	8.35	3.67	1025	1033	WITS90_3	0.007	0.035	1
R538A	4.92	5.58	0.66	18226	7.67	5.39	1467	1474	WITS90_2	0.013	0.035	8
RWI538	5.50	6.08	0.58	4350	2.08	5.99	2009	2017	WITS90_1	0.017	0.035	9
RWI534	4.33	4.58	0.25	15096	16.77	3.09	577	586	WITS90_3	0.008	0.035	2
R530*	4.58	5.25	0.67	14751	6.12	4.35	1600	1607	WITS90_3	0.008	0.035	9
RD544	4.58	5.17	0.59	4830	2.27	3.45	1354	1362	WITS10	0.010	0.035	6
RPI663 **	4.83	5.50	0.67	19831	8.22	3.20	428	436	WITS110_2	0.011	0.035	10
RPI660	5.33	5.50	0.17	14316	23.39	6.13	1157	1165	PITS10_1	0.015	0.035	2
RPI654	5.08	5.33	0.25	5729	6.37	7.12	2660	2668	PITS10_1	0.013	0.035	4

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RPI651 **	5.17	5.42	0.25	6847	7.61	6.62	3757	3763	PITS10_2	0.010	0.035	3
R645A	4.75	5.08	0.33	5757	4.85	3.33	1151	1160	Channel	0.001	0.035	5
RD654	5.08	5.58	0.50	6108	3.39	2.54	656	665	WITS110_2	0.004	0.035	6
RPI689 **	5.00	5.33	0.33	2826	2.38	4.29	6946	6952	WITS110_2	0.003	0.035	4
RPI687	5.33	5.50	0.17	18798	30.72	12.02	10057	10063	WITS100	0.017	0.035	2
RPI684	5.58	5.92	0.34	10777	8.80	11.77	9778	9781	WITS100	0.017	0.035	4
RPI681	5.92	6.50	0.58	14047	6.73	9.96	9568	9570	WITS110_1	0.014	0.035	7
RPI690 **	6.42	6.58	0.16	5688	9.87	3.89	7158	7160	TWTS50	0.005	0.035	1
RD678	6.50	6.92	0.42	3177	2.10	3.42	2378	2385	TSR606	0.006	0.035	1
RWI542	7.42	7.58	0.16	9910	17.20	2.47	421	430	WITS40	0.008	0.035	1
RWI529	7.08	7.33	0.25	3889	4.32	3.27	600	608	WITS90_3	0.011	0.04	1
RWI516	7.00	7.58	0.58	4526	2.17	4.74	6899	6904	WITS130	0.006	0.04	6
RDCP07	7.42	7.83	0.41	14618	9.90	3.00	424	433	WITS120	0.009	0.035	2
RD529	7.08	7.50	0.42	9401	6.22	1.77	115	124	WITS40	0.008	0.035	1
RWI528	7.33	7.75	0.42	3670	2.43	2.92	884	891	WITS70	0.010	0.04	2
RDCPOT	7.42	8.08	0.66	5720	2.41	0.11	5	0	TWTS50	0.004	0.04	2
RWI527	4.33	4.67	0.34	8240	6.73	2.51	749	757	WITS70	0.007	0.04	3
R508* **	7.67	8.17	0.50	12366	6.87	4.95	6932	6936	WITS130	0.005	0.035	7
R510A	4.33	5.42	1.09	17257	4.40	2.34	910	918	WITS70	0.005	0.04	8
RWI510	8.08	8.42	0.34	11711	9.57	3.85	5779	5783	WITS70	0.005	0.04	2
RWI502	8.33	8.42	0.09	1494	4.61	6.97	16462	16470	Channel	0.001	0.035	1
RDCP08	7.50	7.67	0.17	6701	10.95	2.86	415	424	WITS120	0.008	0.035	1
RWI526	7.17	8.00	0.83	5909	1.98	2.36	486	494	WITS70	0.007	0.035	6
RDCP09	7.42	8.25	0.83	6377	2.13	3.74	439	448	PITS10_2	0.009	0.035	8
RD527	4.33	5.00	0.67	4871	2.02	1.49	58	48	WITS130	0.008	0.035	2
RWI525	4.50	5.17	0.67	11922	4.94	3.56	1279	1287	WITS120	0.007	0.035	6

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
RD525	4.50	5.50	1.00	7666	2.13	1.51	72	62	WITS130	0.007	0.035	6
RWI524	4.42	4.75	0.33	11015	9.27	3.07	802	811	WITS130	0.006	0.035	2
RD524	4.42	4.75	0.33	6496	5.47	0.96	25	15	WITS130	0.007	0.035	3
RPI639 **	4.50	4.83	0.33	5658	4.76	3.00	292	302	PITS10_2	0.007	0.035	2
RWI506	5.00	5.25	0.25	6492	7.21	3.05	2602	2608	WITS70	0.005	0.04	3
RD508	8.17	8.42	0.25	2235	2.48	2.28	1296	1304	WITS130	0.003	0.04	6
RWI500	18.33	18.83	0.50	1679	0.93	5.59	2123	2132	Channel	0.003	0.035	5
RPI635	18.83	19.58	0.75	728	0.27	5.22	2120	2127	WITS130	0.014	0.035	2
RDCP11	7.42	7.75	0.33	11034	9.29	3.13	438	447	PITS30	0.009	0.035	5
RDCP12	7.42	7.67	0.25	20386	22.65	2.55	200	209	PITS30	0.009	0.035	6
RPI618	7.25	7.92	0.67	2775	1.15	3.42	819	827	TSR621	0.008	0.035	2
RDCP13 **	7.42	8.08	0.66	9602	4.04	3.34	439	448	PITS30	0.011	0.035	2
RD618	7.42	7.83	0.41	11215	7.60	3.24	225	234	PITS10_2	0.010	0.035	5
RPI615	7.58	7.83	0.25	10443	11.60	3.86	954	962	PITS20	0.008	0.035	12
RPI612	8.17	8.42	0.25	5109	5.68	3.07	356	365	PITS20	0.008	0.035	2
RDCP14	7.42	8.67	1.25	10754	2.39	3.47	378	387	PDTS30	0.011	0.035	8
RPI609	4.75	4.92	0.17	5754	9.40	3.82	1284	1292	PITS20	0.006	0.035	1
RD612	8.17	8.75	0.58	9630	4.61	4.25	1056	1064	PITS20	0.009	0.035	4
RPI621 **	5.25	5.42	0.17	5060	8.27	3.05	1268	1277	TSR621	0.004	0.035	6
RDCP10	7.42	7.83	0.41	6159	4.17	3.22	451	460	PITS30	0.009	0.035	6
RPI628	7.25	8.17	0.92	5834	1.76	3.06	869	878	Channel	0.001	0.035	1
R624A	4.75	5.58	0.83	8664	2.90	5.84	1824	1832	PITS10_2	0.012	0.035	2
RPI636	4.25	4.33	0.08	2635	9.15	2.75	563	572	WITS130	0.006	0.035	1
RPI624	5.50	5.83	0.33	14427	12.14	4.54	2161	2169	PITS20	0.007	0.035	3
RPI633	15.50	16.08	0.58	7557	3.62	4.35	2862	2871	Channel	0.001	0.035	4
RDCP15	8.75	9.17	0.42	10400	6.88	3.37	327	336	PDTS30	0.012	0.035	5

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation
** Modified Typical X-Section
x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
R606A	9.50	10.00	0.50	11809	6.56	1.77	233	242	PDTS40_1	0.004	0.035	6
RPI606	4.58	4.83	0.25	4513	5.01	5.48	830	839	PITS40	0.006	0.035	1
RD606A **	9.50	9.83	0.33	11125	9.36	2.34	162	171	PITS20	0.007	0.035	4
RPI604	4.50	4.83	0.33	2654	2.23	2.18	462	471	TSR606	0.006	0.035	3
RD600A	4.75	5.33	0.58	7507	3.60	4.02	1238	1246	PITS30	0.009	0.035	2
RPI603	5.17	5.42	0.25	7442	8.27	4.63	2341	2349	PDTS30	0.007	0.035	1
RPI600	15.08	15.50	0.42	3427	2.27	3.50	3261	3267	PDTS40_1	0.004	0.035	2
RDCP16	8.75	9.25	0.50	14927	8.29	4.41	1138	1146	PDTS30	0.010	0.035	8
RDCP17	8.83	9.08	0.25	5902	6.56	3.85	379	388	PDTS30	0.015	0.035	4
RPD740	9.42	9.75	0.33	6476	5.45	6.47	1697	1705	PDTS40_2	0.015	0.035	5
R726B	9.75	9.92	0.17	10685	17.46	3.28	1682	1689	PDTS40_1	0.006	0.035	2
RDCP18	8.83	9.25	0.42	8638	5.71	2.26	383	391	WITS70	0.007	0.035	6
RPD736	6.08	6.17	0.09	5434	16.77	2.99	488	497	PDTS30	0.006	0.035	1
RDCP19	8.75	9.00	0.25	6125	6.81	2.33	1156	1164	TWTS50	0.004	0.035	4
RPD760	4.75	4.92	0.17	4937	8.07	2.41	408	418	Channel	0.001	0.035	2
RPD732	5.67	6.33	0.66	1894	0.80	3.60	1298	1306	PDTS30	0.005	0.035	6
R726A	6.17	6.33	0.16	4094	7.11	4.69	1902	1911	PDTS30	0.008	0.035	2
R726*	6.58	7.25	0.67	3986	1.65	4.99	3130	3138	PDTS30	0.007	0.035	2
RPD726	7.25	7.58	0.33	10623	8.94	4.52	2432	2440	PDTS30	0.006	0.035	2
RD744 +	0.00	0.00	0.08	6956	23.19	0.11	0	0	WITS120	0.008	0.035	1
RPD720 +	8.67	8.67	0.08	4959	16.53	3.93	5174	5178	PDTS40_1	0.004	0.035	1
RD716	7.25	7.50	0.25	5888	6.54	2.65	699	707	PDTS40_1	0.006	0.035	2
R700*	8.25	9.00	0.75	10484	3.88	6.91	5461	5466	PDTS40_2	0.008	0.035	2
RPD748	4.42	4.75	0.33	8775	7.39	4.53	525	534	PDTS40_2	0.013	0.035	3
RPD756	4.92	5.25	0.33	5149	4.33	4.93	1746	1753	PDTS30	0.010	0.035	4
R708*	5.00	5.42	0.42	6448	4.26	5.66	1956	1964	PDTS40_2	0.009	0.035	6

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation

** Modified Typical X-Section

x Modified Time To Peak Used

Appendix D.3

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC **JOB NO.** 310.032

JOB: Wittmann Area Drainage Master Study Update

Storm: 100-yr, 6-hr Future Conditions **Route N-Step vs Velocity**

Route (Model Order)	Previous Time to Peak [hr]	Route Time to Peak [hr]	Difference in Time to peak [hr]	Route Length [ft]	HEC-1 Velocity [fps]	Normal Depth Velocity [fps]	HEC-1 Flow [cfs]	Normal Depth Flow [cfs]	Typical Cross Section	Route Slope [ft/ft]	Manning's "n" Value	HEC-1 N-step
R712A	4.58	4.92	0.34	4179	3.41	2.95	535	544	PDTS30	0.006	0.035	6
RPD708	5.08	5.17	0.09	1840	5.68	10.35	3489	3497	Channel	0.010	0.035	1
RPD704	5.25	5.50	0.25	4300	4.78	4.73	3676	3683	PDTS40_1	0.009	0.035	4
RD800 +	0.00	0.00	0.08	4229	14.10	0.13	0	0	WITS120	0.011	0.035	2
R810*	8.83	9.25	0.42	5287	3.50	5.95	5622	5631	TSAF10	0.002	0.035	8
RAF803	4.67	4.83	0.16	6821	11.84	3.42	1935	1942	PDTS40_1	0.006	0.035	2
RAF805	4.33	5.08	0.75	2485	0.92	4.23	639	648	TSAF10	0.004	0.035	6
RAF807 +	4.67	4.67	0.08	8372	27.91	4.32	2887	2894	PDTS40_1	0.008	0.035	1
RAF810	9.25	9.50	0.25	1378	1.53	8.10	5616	5625	TSAF10	0.004	0.035	3
RAF854	4.08	4.17	0.09	2136	6.59	4.71	796	805	TSAF20	0.005	0.035	1
RAF852	4.08	4.17	0.09	2113	6.52	5.36	1172	1181	TSAF10	0.005	0.035	1
RAF864	4.25	4.67	0.42	6743	4.46	2.03	67	57	TSAF20	0.004	0.035	1
RAF862	4.00	4.08	0.08	4666	16.20	3.40	441	451	TSAF20	0.003	0.035	1
RAF866	4.17	4.42	0.25	4588	5.10	3.83	634	642	SVTS10	0.016	0.035	1
RSV258 **	4.42	4.58	0.16	6946	12.06	3.03	487	496	SVTS50_1	0.005	0.035	1

+ Time lapse less than time step of 5 minutes, so 1 time step was assumed for HEC-1 Velocity Calculation
** Modified Typical X-Section
x Modified Time To Peak Used

D.3.7 Routing Input Data Summary

Entellus

BY _____ DATE _____

CHECK _____ DATE _____

CLIENT: FCDMC

JOB NO. 310.032

JOB: Wittmann Area Drainage Master Study Update

Route ID	Mannings' n-values Overbank	Channel	length [ft]	length [miles]	US elev [ft]	DS elev [ft]	slope [ft/ft]	Typical Cross Section ID
R150A	0.060	0.035	9557.0	1.81	1730.0	1530.0	0.0209	WTTS20_2
R205*	0.040	0.04	9517.3	1.80	1492	1412.0	0.0084	SVTS40
R230*	0.040	0.04	8744.1	1.66	1540	1462.0	0.0089	SVTS30
R242*	0.040	0.04	13351.2	2.53	1629.9	1497.7	0.0099	SVTS10
R264A	0.040	0.04	4041.9	0.77	1568	1556.0	0.0030	TSR264A
R350*	0.040	0.04	8309.6	1.57	1680	1630.0	0.0060	IWTS40_1
R359*	0.040	0.04	9280.3	1.76	1888	1792.0	0.0103	IWTS30_2
R390A	0.043	0.035	8577.0	1.62	2155	2040.0	0.0134	IWTS10_1
R442*	0.040	0.04	9087.7	1.72	1645.9	1581.3	0.0071	WITS20
R446A	0.043	0.035	6777.0	1.28	1758.0	1700.0	0.0086	WITS130
R450A	0.043	0.035	5936.0	1.12	2056.0	1968.0	0.0148	WITS10
R450B	0.043	0.035	18811.0	3.56	1968.0	1738.0	0.0122	WITS10
R452A	0.043	0.035	16523.0	3.13	2048.0	1816.0	0.0140	WITS10
R452B	0.043	0.035	9296.0	1.76	1816.0	1738.0	0.0084	WITS10
R508*	0.043	0.035	12365.6	2.34	1433.5	1367.6	0.0053	WITS130
R510A	0.040	0.04	17256.7	3.27	1460	1372.0	0.0051	WITS70
R530*	0.043	0.035	14750.6	2.79	1677.1	1556.3	0.0082	WITS90_3
R538A	0.043	0.035	18226.3	3.45	1912	1668.0	0.0134	WITS90_2
R562*	0.043	0.035	14580.6	2.76	1852	1688.0	0.0112	WITS40
R576A	0.043	0.035	8797.0	1.67	2044	1896.0	0.0168	WITS10
R576B	0.043	0.035	18394.4	3.48	1896	1686.0	0.0114	WITS10
R580A	0.043	0.035	21212.8	4.02	2024	1832.0	0.0091	WITS10
R580B	0.043	0.035	8181.3	1.55	2182	2016.0	0.0203	WITS10
R606A	0.043	0.035	12583.4	2.38	1454	1352.0	0.0081	PDTS30
R624A	0.043	0.035	11809.0	2.24	1392	1342.0	0.0042	PDTS40_1
R645A	0.043	0.035	8663.6	1.64	1656	1552.0	0.0120	PITS10_2
R700*	0.045	0.035	5757.0	1.09	1314	1308.0	0.0010	Channel
R708*	0.043	0.035	10483.6	1.99	1430	1348.0	0.0078	PDTS40_2
R712A	0.043	0.035	6448.0	1.22	1394	1334.9	0.0092	PDTS40_2
R726*	0.043	0.035	4179.0	0.79	1366	1342.0	0.0057	PDTS30
R726A	0.043	0.035	3986.0	0.75	1394	1366.0	0.0070	PDTS30
R726B	0.043	0.035	4094.0	0.78	1400	1366.0	0.0083	PDTS30
R810*	0.043	0.035	10685.0	2.02	1312	1250.0	0.0058	PDTS40_1
RAF803	0.045	0.035	5287.0	1.00	1270	1260.0	0.0019	TSAF10
RAF805	0.043	0.035	6821.0	1.29	1290	1250.0	0.0059	PDTS40_1
RAF807	0.045	0.035	2485.0	0.47	1260	1250.0	0.0040	TSAF10
RAF810	0.043	0.035	8372.0	1.59	1250	1180.0	0.0084	PDTS40_1

Entellus

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JOB NO. 310.032

JOB: Wittmann Area Drainage Master Study Update

Route ID	Mannings' n-values Overbank	Channel	length [ft]	length [miles]	US elev [ft]	DS elev [ft]	slope [ft/ft]	Typical Cross Section ID
RAF852	0.045	0.035	1378.0	0.26	1154	1148.0	0.0044	TSAF10
RAF854	0.045	0.035	2113.0	0.40	1164	1154.0	0.0047	TSAF10
RAF862	0.045	0.035	2136.0	0.40	1128	1118.0	0.0047	TSAF20
RAF864	0.045	0.035	4666.0	0.88	1142	1128.0	0.0030	TSAF20
RAF866	0.045	0.035	6743.0	1.28	1148	1118.0	0.0044	TSAF20
RD248	0.040	0.04	4587.8	0.87	1740.5	1665.1	0.0164	SVTS10
RD312	0.043	0.035	1034.0	0.20	1908	1900.0	0.0077	WITS130
RD349	0.043	0.035	4244.0	0.80	1782.7	1735.5	0.0111	TWTS20
RD351	0.040	0.04	6586.0	1.25	1790	1740.0	0.0076	IWTS30_1
RD357	0.040	0.04	2791.0	0.53	1848	1826.0	0.0079	IWTS30_1
RD363	0.040	0.04	3820.0	0.72	1826	1790.0	0.0094	IWTS30_1
RD365	0.043	0.035	1700.0	0.32	1900	1882.0	0.0106	WITS130
RD369	0.043	0.035	1927.0	0.36	1884	1874.0	0.0052	WITS130
RD371	0.043	0.035	1409.0	0.27	1964	1962.0	0.0014	WITS130
RD372	0.043	0.035	1828.0	0.35	1824	1818.0	0.0033	WITS130
RD380	0.043	0.035	1142.0	0.22	2072	2068.0	0.0035	TWTS20
RD382A	0.043	0.035	1172.0	0.22	1952	1944.0	0.0068	WITS130
RD446A	0.043	0.035	2942.0	0.56	1764	1738.0	0.0088	WITS130
RD448	0.043	0.035	1591.0	0.30	1780	1760.0	0.0126	WITS130
RD450	0.043	0.035	2017.0	0.38	1738	1726.0	0.0059	WITS130
RD454	0.043	0.035	3342.0	0.63	1861.3	1816.0	0.0136	WITS90_2
RD480	0.040	0.04	5985.0	1.13	1591	1552.0	0.0065	TSR482
RD482	0.043	0.035	2439.0	0.46	1650	1627.0	0.0094	WITS130
RD508	0.040	0.04	5200.0	0.98	1366	1332.2	0.0065	WITS70
RD524	0.043	0.035	2235.0	0.42	1382	1376.0	0.0027	WITS130
RD525	0.043	0.035	6496.0	1.23	1424	1382.0	0.0065	WITS130
RD527	0.043	0.035	7666.0	1.45	1474	1424.0	0.0065	WITS130
RD529	0.043	0.035	4871.0	0.92	1526	1488.0	0.0078	WITS130
RD544	0.043	0.035	9401.1	1.78	1628.8	1552.0	0.0082	WITS40
RD576	0.043	0.035	4830.3	0.91	1734	1688.0	0.0095	WITS10
RD576B	0.043	0.035	13551.5	2.57	1896	1736.0	0.0118	WITS10
RD580B	0.043	0.035	9429.7	1.79	2182	1994.0	0.0199	WITS90_1
RD600A	0.043	0.035	4775.0	0.90	1342	1336.0	0.0013	TSBEAR
RD606A	0.043	0.035	7506.5	1.42	1454	1389.0	0.0087	PITS30
RD612	0.043	0.035	11125.0	2.11	1412.2	1340.0	0.0065	PITS20
RD618	0.043	0.035	9630.0	1.82	1534	1446.0	0.0091	PITS20
RD654	0.043	0.035	11214.8	2.12	1658	1548.4	0.0098	PITS10_2

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JOB: Wittmann Area Drainage Master Study Update

Route ID	Mannings' n-values Overbank	Channel	length [ft]	length [miles]	US elev [ft]	DS elev [ft]	slope [ft/ft]	Typical Cross Section ID
RD678	0.043	0.035	6108.0	1.16	1574	1550.0	0.0039	WITS110_2
RD744	0.043	0.035	3177.0	0.60	1338	1320.0	0.0057	TSR606
RD800	0.043	0.035	5888.0	1.12	1346	1311.0	0.0059	PDTS40_1
RDCP07	0.043	0.035	6956.4	1.32	1552	1494.0	0.0083	WITS120
RDCP08	0.043	0.035	4229.1	0.80	1556	1508.0	0.0114	WITS120
RDCP09	0.043	0.035	14617.9	2.77	1558	1426.0	0.0090	WITS120
RDCP10	0.043	0.035	6701.3	1.27	1550	1496.0	0.0081	WITS120
RDCP11	0.043	0.035	6376.9	1.21	1550	1490.0	0.0094	PITS10_2
RDCP12	0.043	0.035	6159.0	1.17	1548.4	1490.7	0.0094	PITS30
RDCP13	0.043	0.035	11034.4	2.09	1544	1446.0	0.0089	PITS30
RDCP14	0.043	0.035	20385.8	3.86	1556	1380.0	0.0086	PITS30
RDCP15	0.043	0.035	9601.8	1.82	1556	1454.0	0.0106	PITS30
RDCP16	0.043	0.035	10753.8	2.04	1556	1436.0	0.0112	PDTS30
RDCP17	0.043	0.035	10399.9	1.97	1556	1436.0	0.0115	PDTS30
RDCP18	0.043	0.035	14927.0	2.83	1556	1406.0	0.0100	PDTS30
RDCP19	0.043	0.035	5902.3	1.12	1552	1464.0	0.0149	PDTS30
RDCPOT	0.040	0.04	8638.0	1.64	1538	1474.0	0.0074	WITS70
RIW300	0.040	0.04	6125.0	1.16	1445.1	1418.8	0.0043	TWTS50
RIW302	0.040	0.04	5720.1	1.08	1443.9	1418.8	0.0044	TWTS50
RIW310	0.040	0.04	860.0	0.16	1548.7	1547.0	0.0020	IWTS50
RIW312	0.040	0.04	8292.4	1.57	1908.3	1828.3	0.0096	TSR375
RIW314	0.040	0.04	20067.8	3.80	1547	1445.1	0.0051	IWTS50
RIW318	0.040	0.04	17570.2	3.33	1634.9	1548.7	0.0049	TSR294
RIW322	0.040	0.04	12886.2	2.44	1616.3	1547.0	0.0054	IWTS40_2
RIW326	0.040	0.04	8065.9	1.53	1594.9	1548.7	0.0057	TWTS30
RIW330	0.040	0.04	2770.8	0.52	1630.4	1616.3	0.0051	IWTS40_2
RIW334	0.040	0.04	21501.4	4.07	1588.6	1443.9	0.0067	TWTS40
RIW338	0.040	0.04	7227.0	1.37	1588.6	1548.7	0.0055	TWTS30
RIW346	0.040	0.04	3705.8	0.70	1605.5	1588.6	0.0046	TWTS30
RIW349	0.043	0.035	4331.4	0.82	1782.7	1712.9	0.0161	TWTS20
RIW351	0.040	0.04	24311.3	4.60	1791.5	1606.6	0.0076	IWTS30_2
RIW353	0.040	0.04	7495.9	1.42	1720	1680.0	0.0053	IWTS40_1
RIW354	0.040	0.04	4522.5	0.86	1712.9	1680.3	0.0072	TSR371
RIW356	0.040	0.04	2643.0	0.50	1735.5	1712.9	0.0086	TSR371
RIW357	0.040	0.04	16692.7	3.16	1848	1716.8	0.0079	IWTS30_1
RIW359	0.040	0.04	13031.3	2.47	1793.4	1716.8	0.0059	IWTS30_2
RIW360	0.043	0.035	2593.3	0.49	1756	1735.5	0.0079	TWTS20

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JOB: Wittmann Area Drainage Master Study Update

Route ID	Mannings' n-values Overbank	Channel	length [ft]	length [miles]	US elev [ft]	DS elev [ft]	slope [ft/ft]	Typical Cross Section ID
RIW361	0.040	0.04	17152.4	3.25	1740	1630.0	0.0064	IWTS30_1
RIW363	0.040	0.04	11126.8	2.11	1826	1740.0	0.0077	IWTS30_1
RIW364	0.040	0.04	10401.5	1.97	1682.4	1605.5	0.0074	TSR371
RIW365	0.040	0.04	7350.8	1.39	1893.6	1828.3	0.0089	IWTS30_1
RIW366	0.040	0.04	9656.7	1.83	1864	1796.0	0.0070	IWTS30_2
RIW368	0.040	0.04	11647.7	2.21	1875.5	1756.0	0.0103	TSR375
RIW369	0.040	0.04	6796.8	1.29	1887.1	1828.3	0.0087	TSR375
RIW370	0.043	0.035	7247.6	1.37	1851.8	1782.7	0.0095	TWTS20
RIW371	0.040	0.04	11583.3	2.19	1965.7	1864.0	0.0088	TSR371
RIW372	0.040	0.04	15366.7	2.91	1828	1680.0	0.0096	TSR375
RIW374	0.040	0.04	20436.7	3.87	1962	1796.0	0.0081	TSR371
RIW375	0.040	0.04	13330.0	2.52	1814	1681.5	0.0099	TSR375
RIW377	0.040	0.04	6588.4	1.25	2025.8	1962.6	0.0096	TSR371
RIW380	0.043	0.035	16914.1	3.20	2072.5	1851.8	0.0130	TWTS20
RIW381	0.040	0.04	4964.3	0.94	1939.5	1892.0	0.0096	TSR371
RIW382	0.040	0.04	4964.3	0.94	1947.8	1888.0	0.0120	TSR371
RIW384	0.040	0.04	4694.3	0.89	1940	1882.0	0.0124	TSR371
RIW386	0.043	0.035	10311.1	1.95	2027.8	1947.8	0.0078	IWTS20_1
RIW387	0.043	0.035	1005.1	0.19	2179.3	2165.2	0.0140	TWTS20
RIW388	0.040	0.04	7725.8	1.46	1920.8	1848.0	0.0094	IWTS20_2
RIW389	0.040	0.04	11459.2	2.17	2063.1	1920.8	0.0124	TSR371
RIW390	0.043	0.035	11625.6	2.20	2038.3	1920.8	0.0101	IWTS20_1
RIW394	0.043	0.035	7697.0	1.46	2257	2155.0	0.0133	IWTS10_1
RIW395	0.043	0.035	13324.0	2.52	2389.6	2165.2	0.0168	TWTS10
RIW396	0.043	0.035	6512.2	1.23	2165.2	2072.5	0.0142	TWTS10
RIW397	0.043	0.035	21294.0	4.03	2830	2390.0	0.0207	TWTS10
RPD704	0.043	0.035	5924.4	1.12	1334.9	1302.6	0.0055	PDTS40_1
RPD708	0.043	0.035	2780.0	0.53	1351	1334.9	0.0058	PDTS40_1
RD716	0.043	0.035	4300.0	0.81	1341.9	1302.6	0.0091	PDTS40_1
RPD720	0.045	0.035	1840.0	0.35	1320.9	1302.6	0.0099	Channel
RPD726	0.043	0.035	4959.0	0.94	1342	1320.0	0.0044	PDTS40_1
RPD732	0.043	0.035	10623.0	2.01	1464	1396.0	0.0064	PDTS30
RPD736	0.043	0.035	1894.0	0.36	1406	1396.0	0.0053	PDTS30
RPD740	0.043	0.035	5434.0	1.03	1436	1402.0	0.0063	PDTS30
RPD748	0.043	0.035	6476.1	1.23	1524	1430.0	0.0145	PDTS40_2
RPD756	0.043	0.035	8775.3	1.66	1540	1430.0	0.0125	PDTS40_2
RPD760	0.043	0.035	5148.6	0.98	1516	1464.0	0.0101	PDTS30

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Route ID	Mannings' n-values Overbank	Channel	length [ft]	length [miles]	US elev [ft]	DS elev [ft]	slope [ft/ft]	Typical Cross Section ID
RPI600	0.045	0.035	4937.0	0.94	1318	1320.9	0.0010	Channel
RPI603	0.043	0.035	3427.5	0.65	1337.5	1322.4	0.0044	PDTS40_1
RPI604	0.043	0.035	7441.8	1.41	1390	1338.0	0.0070	PDTS30
RPI606	0.043	0.035	2654.4	0.50	1352.2	1337.5	0.0055	TSR606
RPI609	0.043	0.035	4513.0	0.85	1372	1344.0	0.0062	PITS40
RPI612	0.043	0.035	5753.6	1.09	1412.2	1377.5	0.0060	PITS20
RPI615	0.043	0.035	5108.7	0.97	1452.4	1412.2	0.0079	PITS20
RPI618	0.043	0.035	10443.1	1.98	1490.7	1412.2	0.0075	PITS20
RPI621	0.043	0.035	2775.0	0.53	1342	1320.0	0.0079	TSR621
RPI624	0.043	0.035	5060.0	0.96	1342	1320.0	0.0043	TSR621
RPI628	0.043	0.035	14427.0	2.73	1488	1392.0	0.0067	PITS20
RPI633	0.045	0.035	5834.0	1.10	1322	1318.0	0.0010	Channel
RPI635	0.045	0.035	7557.0	1.43	1326	1322	0.0010	Channel
RPI636	0.043	0.035	728.0	0.14	1350	1340.0	0.0137	WITS130
RPI639	0.043	0.035	2635.0	0.50	1370	1354.0	0.0061	WITS130
RPI651	0.043	0.035	5658.2	1.07	1587	1548.4	0.0068	PITS10_2
RPI654	0.043	0.035	6846.6	1.30	1658	1587.0	0.0104	PITS10_2
RPI660	0.043	0.035	5729.3	1.09	1731	1658.0	0.0127	PITS10_1
RPI663	0.043	0.035	14315.6	2.71	1945	1731.0	0.0149	PITS10_1
RPI681	0.043	0.035	19831.2	3.76	1786	1568.0	0.0110	WITS110_2
RPI684	0.043	0.035	14047.0	2.66	1980	1784.5	0.0139	WITS110_1
RPI687	0.043	0.035	10777.1	2.04	2160	1980.0	0.0167	WITS100
RPI689	0.043	0.035	18798.3	3.56	2485	2160.0	0.0173	WITS100
RPI690	0.043	0.035	2826.0	0.54	1568	1560.0	0.0028	WITS110_2
RSV200	0.040	0.04	5688.5	1.08	1418.8	1392.1	0.0047	TWTS50
RSV202	0.040	0.04	6617.4	1.25	1447.9	1418.8	0.0044	TWTS50
RSV203	0.040	0.04	7460.7	1.41	1481.9	1418.8	0.0085	SVTS40
RSV210	0.040	0.04	12155.7	2.30	1504.5	1418.8	0.0071	SVTS40
RSV212	0.040	0.04	9921.7	1.88	1462	1412.0	0.0050	TSR408
RSV216	0.040	0.04	7196.1	1.36	1528.3	1497.7	0.0043	SVTS10
RSV218	0.040	0.04	4697.9	0.89	1546.5	1528.3	0.0039	SVTS10
RSV219	0.040	0.04	5058.3	0.96	1567.8	1546.5	0.0042	SVTS10
RSV220	0.040	0.04	10623.1	2.01	1502	1462.0	0.0038	SVTS50_2
RSV236	0.040	0.04	9733.5	1.84	1528.2	1497.7	0.0031	SVTS20_1
RSV244	0.040	0.04	11106.1	2.10	1633.7	1528.3	0.0095	SVTS10
RSV248	0.060	0.035	7772.3	1.47	1740.5	1633.7	0.0137	TSR248
RSV250	0.040	0.04	11764.9	2.23	1674	1546.5	0.0108	SVTS10

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Route ID	Mannings' n-values Overbank	Channel	length [ft]	length [miles]	US elev [ft]	DS elev [ft]	slope [ft/ft]	Typical Cross Section ID
RSV251	0.040	0.04	12592.4	2.38	1674.9	1546.5	0.0102	SVTS10
RSV252	0.040	0.04	9743.8	1.85	1659.5	1567.8	0.0094	SVTS10
RSV254	0.040	0.04	10928.0	2.07	1677.3	1567.8	0.0100	SVTS10
RSV258	0.060	0.035	2154.8	0.41	1744.2	1705.3	0.0181	TSR248
RSV260	0.040	0.04	6945.8	1.32	1536.5	1502.2	0.0049	SVTS50_1
RSV264	0.040	0.04	4870.0	0.92	1552	1538.0	0.0029	TSR264A
RSV268	0.040	0.04	2945.7	0.56	1540.7	1536.5	0.0014	SVTS50_1
RSV272	0.040	0.04	1627.9	0.31	1570.4	1560.7	0.0060	SVTS50_1
RSV276	0.040	0.04	1015.5	0.19	1560.7	1556.4	0.0042	SVTS50_1
RSV280	0.040	0.04	6287.6	1.19	1556.4	1536.5	0.0032	SVTS50_1
RSV284	0.040	0.04	12013.1	2.28	1646.8	1570.4	0.0064	TSR294
RSV286	0.040	0.04	3543.8	0.67	1668.2	1646.8	0.0060	TSR294
RSV290	0.040	0.04	13499.8	2.56	1654.9	1570.4	0.0063	TSR294
RSV294	0.040	0.04	14316.0	2.71	1650.4	1560.7	0.0063	TSR294
RSV298	0.040	0.04	15128.8	2.87	1647.5	1556.4	0.0060	TSR294
RTW400	0.045	0.035	6826.5	1.29	1359.4	1334.4	0.0037	Channel
RTW402	0.045	0.035	2374.6	0.45	1337.4	1359.4	0.0010	Channel
RTW404	0.045	0.035	2936.4	0.56	1334.3	1337.4	0.0010	Channel
RTW406	0.040	0.04	14969.5	2.84	1451.2	1334.3	0.0078	TSR408
RTW408	0.040	0.04	16567.5	3.14	1453.3	1334.3	0.0072	TSR408
RTW410	0.040	0.04	11702.6	2.22	1392.1	1337.4	0.0047	TWTS50
RTW414	0.040	0.04	10139.1	1.92	1467.2	1392.1	0.0074	TSR408
RTW416	0.040	0.04	18065.4	3.42	1483.7	1390.6	0.0052	WITS30
RTW418	0.040	0.04	7044.4	1.33	1484.7	1444.3	0.0057	WITS30
RTW420	0.040	0.04	12733.0	2.41	1450.8	1390.6	0.0047	WITS30
RTW422	0.040	0.04	22820.9	4.32	1444.3	1359.4	0.0037	WITS30
RTW424	0.040	0.04	5625.3	1.07	1473.7	1444.3	0.0052	WITS30
RTW429	0.040	0.04	3702.9	0.70	1552	1550.0	0.0010	TSR429
RTW430	0.040	0.04	10140.7	1.92	1546	1488.0	0.0057	WITS30
RTW432	0.040	0.04	8990.1	1.70	1640.0	1584.0	0.0062	TWTS30
RTW434	0.040	0.04	7363.4	1.39	1581.3	1547.6	0.0046	TWTS30
RTW436	0.040	0.04	13449.0	2.55	1615.6	1547.6	0.0051	TWTS30
RTW444	0.040	0.04	2739.1	0.52	1671.6	1646.4	0.0092	WITS20
RTW446	0.040	0.04	6940.6	1.31	1700.0	1640.0	0.0086	WITS20
RTW448	0.043	0.035	8794.0	1.67	1782.0	1698.3	0.0095	WITS10
RTW450	0.043	0.035	7274.1	1.38	1737.3	1671.6	0.0090	WITS10
RTW452	0.040	0.04	8151.0	1.54	1726.4	1645.9	0.0099	WITS20

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JOB: Wittmann Area Drainage Master Study Update

Route ID	Mannings' n-values Overbank	Channel	length [ft]	length [miles]	US elev [ft]	DS elev [ft]	slope [ft/ft]	Typical Cross Section ID
RTW454	0.043	0.035	13092.9	2.48	1861.3	1726.4	0.0103	WITS10
RTW456	0.043	0.035	4821.2	0.91	1919.3	1861.3	0.0120	WITS10
RTW458	0.043	0.035	3227.4	0.61	1962.8	1919.3	0.0135	WITS10
RTW459	0.043	0.035	6625.0	1.25	2056.0	1968.0	0.0133	TWTS20
RTW460	0.043	0.035	4935.1	0.93	2044.9	1962.8	0.0166	WITS10
RTW462	0.043	0.035	6520.0	1.23	2056.0	1968.0	0.0135	TWTS20
RTW478	0.040	0.04	5968.5	1.13	1554	1546.0	0.0013	TSR478
RTW480	0.040	0.04	4817.3	0.91	1591.9	1552.0	0.0083	TSR482
RTW482	0.040	0.04	7471.3	1.42	1650.2	1591.9	0.0078	TSR482
RTW484	0.040	0.04	10402.1	1.97	1680	1591.9	0.0085	TSR482
RTW485	0.040	0.04	1831.1	0.35	1686	1674.0	0.0066	TSR482
RWI500	0.045	0.035	5659.1	1.07	1332.2	1338.7	0.0010	Channel
RWI502	0.045	0.035	1679.3	0.32	1336.5	1332.2	0.0026	Channel
RWI504	0.045	0.035	1494.1	0.28	1334.4	1336.5	0.0010	Channel
RWI506	0.040	0.04	5234.7	0.99	1358.000	1336.0	0.0042	WITS70
RWI510	0.040	0.04	6491.7	1.23	1367.6	1336.5	0.0048	WITS70
RWI516	0.040	0.04	11711.2	2.22	1488.3	1428.2	0.0051	WITS70
RWI524	0.043	0.035	4525.7	0.86	1384	1356.0	0.0062	WITS130
RWI525	0.043	0.035	11015.0	2.09	1426	1356.0	0.0064	WITS130
RWI526	0.043	0.035	11922.1	2.26	1508.6	1426.8	0.0069	WITS120
RWI527	0.040	0.04	5909.0	1.12	1474	1434.0	0.0068	WITS70
RWI528	0.040	0.04	8239.6	1.56	1494	1434.0	0.0073	WITS70
RWI529	0.040	0.04	3669.9	0.70	1526	1490.0	0.0098	WITS70
RWI534	0.043	0.035	3888.5	0.74	1720.5	1677.1	0.0112	WITS90_3
RWI538	0.043	0.035	15096.4	2.86	1669.3	1556.3	0.0075	WITS90_3
RWI540	0.043	0.035	4350.4	0.82	1981.5	1908.0	0.0169	WITS90_1
RWI542	0.043	0.035	2705.6	0.51	1546	1526.0	0.0074	WITS90_3
RWI544	0.043	0.035	9910.1	1.88	1628.8	1546.5	0.0083	WITS40
RWI546	0.043	0.035	5296.4	1.00	1677.2	1628.8	0.0091	WITS90_3
RWI548	0.043	0.035	13443.6	2.55	1834.6	1677.2	0.0117	WITS90_2
RWI550	0.040	0.04	6201.4	1.17	1542	1490.0	0.0084	WITS70
RWI552	0.040	0.04	1732.0	0.33	1564.6	1543.4	0.0122	WITS70
RWI554	0.043	0.035	4537.9	0.86	1607	1543.4	0.0140	WITS50
RWI556	0.043	0.035	11635.1	2.20	1692	1606.0	0.0074	WITS40
RWI560	0.043	0.035	11698.6	2.22	1688	1606.0	0.0070	WITS40
R560A	0.043	0.035	16408.0	3.11	1876	1688.0	0.0115	WITS10
RWI564	0.043	0.035	9364.4	1.77	1964	1852.0	0.0120	WITS90_1

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Route ID	Mannings' n-values Overbank	Channel	length [ft]	length [miles]	US elev [ft]	DS elev [ft]	slope [ft/ft]	Typical Cross Section ID
RWI566	0.043	0.035	10390.3	1.97	1980	1852.0	0.0123	WITS90_1
RWI570	0.043	0.035	12212.1	2.31	1992	1822.0	0.0139	WITS90_1
RWI572	0.043	0.035	23542.7	4.46	1976	1688.0	0.0122	WITS90_1
RWI574	0.043	0.035	14010.4	2.65	1836	1688.0	0.0106	WITS10
RWI576	0.043	0.035	8726.4	1.65	1736	1650.2	0.0098	WITS10
RWI578	0.043	0.035	12423.9	2.35	1996	1832.0	0.0132	WITS90_1
RWI580	0.043	0.035	8541.2	1.62	1832	1736.0	0.0112	WITS10
RWI582	0.043	0.035	5153.1	0.98	1633.8	1607.0	0.0052	WITS10
RWI584	0.040	0.04	3933.0	0.74	1552	1552.0	0.0010	WITS70
RWT100	0.045	0.035	4778.0	0.90	1337	1335.2	0.0010	Channel
RWT110	0.045	0.035	7640.0	1.45	1339.8	1337.0	0.0010	Channel
RWT120	0.045	0.035	6167.9	1.17	1339.1	1339.8	0.0010	Channel
RWT130	0.045	0.035	5750.0	1.09	1341.7	1339.1	0.0010	Channel
RWT140	0.060	0.035	13052.8	2.47	1600	1350.0	0.0192	WTTS20_1
RWT150	0.060	0.035	16082.2	3.05	1553.5	1339.1	0.0133	WTTS20_1
RWT160	0.060	0.035	18961.0	3.59	1558.2	1339.1	0.0116	WTTS10_1

D.5. Flow Splits and Diversions Data

D.5.1. CAP Split Data

D.5.2. US 60 (Grand Ave) Diversion Data

D.5.3. Natural Diversion Data

D.5.4. 2-Dimensional Modeling Diversion Data

D.5.3. Natural Diversion Data

(HEC-RAS SPLIT FLOW OPTIMIZATION FOR CTW480.)

By: AMB Date: 1/27/05
Check: RAS Date: 1-27-05

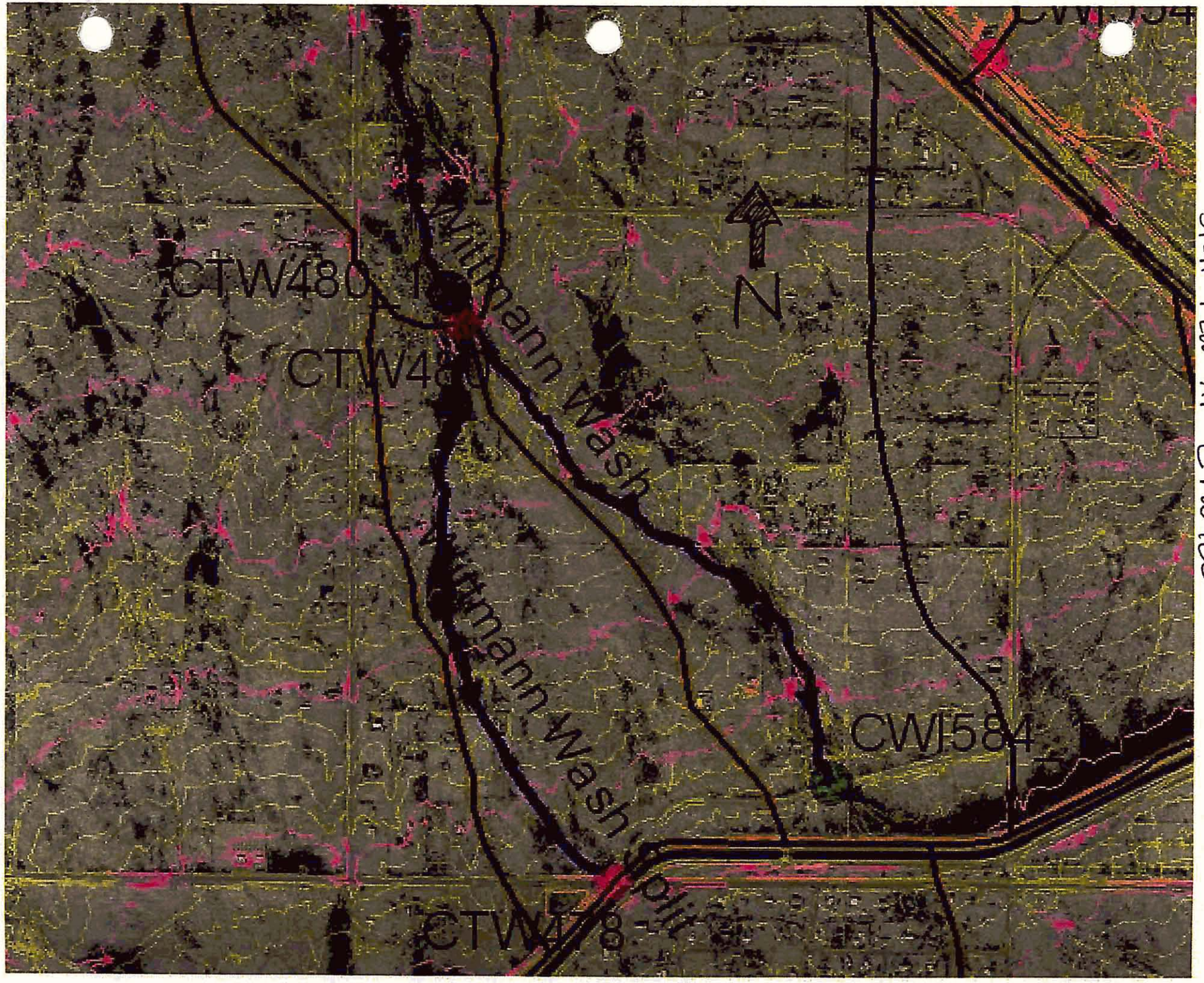
HEC-RAS Plan: Wittmann Was Profile: Floodplain

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Split	Wittmann Split	0	Floodplain	147.92	1549.15	1552.33	1549.76	1552.33	0.000011	0.20	845.03	669.48	0.02
[illegible]	Wittmann Split	.059	Floodplain	147.92	1549.73	1552.21		1552.40	0.008191	3.60	41.87	33.65	0.63
[illegible]	Wittmann Split	.153	Floodplain	147.92	1557.77	1558.63	1558.61	1558.76	0.022776	2.83	54.69	178.28	0.74
Split	Wittmann Split	.254	Floodplain	147.92	1562.87	1563.66	1563.53	1563.69	0.004938	0.74	112.97	460.33	0.30
Split	Wittmann Split	.315	Floodplain	147.92	1565.48	1566.06	1565.93	1566.09	0.012487	1.34	108.63	391.47	0.42
Split	Wittmann Split	.399	Floodplain	147.92	1569.38	1570.00		1570.02	0.006691	1.19	125.00	346.19	0.32
Split	Wittmann Split	.492	Floodplain	147.92	1573.27	1573.93	1573.73	1573.95	0.009622	1.17	127.44	433.40	0.37
Split	Wittmann Split	.576	Floodplain	147.92	1576.86	1577.44	1577.27	1577.47	0.006671	1.16	107.80	305.76	0.32
Split	Wittmann Split	.667	Floodplain	147.92	1581.01	1581.59	1581.49	1581.65	0.011905	1.34	82.68	286.24	0.41
Split	Wittmann Split	.766	Floodplain	147.92	1585.59	1586.21	1585.99	1586.23	0.006713	1.00	137.58	461.37	0.31
Split	Wittmann Split	.821	Floodplain	147.92	1586.33	1588.25	1588.04	1588.29	0.007596	1.26	101.59	266.07	0.34
Wittmann	Bottom Portion	1	Floodplain	3332.08	1552.36	1554.67	1554.67	1554.92	0.025647	3.49	845.10	1649.25	0.73
Wittmann	Bottom Portion	10	Floodplain	3332.08	1555.34	1558.58	1558.03	1558.69	0.004854	2.60	1224.90	1069.55	0.36
Wittmann	Bottom Portion	20	Floodplain	3332.08	1558.67	1561.60	1561.32	1561.84	0.009813	3.67	869.44	864.14	0.52
Wittmann	Bottom Portion	30	Floodplain	3332.08	1561.08	1565.29		1565.44	0.005726	3.03	1068.50	803.35	0.40
Wittmann	Bottom Portion	40	Floodplain	3332.08	1564.39	1568.24	1567.86	1568.39	0.005553	2.67	1069.63	981.49	0.38
Wittmann	Bottom Portion	50	Floodplain	3332.08	1568.65	1571.18	1570.89	1571.44	0.006930	2.26	836.93	725.01	0.37
Wittmann	Bottom Portion	60	Floodplain	3332.08	1572.23	1576.03	1575.92	1576.33	0.013851	4.32	770.66	898.33	0.56
Wittmann	Bottom Portion	70	Floodplain	3332.08	1575.61	1580.78	1580.33	1580.90	0.004694	2.82	1199.32	1162.56	0.33
Wittmann	Bottom Portion	80	Floodplain	3332.08	1579.07	1584.48	1584.39	1584.86	0.013572	6.32	729.31	882.03	0.59
Wittmann	Bottom Portion	90	Floodplain	3332.08	1581.16	1587.95	1587.51	1588.27	0.007377	4.38	734.00	548.50	0.41

(west path) 5%

(east path) - 95%

* Flow @ split location is 2780 cfs (CTW480).



SPLIT FLOW AT CTW480

D.6. Summary of Peak Discharge

D.6.1. 100-yr, 24-hr Existing Conditions Model Output

D.6.2. 100-yr, 6-hr Existing Conditions Model Output

D.6.3. 100-yr, 24-hr Future Conditions Model Output

D.6.4. 100-yr, 6-hr Future Conditions Model Output

D.6.5. Calibration Data

Table D.6: Summary of Peak Discharges

Model ID	100-yr 24-hr Storm			100-yr 6-hr Storm			Controlling Storm			
	Drainage Area	Exst. Cond.	Fut. Cond.	Drainage Area	Exst. Cond.	Fut. Cond.	Exst. Cond.		Fut Cond.	
	[mi^2]	Q [cfs]	Q [cfs]	[mi^2]	Q [cfs]	Q [cfs]	Storm	Q [cfs]	Storm	Q [cfs]
AF800	0.72	736	730	0.72	945	952	6-hour	945	6-hour	952
AF802	0.39	425	452	0.39	618	671	6-hour	618	6-hour	671
AF803	2.84	1,811	1,783	2.84	2,044	2,004	6-hour	2,044	6-hour	2,004
AF805	0.63	572	564	0.63	810	805	6-hour	810	6-hour	805
AF807	1.02	1,553	1,627	1.02	1,789	1,935	6-hour	1,789	6-hour	1,935
AF810	2.12	1,393	1,553	2.12	1,543	1,820	6-hour	1,543	6-hour	1,820
AF820	0.70	411	404	0.70	592	584	6-hour	592	6-hour	584
AF830	0.27	244	236	0.27	356	349	6-hour	356	6-hour	349
AF850	0.22	405	445	0.22	585	633	6-hour	585	6-hour	633
AF852	0.17	340	341	0.17	479	481	6-hour	479	6-hour	481
AF854	0.34	583	586	0.34	863	866	6-hour	863	6-hour	866
AF860	0.36	319	369	0.36	476	543	6-hour	476	6-hour	543
AF862	0.18	365	358	0.18	542	533	6-hour	542	6-hour	533
AF864	0.09	79	74	0.09	116	108	6-hour	116	6-hour	108
AF866	0.45	609	620	0.45	896	912	6-hour	896	6-hour	912
C200*	42.48	7,752	9,392	42.48	7,146	9,128	24-hour	7,752	24-hour	9,392
C205*	1.57	919	932	1.57	1,114	1,162	6-hour	1,114	6-hour	1,162
C210*	40.83	7,445	9,095	40.83	6,969	8,907	24-hour	7,445	24-hour	9,095
C216*	2.38	1,079	1,193	2.38	1,295	1,480	6-hour	1,295	6-hour	1,480
C230*	3.91	3,546	3,549	3.91	3,331	3,427	24-hour	3,546	24-hour	3,549
C242*	3.76	2,883	3,084	3.76	2,739	3,039	24-hour	2,883	24-hour	3,084
C302*	54.75	10,663	10,627	54.72	9,848	9,876	24-hour	10,663	24-hour	10,627
C350*	22.23	6,553	6,347	22.22	6,985	6,672	6-hour	6,985	6-hour	6,672
C359*	1.45	778	780	1.45	990	1,004	6-hour	990	6-hour	1,004
C363*	0.54	279	264	0.72	508	490	6-hour	508	6-hour	490
C364*	16.90	5,271	5,346	16.95	5,401	5,578	6-hour	5,401	6-hour	5,578
C390A	5.07	2,903	2,890	5.07	3,030	3,115	6-hour	3,030	6-hour	3,115
C410*	104.45	14,102	15,013	104.42	11,834	12,703	24-hour	14,102	24-hour	15,013
C430*	19.33	3,802	3,754	19.33	3,980	4,054	6-hour	3,980	6-hour	4,054
C442*	12.26	3,831	3,721	12.29	4,121	4,221	6-hour	4,121	6-hour	4,221
C446A	0.42	249	238	0.50	420	408	6-hour	420	6-hour	408
C450B	6.35	2,786	2,834	6.38	3,226	3,447	6-hour	3,226	6-hour	3,447
C452B	3.38	1,302	1,239	3.38	1,645	1,579	6-hour	1,645	6-hour	1,579
C508*	40.64	7,495	8,068	41.72	6,337	7,058	24-hour	7,495	24-hour	8,068
C530*	2.13	1,068	1,309	2.13	1,333	1,662	6-hour	1,333	6-hour	1,662
C538A	2.02	1,278	1,268	2.02	1,595	1,598	6-hour	1,595	6-hour	1,598
C562*	5.03	2,509	2,152	5.03	2,896	2,507	6-hour	2,896	6-hour	2,507

* Drainage areas may differ between the 24-hour and 6-hour storms: the HEC-1 hard coding was performed separately for the 24-hour and 6-hour storms.

Table D.6: Summary of Peak Discharges

Model ID	100-yr 24-hr Storm			100-yr 6-hr Storm			Controlling Storm			
	Drainage Area	Exst. Cond.	Fut. Cond.	Drainage Area	Exst. Cond.	Fut. Cond.	Exst. Cond.		Fut Cond.	
	[mi^2]	Q [cfs]	Q [cfs]	[mi^2]	Q [cfs]	Q [cfs]	Storm	Q [cfs]	Storm	Q [cfs]
C576B	1.69	687	619	1.69	919	837	6-hour	919	6-hour	837
C580A	3.13	2,218	1,878	3.13	2,424	2,129	6-hour	2,424	6-hour	2,129
C600A	8.62	1,288	1,493	9.67	1,221	1,410	24-hour	1,288	24-hour	1,493
C606A	4.08	363	375	3.55	368	396	6-hour	368	6-hour	396
C624A	6.92	2,060	2,199	7.56	1,746	2,115	24-hour	2,060	24-hour	2,199
C700*	302.88	6,286	7,625	302.88	4,027	5,534	24-hour	6,286	24-hour	7,625
C708*	3.70	1,563	1,750	3.70	1,685	2,010	6-hour	1,685	6-hour	2,010
C726*	41.19	3,037	3,389	36.10	2,672	3,211	24-hour	3,037	24-hour	3,389
C726A	21.41	1,812	1,971	18.85	1,657	1,909	24-hour	1,812	24-hour	1,971
C726B	19.77	1,298	1,654	17.24	1,229	1,695	24-hour	1,298	6-hour	1,695
C802*	313.51	7,038	8,537	313.51	4,057	5,638	24-hour	7,038	24-hour	8,537
CAF807	4.49	2,508	2,600	4.49	2,926	2,905	6-hour	2,926	6-hour	2,905
CAF810	320.12	7,163	8,766	320.12	4,048	5,631	24-hour	7,163	24-hour	8,766
CAF820	320.81	7,160	8,755	320.81	4,038	5,615	24-hour	7,160	24-hour	8,755
CAF850	0.72	1,140	1,184	0.72	1,545	1,596	6-hour	1,545	6-hour	1,596
CAF852	0.51	812	817	0.51	1,174	1,179	6-hour	1,174	6-hour	1,179
CAF860	1.08	860	914	1.08	1,151	1,226	6-hour	1,151	6-hour	1,226
CAF862	0.26	373	364	0.26	555	543	6-hour	555	6-hour	543
CAP1*	53.75	14,390	15,575	53.76	13,205	14,655	24-hour	14,390	24-hour	15,575
CAP2*	39.36	8,461	10,018	33.74	6,672	8,797	24-hour	8,461	24-hour	10,018
CIW300	30.57	6,941	7,056	30.55	6,611	6,819	24-hour	6,941	24-hour	7,056
CIW302	24.18	5,078	5,239	24.24	5,042	5,220	24-hour	5,078	24-hour	5,239
CIW310	1.75	708	686	1.75	885	891	6-hour	885	6-hour	891
CIW314	29.09	7,496	7,416	29.07	7,566	7,448	6-hour	7,566	6-hour	7,448
CIW322	25.16	7,021	6,791	25.14	7,314	7,020	6-hour	7,314	6-hour	7,020
CIW330	23.27	6,608	6,392	23.25	6,979	6,677	6-hour	6,979	6-hour	6,677
CIW334	22.85	5,156	5,266	22.91	5,175	5,351	6-hour	5,175	6-hour	5,351
CIW338	21.26	5,213	5,289	21.32	5,248	5,425	6-hour	5,248	6-hour	5,425
CIW342	17.25	5,157	5,226	17.30	5,302	5,474	6-hour	5,302	6-hour	5,474
CIW346	20.92	5,247	5,319	20.98	5,297	5,470	6-hour	5,297	6-hour	5,470
CIW349	12.30	5,399	5,508	12.27	5,506	5,721	6-hour	5,506	6-hour	5,721
CIW350	17.41	5,647	5,297	17.45	6,037	5,645	6-hour	6,037	6-hour	5,645
CIW351	1.71	559	568	1.67	697	711	6-hour	697	6-hour	711
CIW352	6.31	2,192	2,204	6.39	2,291	2,355	6-hour	2,291	6-hour	2,355
CIW353	15.24	5,023	4,662	15.28	5,494	5,051	6-hour	5,494	6-hour	5,051
CIW354	14.59	5,244	5,334	14.64	5,405	5,595	6-hour	5,405	6-hour	5,595
CIW356	14.23	5,308	5,397	14.28	5,452	5,643	6-hour	5,452	6-hour	5,643

** Drainage areas may differ between the 24-hour and 6-hour storms: the HEC-1 hard coding was performed separately for the 24-hour and 6-hour storms.*

Table D.6: Summary of Peak Discharges

Model ID	100-yr 24-hr Storm			100-yr 6-hr Storm			Controlling Storm			
	Drainage Area	Exst. Cond.	Fut. Cond.	Drainage Area	Exst. Cond.	Fut. Cond.	Exst. Cond.		Fut Cond.	
	[mi^2]	Q [cfs]	Q [cfs]	[mi^2]	Q [cfs]	Q [cfs]	Storm	Q [cfs]	Storm	Q [cfs]
CIW357	8.60	3,504	3,311	8.60	3,583	3,404	6-hour	3,583	6-hour	3,404
CIW359	5.97	3,105	2,625	5.97	3,423	3,009	6-hour	3,423	6-hour	3,009
CIW360	1.54	666	668	1.62	771	775	6-hour	771	6-hour	775
CIW361	4.82	1,600	1,588	4.76	1,886	1,854	6-hour	1,886	6-hour	1,854
CIW362	14.77	5,141	5,227	14.82	5,316	5,506	6-hour	5,316	6-hour	5,506
CIW363	4.38	1,640	1,570	4.26	1,903	1,805	6-hour	1,903	6-hour	1,805
CIW364	2.13	1,337	1,273	2.13	1,456	1,433	6-hour	1,456	6-hour	1,433
CIW365	0.63	353	330	0.74	583	557	6-hour	583	6-hour	557
CIW366	1.08	881	785	1.07	1,105	989	6-hour	1,105	6-hour	989
CIW367	0.17	80	75	0.43	320	301	6-hour	320	6-hour	301
CIW368	0.71	296	301	0.79	479	498	6-hour	479	6-hour	498
CIW370	12.05	5,663	5,761	12.02	5,750	5,961	6-hour	5,750	6-hour	5,961
CIW374	0.53	558	526	0.54	784	757	6-hour	784	6-hour	757
CIW375	0.82	306	329	0.85	446	493	6-hour	446	6-hour	493
CIW380	15.11	7,968	8,319	15.11	7,995	8,664	6-hour	7,995	6-hour	8,664
CIW381	0.72	493	477	0.64	619	599	6-hour	619	6-hour	599
CIW382	0.99	525	539	0.99	685	708	6-hour	685	6-hour	708
CIW384	0.23	164	157	0.41	390	394	6-hour	390	6-hour	394
CIW388	7.85	3,436	3,268	7.85	3,532	3,396	6-hour	3,532	6-hour	3,396
CIW390	6.50	3,038	2,945	6.50	3,093	3,091	6-hour	3,093	6-hour	3,091
CIW395	12.68	7,572	8,032	12.68	7,766	8,463	6-hour	7,766	6-hour	8,463
CIW396	14.61	7,924	8,342	14.61	8,001	8,699	6-hour	8,001	6-hour	8,699
CPD700	313.12	7,038	8,525	313.12	4,058	5,638	24-hour	7,038	24-hour	8,525
CPD704	8.84	3,060	3,449	8.84	3,265	3,804	6-hour	3,265	6-hour	3,804
CPD708	7.76	2,728	3,185	7.76	2,957	3,529	6-hour	2,957	6-hour	3,529
CPD720	293.30	5,843	7,004	296.13	4,030	5,174	24-hour	5,843	24-hour	7,004
CPD726	44.29	2,998	3,378	39.20	2,581	3,146	24-hour	2,998	24-hour	3,378
CPD732	15.04	1,200	1,349	13.11	1,085	1,319	24-hour	1,200	24-hour	1,349
CPD736	5.27	451	476	4.64	441	489	24-hour	451	6-hour	489
CPD740	18.84	1,273	1,652	16.31	1,249	1,698	24-hour	1,273	6-hour	1,698
CPD748	0.47	605	614	0.47	910	914	6-hour	910	6-hour	914
CPI600	258.01	4,434	4,798	263.07	2,593	3,266	24-hour	4,434	24-hour	4,798
CPI603	15.46	2,450	2,713	15.98	2,200	2,506	24-hour	2,450	24-hour	2,713
CPI604	2.03	321	382	1.82	469	496	6-hour	469	6-hour	496
CPI606	3.49	701	785	3.17	753	881	6-hour	753	6-hour	881
CPI609	8.10	1,197	1,393	9.15	1,118	1,300	24-hour	1,197	24-hour	1,393
CPI612	12.43	1,406	1,586	14.40	1,278	1,425	24-hour	1,406	24-hour	1,586

* Drainage areas may differ between the 24-hour and 6-hour storms: the HEC-1 hard coding was performed separately for the 24-hour and 6-hour storms.

Table D.6: Summary of Peak Discharges

Model ID	100-yr 24-hr Storm			100-yr 6-hr Storm			Controlling Storm			
	Drainage Area	Exst. Cond.	Fut. Cond.	Drainage Area	Exst. Cond.	Fut. Cond.	Exst. Cond.		Fut Cond.	
	[mi^2]	Q [cfs]	Q [cfs]	[mi^2]	Q [cfs]	Q [cfs]	Storm	Q [cfs]	Storm	Q [cfs]
CPI615	6.21	701	798	7.20	952	982	6-hour	952	6-hour	982
CPI618	5.48	629	656	6.46	661	866	6-hour	661	6-hour	866
CPI621	10.22	1,200	1,397	11.70	1,028	1,287	24-hour	1,200	24-hour	1,397
CPI624	8.57	1,837	2,360	9.21	1,564	2,243	24-hour	1,837	24-hour	2,360
CPI628	4.11	750	763	4.75	594	1,057	24-hour	750	6-hour	1,057
CPI633	241.94	3,906	3,160	246.48	2,199	2,865	24-hour	3,906	24-hour	3,160
CPI635	223.30	2,908	677	225.17	1,523	2,123	24-hour	2,908	6-hour	2,123
CPI639	0.37	173	184	0.43	288	310	6-hour	288	6-hour	310
CPI645	11.72	4,921	4,890	11.72	5,320	5,404	6-hour	5,320	6-hour	5,404
CPI651	7.26	3,455	3,308	7.26	3,894	3,811	6-hour	3,894	6-hour	3,811
CPI654	6.34	3,103	2,831	6.34	3,587	3,352	6-hour	3,587	6-hour	3,352
CPI660	2.31	986	906	2.31	1,270	1,172	6-hour	1,270	6-hour	1,172
CPI672	6.98	2,266	2,407	6.98	2,483	2,753	6-hour	2,483	6-hour	2,753
CPI675	14.77	6,454	6,800	14.77	6,471	7,156	6-hour	6,471	6-hour	7,156
CPI678	19.55	9,081	9,528	19.55	8,723	9,652	24-hour	9,081	6-hour	9,652
CPI681	18.72	9,687	10,027	18.72	9,152	10,009	24-hour	9,687	24-hour	10,027
CPI684	17.73	10,128	10,632	17.73	9,384	10,270	24-hour	10,128	24-hour	10,632
CPI687	16.99	10,065	10,688	16.99	9,390	10,250	24-hour	10,065	24-hour	10,688
CPI689	9.98	6,934	7,340	9.98	6,591	7,228	24-hour	6,934	24-hour	7,340
CPI690	14.71	6,673	7,007	14.71	6,659	7,346	24-hour	6,673	6-hour	7,346
CSV200	99.52	14,084	14,856	99.49	11,885	12,735	24-hour	14,084	24-hour	14,856
CSV212	38.68	7,363	8,859	38.68	6,822	8,643	24-hour	7,363	24-hour	8,859
CSV216	6.82	2,345	2,364	6.82	2,621	2,753	6-hour	2,621	6-hour	2,753
CSV218	2.82	1,692	1,668	2.82	1,767	1,834	6-hour	1,767	6-hour	1,834
CSV219	1.14	1,104	1,112	1.14	1,122	1,150	6-hour	1,122	6-hour	1,150
CSV220	30.63	6,753	7,844	30.63	6,403	7,777	24-hour	6,753	24-hour	7,844
CSV244	1.62	720	804	1.62	917	1,053	6-hour	917	6-hour	1,053
CSV246	0.76	395	421	0.76	514	555	6-hour	514	6-hour	555
CSV256	0.44	340	391	0.44	484	564	6-hour	484	6-hour	564
CSV260	16.99	5,765	6,663	16.99	6,422	7,564	6-hour	6,422	6-hour	7,564
CSV264	4.82	2,264	2,474	4.82	2,714	3,000	6-hour	2,714	6-hour	3,000
CSV272	3.84	1,566	1,843	3.84	1,966	2,342	6-hour	1,966	6-hour	2,342
CSV276	7.41	3,247	3,634	7.41	3,738	4,303	6-hour	3,738	6-hour	4,303
CSV280	9.54	3,723	4,203	9.54	4,248	4,905	6-hour	4,248	6-hour	4,905
CSV284	1.82	1,157	1,270	1.82	1,449	1,635	6-hour	1,449	6-hour	1,635
CTW400	163.05	17,339	21,188	163.08	11,450	14,523	24-hour	17,339	24-hour	21,188
CTW402	135.09	16,124	19,464	135.06	11,555	14,148	24-hour	16,124	24-hour	19,464

* Drainage areas may differ between the 24-hour and 6-hour storms: the HEC-1 hard coding was performed separately for the 24-hour and 6-hour storms.

Table D.6: Summary of Peak Discharges

Model ID	100-yr 24-hr Storm			100-yr 6-hr Storm			Controlling Storm			
	Drainage Area	Exst. Cond.	Fut. Cond.	Drainage Area	Exst. Cond.	Fut. Cond.	Exst. Cond.		Fut Cond.	
	[mi^2]	Q [cfs]	Q [cfs]	[mi^2]	Q [cfs]	Q [cfs]	Storm	Q [cfs]	Storm	Q [cfs]
CTW404	25.72	5,271	5,951	25.72	4,612	5,469	24-hour	5,271	24-hour	5,951
CTW410	1.48	852	931	1.48	1,107	1,235	6-hour	1,107	6-hour	1,235
CTW412	2.87	1,295	1,711	2.87	1,661	2,214	6-hour	1,661	6-hour	2,214
CTW418	21.49	2,766	2,817	21.55	2,684	2,831	24-hour	2,766	6-hour	2,831
CTW422	23.69	2,842	3,320	23.75	2,609	2,958	24-hour	2,842	24-hour	3,320
CTW430	20.12	3,900	3,863	20.18	3,980	4,049	6-hour	3,980	6-hour	4,049
CTW431	2.78	1,160	1,180	2.75	1,408	1,443	6-hour	1,408	6-hour	1,443
CTW432	1.90	770	769	1.87	976	996	6-hour	976	6-hour	996
CTW434	15.61	3,912	3,821	15.61	4,103	4,176	6-hour	4,103	6-hour	4,176
CTW440	7.60	2,556	2,586	7.40	2,872	3,006	6-hour	2,872	6-hour	3,006
CTW442	4.67	1,417	1,330	4.90	1,793	1,738	6-hour	1,793	6-hour	1,738
CTW444	7.49	2,616	2,641	7.29	2,931	3,064	6-hour	2,931	6-hour	3,064
CTW446	1.04	475	488	1.01	634	664	6-hour	634	6-hour	664
CTW450	7.59	2,832	2,877	7.62	3,229	3,391	6-hour	3,229	6-hour	3,391
CTW452	4.29	1,465	1,389	4.52	1,841	1,787	6-hour	1,841	6-hour	1,787
CTW454	3.52	1,564	1,504	3.52	1,811	1,758	6-hour	1,811	6-hour	1,758
CTW456	3.16	1,517	1,464	3.16	1,736	1,698	6-hour	1,736	6-hour	1,698
CTW458	2.99	1,479	1,435	2.99	1,686	1,658	6-hour	1,686	6-hour	1,658
CTW462	4.02	2,130	2,355	4.05	3,039	3,373	6-hour	3,039	6-hour	3,373
CTW478	0.79	351	357	0.85	422	429	6-hour	422	6-hour	429
CTW480	10.62	2,780	2,882	11.78	3,071	3,279	6-hour	3,071	6-hour	3,279
CTW482	3.88	1,050	1,032	5.04	1,655	1,553	6-hour	1,655	6-hour	1,553
CTW484	5.99	2,046	1,902	5.99	2,286	2,213	6-hour	2,286	6-hour	2,213
CTW485	5.64	1,937	1,727	5.64	2,200	2,060	6-hour	2,200	6-hour	2,060
CWI500	222.69	23,146	3,318	224.56	13,179	17,232	24-hour	23,146	6-hour	17,232
CWI502	201.44	21,379	26,281	202.35	12,654	16,474	24-hour	21,379	24-hour	26,281
CWI504	164.40	17,199	21,107	164.43	11,356	14,452	24-hour	17,199	24-hour	21,107
CWI506	12.35	2,340	1,702	13.10	2,075	2,759	24-hour	2,340	6-hour	2,759
CWI508	41.34	7,402	7,988	42.42	6,228	6,914	24-hour	7,402	24-hour	7,988
CWI510	35.84	6,176	6,728	36.72	5,284	5,913	24-hour	6,176	24-hour	6,728
CWI512	35.64	7,194	7,664	36.18	6,187	6,857	24-hour	7,194	24-hour	7,664
CWI514	30.62	7,064	7,416	30.56	6,311	6,941	24-hour	7,064	24-hour	7,416
CWI516	34.29	7,374	7,745	34.83	6,473	7,122	24-hour	7,374	24-hour	7,745
CWI518	5.00	1,014	1,316	5.54	1,019	1,402	6-hour	1,019	6-hour	1,402
CWI524	1.51	712	734	1.60	940	978	6-hour	940	6-hour	978
CWI525	8.92	1,614	1,802	10.23	1,695	1,778	6-hour	1,695	24-hour	1,802
CWI526	3.49	418	435	4.10	436	506	6-hour	436	6-hour	506

* Drainage areas may differ between the 24-hour and 6-hour storms: the HEC-1 hard coding was performed separately for the 24-hour and 6-hour storms.

Table D.6: Summary of Peak Discharges

Model ID	100-yr 24-hr Storm			100-yr 6-hr Storm			Controlling Storm			
	Drainage Area	Exst. Cond.	Fut. Cond.	Drainage Area	Exst. Cond.	Fut. Cond.	Exst. Cond.		Fut Cond.	
	[mi^2]	Q [cfs]	Q [cfs]	[mi^2]	Q [cfs]	Q [cfs]	Storm	Q [cfs]	Storm	Q [cfs]
CWI527	0.71	645	717	0.71	886	998	6-hour	886	6-hour	998
CWI528	3.80	420	475	4.41	469	985	6-hour	469	6-hour	985
CWI529	3.53	407	455	4.13	466	834	6-hour	466	6-hour	834
CWI530	9.77	3,248	3,488	9.78	3,730	3,977	6-hour	3,730	6-hour	3,977
CWI532	0.76	539	687	0.76	781	972	6-hour	781	6-hour	972
CWI538	3.45	1,726	1,679	3.45	2,143	2,102	6-hour	2,143	6-hour	2,102
CWI542	2.07	886	996	2.07	1,117	1,271	6-hour	1,117	6-hour	1,271
CWI544	2.71	1,638	1,817	2.71	1,903	2,147	6-hour	1,903	6-hour	2,147
CWI546	0.91	463	521	0.91	631	731	6-hour	631	6-hour	731
CWI550	30.26	7,251	7,522	30.20	6,778	7,246	24-hour	7,251	24-hour	7,522
CWI552	18.77	5,165	5,175	17.61	5,260	5,256	6-hour	5,260	6-hour	5,256
CWI554	18.36	5,164	5,150	17.20	5,275	5,258	6-hour	5,275	6-hour	5,258
CWI560	16.86	5,195	4,991	15.70	5,384	5,204	6-hour	5,384	6-hour	5,204
CWI562	3.26	1,415	1,265	3.26	1,723	1,537	6-hour	1,723	6-hour	1,537
CWI566	0.58	410	387	0.58	562	541	6-hour	562	6-hour	541
CWI576	7.07	2,463	2,277	7.07	2,695	2,439	6-hour	2,695	6-hour	2,439
CWI578	0.77	480	429	0.77	680	616	6-hour	680	6-hour	616
CWI580	5.22	2,239	2,028	5.22	2,520	2,253	6-hour	2,520	6-hour	2,253
CWI582	0.38	361	411	0.38	527	605	6-hour	527	6-hour	605
CWI584	11.35	2,549	2,748	12.45	2,798	3,072	6-hour	2,798	6-hour	3,072
CWT100	22.55	5,629	6,289	22.55	4,921	5,796	24-hour	5,629	24-hour	6,289
CWT110	18.71	5,882	6,522	18.71	5,207	6,086	24-hour	5,882	24-hour	6,522
CWT120	15.81	5,970	6,604	15.81	5,370	6,236	24-hour	5,970	24-hour	6,604
CWT130	6.36	2,641	2,914	6.36	2,655	3,077	6-hour	2,655	6-hour	3,077
CWT150	5.84	2,964	3,269	5.84	2,868	3,269	24-hour	2,964	24-hour	3,269
IW300	1.48	686	703	1.48	948	1,000	6-hour	948	6-hour	1,000
IW302	1.33	544	648	1.33	746	904	6-hour	746	6-hour	904
IW310	1.17	708	685	1.17	924	921	6-hour	924	6-hour	921
IW312	0.57	346	328	0.57	492	470	6-hour	492	6-hour	470
IW314	2.18	1,094	1,214	2.18	1,305	1,532	6-hour	1,305	6-hour	1,532
IW318	0.58	409	390	0.58	585	561	6-hour	585	6-hour	561
IW322	1.89	932	893	1.89	1,161	1,149	6-hour	1,161	6-hour	1,149
IW326	0.33	327	319	0.33	478	473	6-hour	478	6-hour	473
IW330	1.04	619	587	1.04	805	781	6-hour	805	6-hour	781
IW334	1.26	1,160	1,258	1.26	1,392	1,579	6-hour	1,392	6-hour	1,579
IW338	0.34	358	349	0.34	525	511	6-hour	525	6-hour	511
IW342	0.35	180	175	0.35	279	273	6-hour	279	6-hour	273

* Drainage areas may differ between the 24-hour and 6-hour storms: the HEC-1 hard coding was performed separately for the 24-hour and 6-hour storms.

Table D.6: Summary of Peak Discharges

Model ID	100-yr 24-hr Storm			100-yr 6-hr Storm			Controlling Storm			
	Drainage Area	Exst. Cond.	Fut. Cond.	Drainage Area	Exst. Cond.	Fut. Cond.	Exst. Cond.		Fut Cond.	
	[mi^2]	Q [cfs]	Q [cfs]	[mi^2]	Q [cfs]	Q [cfs]	Storm	Q [cfs]	Storm	Q [cfs]
IW346	3.44	1,969	1,855	3.44	2,036	2,016	6-hour	2,036	6-hour	2,016
IW349	0.25	172	162	0.25	258	243	6-hour	258	6-hour	243
IW350	2.17	1,154	1,130	2.17	1,410	1,438	6-hour	1,410	6-hour	1,438
IW351	0.32	236	228	0.32	354	342	6-hour	354	6-hour	342
IW352	0.10	99	99	0.10	148	148	6-hour	148	6-hour	148
IW353	2.80	2,307	2,180	2.80	2,512	2,507	6-hour	2,512	6-hour	2,507
IW354	0.36	409	402	0.36	596	579	6-hour	596	6-hour	579
IW356	0.29	275	266	0.29	395	391	6-hour	395	6-hour	391
IW357	0.75	647	617	0.75	879	843	6-hour	879	6-hour	843
IW358	0.16	98	95	0.16	146	144	6-hour	146	6-hour	144
IW359	2.91	2,442	2,210	2.91	2,496	2,318	6-hour	2,496	6-hour	2,318
IW360	0.83	670	671	0.83	898	900	6-hour	898	6-hour	900
IW361	0.35	212	218	0.35	334	326	6-hour	334	6-hour	326
IW362	0.18	183	180	0.18	266	260	6-hour	266	6-hour	260
IW363	0.63	804	784	0.63	1,112	1,073	6-hour	1,112	6-hour	1,073
IW364	1.15	1,340	1,274	1.15	1,624	1,576	6-hour	1,624	6-hour	1,576
IW365	0.47	272	259	0.47	394	376	6-hour	394	6-hour	376
IW366	1.06	881	785	1.06	1,107	992	6-hour	1,107	6-hour	992
IW367	0.05	77	75	0.05	109	107	6-hour	109	6-hour	107
IW368	0.29	179	169	0.29	271	263	6-hour	271	6-hour	263
IW369	0.79	435	411	0.79	590	565	6-hour	590	6-hour	565
IW370	0.88	433	410	0.88	588	565	6-hour	588	6-hour	565
IW371	0.05	68	63	0.05	103	96	6-hour	103	6-hour	96
IW372	0.32	354	339	0.32	511	504	6-hour	511	6-hour	504
IW374	0.39	534	512	0.39	758	738	6-hour	758	6-hour	738
IW375	0.66	272	259	0.66	384	368	6-hour	384	6-hour	368
IW377	0.11	106	104	0.11	153	153	6-hour	153	6-hour	153
IW380	0.50	490	439	0.50	701	643	6-hour	701	6-hour	643
IW381	0.38	315	299	0.38	454	433	6-hour	454	6-hour	433
IW382	0.62	526	541	0.62	738	762	6-hour	738	6-hour	762
IW384	0.08	128	127	0.08	184	180	6-hour	184	6-hour	180
IW386	0.37	271	265	0.37	395	389	6-hour	395	6-hour	389
IW387	1.35	1,110	1,083	1.35	1,332	1,312	6-hour	1,332	6-hour	1,312
IW388	1.23	867	803	1.23	1,107	1,052	6-hour	1,107	6-hour	1,052
IW389	0.13	118	110	0.13	168	158	6-hour	168	6-hour	158
IW390	0.31	146	129	0.31	221	197	6-hour	221	6-hour	197
IW390A	0.90	576	560	0.90	771	753	6-hour	771	6-hour	753

* Drainage areas may differ between the 24-hour and 6-hour storms: the HEC-1 hard coding was performed separately for the 24-hour and 6-hour storms.

Table D.6: Summary of Peak Discharges

Model ID	100-yr 24-hr Storm			100-yr 6-hr Storm			Controlling Storm			
	Drainage Area	Exst. Cond.	Fut. Cond.	Drainage Area	Exst. Cond.	Fut. Cond.	Exst. Cond.		Fut Cond.	
	[mi^2]	Q [cfs]	Q [cfs]	[mi^2]	Q [cfs]	Q [cfs]	Storm	Q [cfs]	Storm	Q [cfs]
IW392	1.11	1,713	1,572	1.11	1,985	1,811	6-hour	1,985	6-hour	1,811
IW394	4.17	2,569	2,624	4.17	2,700	2,805	6-hour	2,700	6-hour	2,805
IW395	7.86	6,223	6,506	7.86	5,796	6,231	24-hour	6,223	24-hour	6,506
IW396	0.59	260	256	0.59	390	389	6-hour	390	6-hour	389
IW397	4.81	3,716	3,909	4.81	3,845	4,160	6-hour	3,845	6-hour	4,160
PD700	1.40	1,491	1,451	1.40	1,703	1,683	6-hour	1,703	6-hour	1,683
PD704	0.36	337	342	0.36	480	491	6-hour	480	6-hour	491
PD708	2.40	1,690	1,596	2.40	1,840	1,829	6-hour	1,840	6-hour	1,829
PD712	0.89	755	742	0.89	1,003	987	6-hour	1,003	6-hour	987
PD712A	0.77	407	382	0.77	570	546	6-hour	570	6-hour	546
PD716	1.75	2,751	2,662	1.75	2,644	2,642	24-hour	2,751	24-hour	2,662
PD720	0.59	668	664	0.59	942	944	6-hour	942	6-hour	944
PD726	1.35	843	797	1.35	1,071	1,051	6-hour	1,071	6-hour	1,051
PD726A	1.10	457	431	1.10	605	579	6-hour	605	6-hour	579
PD726B	0.93	642	654	0.93	832	849	6-hour	832	6-hour	849
PD732	0.48	461	462	0.48	681	687	6-hour	681	6-hour	687
PD736	0.78	269	256	0.78	373	358	6-hour	373	6-hour	358
PD740	1.28	798	809	1.28	991	1,005	6-hour	991	6-hour	1,005
PD744	0.80	531	508	0.80	732	709	6-hour	732	6-hour	709
PD748	0.28	374	381	0.28	557	559	6-hour	557	6-hour	559
PD752	0.19	236	239	0.19	354	356	6-hour	354	6-hour	356
PD756	3.23	1,528	1,554	3.23	1,655	1,791	6-hour	1,655	6-hour	1,791
PD760	0.87	1,161	1,168	0.87	1,444	1,464	6-hour	1,444	6-hour	1,464
PDEAST	16.44	8,461	10,018	16.44	6,672	8,797	24-hour	8,461	24-hour	10,018
PDWEST	7.08	4,394	5,033	7.08	3,720	4,407	24-hour	4,394	24-hour	5,033
PI600	0.61	731	718	0.61	1,023	1,007	6-hour	1,023	6-hour	1,007
PI600A	0.52	822	817	0.52	1,191	1,179	6-hour	1,191	6-hour	1,179
PI603	0.52	418	423	0.52	623	633	6-hour	623	6-hour	633
PI604	0.36	312	329	0.36	469	494	6-hour	469	6-hour	494
PI606	1.08	708	790	1.08	921	1,033	6-hour	921	6-hour	1,033
PI606A	0.46	374	353	0.46	575	546	6-hour	575	6-hour	546
PI609	1.94	960	1,030	1.94	1,135	1,233	6-hour	1,135	6-hour	1,233
PI612	0.74	458	492	0.74	656	701	6-hour	656	6-hour	701
PI615	0.84	625	628	0.84	852	855	6-hour	852	6-hour	855
PI618	0.29	323	300	0.29	470	448	6-hour	470	6-hour	448
PI621	0.90	645	667	0.90	865	907	6-hour	865	6-hour	907
PI624	1.23	847	879	1.23	1,112	1,157	6-hour	1,112	6-hour	1,157

* Drainage areas may differ between the 24-hour and 6-hour storms: the HEC-1 hard coding was performed separately for the 24-hour and 6-hour storms.

Table D.6: Summary of Peak Discharges

Model ID	100-yr 24-hr Storm			100-yr 6-hr Storm			Controlling Storm			
	Drainage Area	Exst. Cond.	Fut. Cond.	Drainage Area	Exst. Cond.	Fut. Cond.	Exst. Cond.		Fut Cond.	
	[mi^2]	Q [cfs]	Q [cfs]	[mi^2]	Q [cfs]	Q [cfs]	Storm	Q [cfs]	Storm	Q [cfs]
PI624A	2.81	1,630	1,827	2.81	1,577	1,953	24-hour	1,630	6-hour	1,953
PI628	0.57	695	655	0.57	1,004	953	6-hour	1,004	6-hour	953
PI633	0.34	280	297	0.34	383	411	6-hour	383	6-hour	411
PI635	0.61	622	565	0.61	889	807	6-hour	889	6-hour	807
PI636	0.43	384	373	0.43	576	566	6-hour	576	6-hour	566
PI639	0.34	169	178	0.34	261	273	6-hour	261	6-hour	273
PI642	0.24	162	184	0.24	247	278	6-hour	247	6-hour	278
PI645	1.56	1,160	1,143	1.56	1,292	1,316	6-hour	1,292	6-hour	1,316
PI645A	1.63	912	893	1.63	1,162	1,175	6-hour	1,162	6-hour	1,175
PI648	1.73	1,035	969	1.73	1,286	1,246	6-hour	1,286	6-hour	1,246
PI651	0.46	308	290	0.46	459	436	6-hour	459	6-hour	436
PI654	4.03	2,372	2,194	4.03	2,695	2,599	6-hour	2,695	6-hour	2,599
PI657	0.87	456	432	0.87	607	583	6-hour	607	6-hour	583
PI660	0.84	339	320	0.84	455	432	6-hour	455	6-hour	432
PI663	0.60	329	324	0.60	468	468	6-hour	468	6-hour	468
PI669	0.29	144	145	0.29	219	223	6-hour	219	6-hour	223
PI672	1.51	1,172	1,128	1.51	1,342	1,306	6-hour	1,342	6-hour	1,306
PI675	0.06	72	72	0.06	106	106	6-hour	106	6-hour	106
PI678	0.83	406	514	0.83	556	708	6-hour	556	6-hour	708
PI681	0.99	598	585	0.99	792	798	6-hour	792	6-hour	798
PI684	0.74	637	632	0.74	864	871	6-hour	864	6-hour	871
PI687	7.01	4,139	4,342	7.01	4,123	4,438	24-hour	4,139	6-hour	4,438
PI688	3.20	2,507	2,636	3.20	2,650	2,857	6-hour	2,650	6-hour	2,857
PI689	6.78	4,688	4,972	6.78	4,695	5,150	6-hour	4,695	6-hour	5,150
PI690	0.63	315	334	0.63	447	478	6-hour	447	6-hour	478
PI693	0.84	756	732	0.84	1,003	980	6-hour	1,003	6-hour	980
SV200	2.29	1,931	2,114	2.29	2,003	2,363	6-hour	2,003	6-hour	2,363
SV202	1.44	1,078	1,032	1.44	1,323	1,314	6-hour	1,323	6-hour	1,314
SV203	0.08	120	111	0.08	182	170	6-hour	182	6-hour	170
SV205	0.50	747	739	0.50	1,102	1,095	6-hour	1,102	6-hour	1,095
SV208	1.07	638	676	1.07	831	889	6-hour	831	6-hour	889
SV210	0.72	1,189	1,216	0.72	1,553	1,606	6-hour	1,553	6-hour	1,606
SV212	4.14	3,325	3,361	4.14	3,072	3,358	24-hour	3,325	24-hour	3,361
SV214	1.87	1,910	1,944	1.87	2,019	2,185	6-hour	2,019	6-hour	2,185
SV216	1.63	1,613	1,551	1.63	1,787	1,781	6-hour	1,787	6-hour	1,781
SV218	1.29	1,039	986	1.29	1,258	1,225	6-hour	1,258	6-hour	1,225
SV219	0.90	1,105	1,105	0.90	1,167	1,179	6-hour	1,167	6-hour	1,179

* Drainage areas may differ between the 24-hour and 6-hour storms: the HEC-1 hard coding was performed separately for the 24-hour and 6-hour storms.

Table D.6: Summary of Peak Discharges

Model ID	100-yr 24-hr Storm			100-yr 6-hr Storm			Controlling Storm			
	Drainage Area	Exst. Cond.	Fut. Cond.	Drainage Area	Exst. Cond.	Fut. Cond.	Exst. Cond.		Fut Cond.	
	[mi^2]	Q [cfs]	Q [cfs]	[mi^2]	Q [cfs]	Q [cfs]	Storm	Q [cfs]	Storm	Q [cfs]
SV220	0.60	797	792	0.60	1,114	1,101	6-hour	1,114	6-hour	1,101
SV230	0.85	1,276	1,261	0.85	1,582	1,580	6-hour	1,582	6-hour	1,580
SV232	3.06	2,919	3,041	3.06	2,720	2,915	24-hour	2,919	24-hour	3,041
SV236	0.59	521	527	0.59	763	760	6-hour	763	6-hour	760
SV240	3.67	2,841	3,045	3.67	2,706	3,008	24-hour	2,841	24-hour	3,045
SV242	0.09	63	63	0.09	93	94	6-hour	93	6-hour	94
SV244	0.95	435	470	0.95	576	640	6-hour	576	6-hour	640
SV246	0.16	200	197	0.16	287	285	6-hour	287	6-hour	285
SV248	1.27	771	845	1.27	944	1,058	6-hour	944	6-hour	1,058
SV250	0.12	107	104	0.12	156	157	6-hour	156	6-hour	157
SV251	0.27	204	204	0.27	313	308	6-hour	313	6-hour	308
SV252	0.15	104	108	0.15	158	162	6-hour	158	6-hour	162
SV254	0.10	99	113	0.10	150	171	6-hour	150	6-hour	171
SV256	0.06	68	79	0.06	104	121	6-hour	104	6-hour	121
SV258	0.74	669	753	0.74	888	1,018	6-hour	888	6-hour	1,018
SV260	1.26	1,154	1,091	1.26	1,404	1,354	6-hour	1,404	6-hour	1,354
SV264	1.92	1,336	1,279	1.92	1,603	1,603	6-hour	1,603	6-hour	1,603
SV264A	2.90	1,695	1,691	2.90	2,000	2,107	6-hour	2,000	6-hour	2,107
SV268	1.38	1,349	1,292	1.38	1,628	1,618	6-hour	1,628	6-hour	1,618
SV272	1.20	976	932	1.20	1,212	1,193	6-hour	1,212	6-hour	1,193
SV276	0.92	678	643	0.92	905	874	6-hour	905	6-hour	874
SV280	1.06	707	664	1.06	925	890	6-hour	925	6-hour	890
SV284	0.28	337	341	0.28	491	495	6-hour	491	6-hour	495
SV286	1.54	1,175	1,181	1.54	1,427	1,504	6-hour	1,427	6-hour	1,504
SV290	0.81	653	664	0.81	881	914	6-hour	881	6-hour	914
SV294	2.65	1,805	1,761	2.65	2,100	2,178	6-hour	2,100	6-hour	2,178
SV298	1.08	506	493	1.08	672	667	6-hour	672	6-hour	667
TW400	4.27	2,211	2,765	4.27	2,394	3,162	6-hour	2,394	6-hour	3,162
TW402	4.91	3,179	3,492	4.91	3,158	3,774	24-hour	3,179	6-hour	3,774
TW404	2.09	2,515	2,509	2.09	2,442	2,543	24-hour	2,515	6-hour	2,543
TW406	0.16	375	378	0.16	521	525	6-hour	521	6-hour	525
TW408	0.91	413	437	0.91	565	604	6-hour	565	6-hour	604
TW410	0.31	178	204	0.31	254	290	6-hour	254	6-hour	290
TW412	2.06	1,239	1,403	2.06	1,453	1,762	6-hour	1,453	6-hour	1,762
TW414	1.17	2,018	2,027	1.17	2,191	2,227	6-hour	2,191	6-hour	2,227
TW416	0.59	420	456	0.59	627	677	6-hour	627	6-hour	677
TW418	1.37	1,476	1,473	1.37	1,784	1,835	6-hour	1,784	6-hour	1,835

* Drainage areas may differ between the 24-hour and 6-hour storms: the HEC-1 hard coding was performed separately for the 24-hour and 6-hour storms.

Table D.6: Summary of Peak Discharges

Model ID	100-yr 24-hr Storm			100-yr 6-hr Storm			Controlling Storm			
	Drainage Area	Exst. Cond.	Fut. Cond.	Drainage Area	Exst. Cond.	Fut. Cond.	Exst. Cond.		Fut Cond.	
	[mi^2]	Q [cfs]	Q [cfs]	[mi^2]	Q [cfs]	Q [cfs]	Storm	Q [cfs]	Storm	Q [cfs]
TW420	0.81	575	662	0.81	778	923	6-hour	778	6-hour	923
TW422	0.70	516	546	0.70	741	791	6-hour	741	6-hour	791
TW424	1.50	2,046	2,112	1.50	2,266	2,372	6-hour	2,266	6-hour	2,372
TW429	0.56	510	520	0.56	728	749	6-hour	728	6-hour	749
TW430	2.49	2,816	2,732	2.49	2,825	2,852	6-hour	2,825	6-hour	2,852
TW431	0.87	705	682	0.87	940	922	6-hour	940	6-hour	922
TW432	0.86	588	574	0.86	787	778	6-hour	787	6-hour	778
TW434	0.57	453	443	0.57	657	642	6-hour	657	6-hour	642
TW436	0.67	729	733	0.67	1,001	1,007	6-hour	1,001	6-hour	1,007
TW440	0.11	133	134	0.11	191	193	6-hour	191	6-hour	193
TW442	0.38	373	386	0.38	546	567	6-hour	546	6-hour	567
TW444	0.35	357	351	0.35	524	514	6-hour	524	6-hour	514
TW446	0.35	361	345	0.35	522	503	6-hour	522	6-hour	503
TW446A	0.34	221	210	0.34	322	309	6-hour	322	6-hour	309
TW448	0.35	202	194	0.35	291	281	6-hour	291	6-hour	281
TW450	1.25	661	625	1.25	857	825	6-hour	857	6-hour	825
TW450A	0.88	709	692	0.88	937	927	6-hour	937	6-hour	927
TW450B	0.40	452	430	0.40	651	626	6-hour	651	6-hour	626
TW452	0.46	320	304	0.46	466	447	6-hour	466	6-hour	447
TW452A	1.08	822	816	1.08	1,062	1,073	6-hour	1,062	6-hour	1,073
TW452B	1.03	615	580	1.03	813	784	6-hour	813	6-hour	784
TW454	0.36	128	123	0.36	195	188	6-hour	195	6-hour	188
TW456	0.18	117	113	0.18	172	167	6-hour	172	6-hour	167
TW458	0.67	726	725	0.67	985	991	6-hour	985	6-hour	991
TW459	1.04	401	348	1.04	535	472	6-hour	535	6-hour	472
TW460	2.32	1,213	1,171	2.32	1,412	1,362	6-hour	1,412	6-hour	1,362
TW462	0.08	129	124	0.08	184	179	6-hour	184	6-hour	179
TW478	0.26	351	353	0.26	465	470	6-hour	465	6-hour	470
TW480	0.75	741	746	0.75	999	1,006	6-hour	999	6-hour	1,006
TW482	0.76	678	758	0.76	909	1,039	6-hour	909	6-hour	1,039
TW484	0.35	245	265	0.35	365	395	6-hour	365	6-hour	395
TW485	2.37	1,589	1,536	2.37	1,746	1,789	6-hour	1,746	6-hour	1,789
WI500	1.05	765	745	1.05	985	972	6-hour	985	6-hour	972
WI502	1.21	669	687	1.21	851	900	6-hour	851	6-hour	900
WI504	1.35	1,395	1,342	1.35	1,645	1,612	6-hour	1,645	6-hour	1,612
WI506	1.58	961	1,036	1.58	1,175	1,284	6-hour	1,175	6-hour	1,284
WI508	0.70	411	390	0.70	581	563	6-hour	581	6-hour	563

* Drainage areas may differ between the 24-hour and 6-hour storms: the HEC-1 hard coding was performed separately for the 24-hour and 6-hour storms.

Table D.6: Summary of Peak Discharges

Model ID	100-yr 24-hr Storm			100-yr 6-hr Storm			Controlling Storm			
	Drainage Area	Exst. Cond.	Fut. Cond.	Drainage Area	Exst. Cond.	Fut. Cond.	Exst. Cond.		Fut Cond.	
	[mi^2]	Q [cfs]	Q [cfs]	[mi^2]	Q [cfs]	Q [cfs]	Storm	Q [cfs]	Storm	Q [cfs]
WI510	1.23	563	573	1.23	725	760	6-hour	725	6-hour	760
WI510A	1.13	937	988	1.13	1,156	1,254	6-hour	1,156	6-hour	1,254
WI512	1.36	1,020	1,173	1.36	1,256	1,480	6-hour	1,256	6-hour	1,480
WI514	0.35	441	446	0.35	639	660	6-hour	639	6-hour	660
WI516	0.14	136	150	0.14	199	223	6-hour	199	6-hour	223
WI518	0.53	466	519	0.53	718	803	6-hour	718	6-hour	803
WI524	0.95	712	734	0.95	944	987	6-hour	944	6-hour	987
WI525	1.94	1,548	1,641	1.94	1,695	1,895	6-hour	1,695	6-hour	1,895
WI526	0.05	32	37	0.05	48	54	6-hour	48	6-hour	54
WI527	0.71	645	717	0.71	886	998	6-hour	886	6-hour	998
WI528	0.36	305	360	0.36	469	544	6-hour	469	6-hour	544
WI529	0.17	205	231	0.17	302	338	6-hour	302	6-hour	338
WI530	2.38	1,618	1,616	2.38	1,628	1,709	6-hour	1,628	6-hour	1,709
WI532	0.32	353	419	0.32	490	580	6-hour	490	6-hour	580
WI534	0.43	415	422	0.43	596	616	6-hour	596	6-hour	616
WI536	1.37	680	705	1.37	868	928	6-hour	868	6-hour	928
WI538	1.43	723	726	1.43	915	948	6-hour	915	6-hour	948
WI538A	0.78	553	552	0.78	756	764	6-hour	756	6-hour	764
WI540	1.25	832	823	1.25	1,072	1,075	6-hour	1,072	6-hour	1,075
WI542	1.17	618	691	1.17	783	903	6-hour	783	6-hour	903
WI544	1.79	1,324	1,458	1.79	1,536	1,716	6-hour	1,536	6-hour	1,716
WI546	0.61	464	500	0.61	660	710	6-hour	660	6-hour	710
WI548	0.31	339	329	0.31	486	471	6-hour	486	6-hour	471
WI550	0.14	212	234	0.14	321	350	6-hour	321	6-hour	350
WI552	0.41	322	329	0.41	490	503	6-hour	490	6-hour	503
WI554	1.04	833	939	1.04	1,054	1,217	6-hour	1,054	6-hour	1,217
WI556	0.08	153	169	0.08	217	237	6-hour	217	6-hour	237
WI560	3.56	2,795	2,845	3.56	2,829	3,069	6-hour	2,829	6-hour	3,069
WI560A	2.04	910	802	2.04	1,098	986	6-hour	1,098	6-hour	986
WI562	0.87	569	516	0.87	768	713	6-hour	768	6-hour	713
WI564	1.81	810	785	1.81	1,005	977	6-hour	1,005	6-hour	977
WI566	0.11	119	107	0.11	170	152	6-hour	170	6-hour	152
WI570	2.24	1,622	1,433	2.24	1,907	1,732	6-hour	1,907	6-hour	1,732
WI572	2.06	1,896	1,739	2.06	2,021	1,905	6-hour	2,021	6-hour	1,905
WI574	0.22	219	212	0.22	318	311	6-hour	318	6-hour	311
WI576	1.18	729	711	1.18	915	910	6-hour	915	6-hour	910
WI576A	1.22	633	603	1.22	806	770	6-hour	806	6-hour	770

* Drainage areas may differ between the 24-hour and 6-hour storms: the HEC-1 hard coding was performed separately for the 24-hour and 6-hour storms.

Table D.6: Summary of Peak Discharges

Model ID	100-yr 24-hr Storm			100-yr 6-hr Storm			Controlling Storm			
	Drainage Area	Exst. Cond.	Fut. Cond.	Drainage Area	Exst. Cond.	Fut. Cond.	Exst. Cond.		Fut Cond.	
	[mi^2]	Q [cfs]	Q [cfs]	[mi^2]	Q [cfs]	Q [cfs]	Storm	Q [cfs]	Storm	Q [cfs]
WI576B	0.46	356	337	0.46	522	504	6-hour	522	6-hour	504
WI578	0.48	350	306	0.48	517	454	6-hour	517	6-hour	454
WI580	1.32	1,398	1,354	1.32	1,574	1,552	6-hour	1,574	6-hour	1,552
WI580A	2.79	2,029	1,748	2.79	2,197	1,942	6-hour	2,197	6-hour	1,942
WI580B	0.63	509	457	0.63	711	647	6-hour	711	6-hour	647
WI582	0.38	361	411	0.38	527	605	6-hour	527	6-hour	605
WI584	1.26	824	875	1.26	1,038	1,115	6-hour	1,038	6-hour	1,115
WT100	3.85	2,889	3,045	3.85	2,800	3,019	24-hour	2,889	24-hour	3,045
WT110	2.90	2,415	2,523	2.90	2,333	2,494	24-hour	2,415	24-hour	2,523
WT120	2.80	1,802	1,889	2.80	1,864	2,002	6-hour	1,864	6-hour	2,002
WT130	2.57	1,817	1,936	2.57	1,876	2,054	6-hour	1,876	6-hour	2,054
WT140	3.79	1,911	2,090	3.79	1,939	2,211	6-hour	1,939	6-hour	2,211
WT150	1.09	901	970	1.09	1,126	1,230	6-hour	1,126	6-hour	1,230
WT150A	4.75	2,779	3,034	4.75	2,644	3,021	24-hour	2,779	24-hour	3,034
WT160	0.81	569	614	0.81	767	836	6-hour	767	6-hour	836

* Drainage areas may differ between the 24-hour and 6-hour storms: the HEC-1 hard coding was performed separately for the 24-hour and 6-hour storms.

D.6.1. 100-yr, 24-hr Existing Conditions Model Output

Wittmann ADMSU Addendum
100-year 24-hour Existing Conditions

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN   1998              *
*            VERSION 4.1               *
*                                      *
*  RUN DATE   04MAY05  TIME  12:57:56  *
*                                      *
****************************************
```

```
****************************************
*                                      *
*   U.S. ARMY CORPS OF ENGINEERS       *
*   HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET            *
*      DAVIS, CALIFORNIA 95616         *
*          (916) 756-1104              *
*                                      *
****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1
PAGE 1

HEC-1 INPUT

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID   ******************************************************************************
  2           ID   **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
  3           ID   **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
  4           ID   ******************************************************************************
  5           ID   **                                                                          **
  6           ID   **  ADDENDUM TO THE WITTMANN AREA DRAINAGE MASTER STUDY UPDATE HYDROLOGY    **
  7           ID   **                                                                          **
  8           ID   ******************************************************************************
  9           ID   **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
 10           ID   **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
 11           ID   ******************************************************************************
 12           ID   **                                                                          **
 13           ID   ** THE FOLLOWING CHANGES HAVE BEEN MADE TO THE WITTMANN HYDROLOGY MODELS    **
 14           ID   ** DATED OCTOBER 2004:                                                      **
 15           ID   **                                                                          **
 16           ID   **     -Diversion added after CTW480                                        **
 17           ID   **          -Main flow (5%) to CTW478                                       **
 18           ID   **          -Diverted flow (95%) to CWI584                                  **
 19           ID   **          -Added concentration point CWI584 combining RD480 and WI584     **
 20           ID   **          -Hard coding was added to CTW478                                **
 21           ID   **          -Route added after D480 (Diversion Recovery)                    **
 22           ID   **          -Route RWI584 was adjusted                                      **
 23           ID   **          -Storage Route SCP050 was adjusted                              **
 24           ID   **          -Route R508* was adjusted                                       **
 25           ID   **          -Hard coding for CWI510 was adjusted                            **
 26           ID   **                                                                          **
 27           ID   **     -Diversion D618 was moved from after CPI618 to before RDCP12         **
 28           ID   **          -Updated route RD618 information                                **
 29           ID   **          -Hard coding on CPI618 was adjusted                             **
 30           ID   **          -Hard coding on CPI615 was adjusted                             **
 31           ID   **                                                                          **
 32           ID   **     -Route RPI639 changed from following US60 to CPI636 to route         **
 33           ID   **      through US60/RR structures and combine with CWI506                  **
 34           ID   **          -Cards PI639, D524, RD524, CPI639 and RPI639 were changed from **
 35           ID   **           following R624A to follow RWI524                               **
 36           ID   **          -CPI636 was removed-no longer needed to combine PI636 & RPI639 **
 37           ID   **          -RPI639 information was changed to reflect new route            **
 38           ID   **          -CWI506 changed from combining 3 to combine 4:                  **
 39           ID   **           RWI525, RWI524, RPI639 & WI506                                 **
 40           ID   **          -Hard coding on CWI506 was adjusted                             **
 41           ID   **          -Hard Coding on CWI500 was adjusted                             **
 42           ID   **                                                                          **
 43           ID   ******************************************************************************
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 44          ID   **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
 45          ID   **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
 46          ID   ******************************************************************************
 47          ID
 48          ID
 49          ID
 50          ID   ******************************************************************************
 51          ID   ******************************************************************************
 52          ID   **                                                                          **
 53          ID   **    WITTMANN AREA DRAINAGE MASTER STUDY UPDATE-HYDROLOGY MODEL 2004       **
 54          ID   **                                                                          **
 55          ID   ******************************************************************************
1                                    HEC-1 INPUT
PAGE  2

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 56          ID   ******************************************************************************
 57          ID
 58          ID   PROJECT:                 Wittmann ADMS Update
 59          ID   CLIENT:                  Flood Control District of Maricopa County
 60          ID   PREPARED BY:             Entellus, Inc.
 61          ID   PROJECT No:              FCD 2002C029              Entellus 310.032
 62          ID   FILE NAME: WTEC24-addendum.hc1          CREATED DATE: FEB 01, 2004
 63          ID                                          MODIFIED DATE: MAY 04, 2005
 64          ID
 65          ID   STORM:
 66          ID                       100-year 24-hour Storm
 67          ID
 68          ID   DEVELOPMENT CONDITIONS:
 69          ID                       Existing Conditions
 70          ID
 71          ID   MODELING ASSUMPTIONS:
 72          ID                       It was assumed that the US60 did not have adequate
 73          ID                       storage to cause any significant attenuation.
 74          ID
 75          ID                       The assumption was made that the CAP Canal embankment
 76          ID                       would not be breached under a large flood event.
 77          ID
 78          ID                       The assumption was made that the Beardsley Canal would
 79          ID                       not fail under a large storm event (Per District
 80          ID                       Instruction).  In addition, the berm north of the
 81          ID                       Beardsley canal and east of US60 was assumed to fail
 82          ID                       (per district Instruction).
 83          ID
 84          ID                       For both the CAP and Beardsley Canals, once the berm
 85          ID                       elevation was reached weir flow was assumed.  It was
 86          ID                       also assumed that any weir flow over the canal that
 87          ID                       might enter the canal and be diverted out of the study
 88          ID                       area was insignificant, and thus was ignored.  In other
 89          ID                       words all weir flow over the canal embankment reaches
 90          ID                       the downstream concentration point.
 91          ID
 92          ID                       Typical X-sects were developed, and it was assumed
 93          ID                       that a typical x-sect could adequately represent
 94          ID                       various reaches.
 95          ID
 96          ID                       Time-Area Relations were used base on the District's
 97          ID                       Hydrology Manual criteria.  Two Time-Area Relation
 98          ID                       Curves were utilized:
 99          ID                               -Urban
100          ID                               -Natural
101          ID                       The Time-Area Relation Curves were taken directly
102          ID                       from the manual
103          ID
104          ID   MODELING METHODS:
105          ID                       This model utilizes QI cards to input the Padelford
106          ID                       hydrographs from the 100-year 6-hour existing
107          ID                       conditions model developed by A-N West Inc. for the
108          ID                       Padelford Wash Floodplain Delineation Study.  The
109          ID                       hydrograph was altered from its original form
110          ID                       (2-minute interval to 5-minute interval) through
1                                        HEC-1 INPUT
PAGE  3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 111          ID                        simple interpolation.
 112          ID
 113          ID                        Clark Unit Hydrographs were used for all subbasins
 114          ID                        except the two subbasins directly upstream of the
 115          ID                        Bonita Dam (PD726B and PD740 use S-graphs).  The UC
 116          ID                        parameters were calculated using the WMS7.0 software.
 117          ID
 118          ID                        For Basins PD726B and PD740 S-Graphs were utilized per
 119          ID                        the request of the FCDMC.  Limited details regarding
 120          ID                        the calculations of the S-graphs can be found in the
 121          ID                        model by the basin KK card.  For full details of the
 122          ID                        S-graph calculations refer to the Appendix.
 123          ID
 124          ID                        Normal Depth routing was used for all routing reaches.
 125          ID
 126          ID                        Hard coding was used to account for the percentage of
 127          ID                        area associated with a diversion.  Because of the use
 128          ID                        of JD cards and aereal reduction, hard coding  was
 129          ID                        necessary to properly account for area.  For a given
 130          ID                        diversion a percentage of the flow is routed to two
 131          ID                        different locations.  The same percentage of area
 132          ID                        follows that diverted flow.  In addition the area
 133          ID                        downstream of the main path is reduced or increased and
 134          ID                        is hard coded to account for the loss or gain of area.
 135          ID                        Hard coding was performed based on the 24-hour existing
 136          ID                        conditions model.
 137          ID
 138          ID                        Stage-storage was developed for all the structures
 139          ID                        along the CAP Canal, as well as along the Beardsley
 140          ID                        Canal.  In addition several stage-storage locations
 141          ID                        were developed for areas with significant storage
 142          ID                        along the SR74.  No storage was modeled along the US60
 143          ID                        and railroad, but the culverts were analyzed for
 144          ID                        diversion potential.  Diversions were placed in the
 145          ID                        model where deemed appropriate.  See appendix for
 146          ID                        details.
 147          ID
 148          ID                        FLO-2D was utilized to calculate the split flows at
 149          ID                        concentration points CIW351. CIW357, CIW363 and CWI576.
 150          ID                        See appendix for modeling details.
 151          ID
 152          ID   ******************************************************************************
 153          ID   ******************************************************************************
 154          ID
              *DIAGRAM
 155          IT       5                0    1500
 156          IO       5
 157          IN      15                0
 158          JD    4.18    0.01
              * 24-hour distribution
 159          PC     0.0   0.002   0.005   0.008   0.011   0.014   0.017    0.02   0.023   0.026
 160          PC   0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056    0.06
 161          PC   0.064   0.068   0.072   0.076    0.08   0.085    0.09   0.095     0.1   0.105
 162          PC    0.11   0.115    0.12   0.126   0.133    0.14   0.147   0.155   0.163   0.172
 163          PC   0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 164          PC   0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
 165          PC   0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
 166          PC   0.913   0.918   0.922   0.926    0.93   0.934   0.938   0.942   0.946    0.95
 167          PC   0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977    0.98
 168          PC   0.983   0.986   0.989   0.992   0.995   0.998     1.0
 169          JD   3.929    10.0
 170          JD   3.856    20.0
 171          JD   3.725    40.0
 172          JD   3.599    80.0
 173          JD   3.532   120.0
 174          JD   3.444   200.0
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```
175          JD   3.385   300.0
176          JD   3.289   500.0
             *
             *
             *
             *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * ************************************************************************ *
             * ************ BEGINNING OF WEST PORTION OF DETAILED MODEL ******************* *
             * ************************************************************************ *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
```

```
                    * Combines TW480, RTW482 and RTW484

2588                KK  CTW480
2589                KO       0       0     0.0       0      22
2590                HC       3
                    *
                    *
                    * Diversion Out
                    * Flow Split Diversion: Main path to TW478, Diversion to WI584
                    * 95% of flow is diverted to IW356

2591                KK    D480
2592                KO       0       0     0.0       0      22
2593                DT   DO480
2594                DI       0   10000
2595                DQ       0    9500
                    *
                    *
                    * ROUTE UPDATED 4/14/04

2596                KK  RTW480
2597                KO       0       0     0.0       0      22
2598                RS       2    FLOW     0.0     0.0
2599                RC    0.04    0.04    0.04    4817  0.0083
                    * TSR482
2600                RX       0     102     478     535     709     892    1441    1649
2601                RY    1610    1608    1608    1606    1606    1608    1608    1610
                    *
                    *
1                                                HEC-1 INPUT
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LINE                ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


2602                KK   TW478
2603                KO       0       0     0.0       1      22
2604                BA  0.2625
2605                LG   0.329   0.193   6.512   0.151   5.664
2606                UC   0.458   0.333
                    * Urban Time-Area Relation
2607                UA       0       5      16      30      65      77      84      90      94      97
2608                UA     100
                    *
                    *
                    * Combines TW478 and RTW480

2609                KK  CTW478
2610                KO       0       0     0.0       0      22
2611                HC       2    0.79
```

```
* Diversion Recovery: Flow split from CTW480

KK    D480
KO       0       0     0.0       0      22
DR   DO480
*
*
* ROUTE UPDATED 05/04/2005

KK   RD480
KO       0       0     0.0       0      22
RS       2    FLOW     0.0     0.0
RC    0.04    0.04    0.04    5985  0.0065
* TSR482
RX       0     102     478     535     709     892    1441    1649
RY    1610    1608    1608    1606    1606    1608    1608    1610
*
*
* COMBINES WI584 AND RD480

KK  CWI584
KO       0       0     0.0       0      22
HC       2   11.35
*
*
* ROUTE UPDATED 05/04/2005

KK  RWI584
KO       0       0     0.0       0      22
RS       2    FLOW     0.0     0.0
RC    0.04    0.04    0.04    3933   0.001
* WITS70
RX       0     450     700    1284    1435    1499    1745    2500
RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
*
*

KK   WI550
KO       0       0     0.0       1      22
BA  0.1425
LG   0.271    0.23     4.3    0.41  20.079
UC   0.346   0.250
* Natural Time-Area Relation
UA       0       3       5       8      12      20      43      75      90      96
UA     100
*
*
* COMBINES WI550, RWI552 AND RWI584

KK  CWI550
KO       0       0     0.0       0      22
HC       3
*
* *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE CAP050

KK  SCP050
KO       0       0     0.0       0      22
RS       1    STOR       0
SQ       0     209    1075    2314    3833    4684   12000
SE    1545    1546    1548    1550    1552    1553    1554
SA       0      .1      .7    11.5    35.3    54.1
SE    1545    1546    1548    1550    1552    1553
```

```
                 * Combines CWI518 and CWI512

3675             KK   C508*
3676             KO       0       0     0.0       0      22
3677             HC       2
                 *
                 *
                 * ROUTE UPDATED 05/04/2005

3678             KK   R508*
3679             KO       0       0     0.0       0      22
3680             RS       7    FLOW     0.0     0.0
3681             RC   0.043   0.035   0.043   12366  0.0053
                 * WITS130 modified
3682             RX       0     400     456     575     620     650     660     682
3683             RY    1398    1394  1393.5  1392.5    1392  1392.5    1395    1398
                 *
                 *

3684             KK   WI508
3685             KO       0       0     0.0       1      22
3686             BA  0.6991
3687             LG   0.336   0.252   5.116   0.271    6.72
3688             UC   1.021   0.932
                 * Natural Time-Area Relation
3689             UA       0       3       5       8      12      20      43      75      90      96
3690             UA     100
                 *
                 *
                 * COMBINES WI508 AND R508*

3691             KK  CWI508
3692             KO       0       0     0.0       0      22
3693             HC       2
                 *
                 * Diversion Out: Flow split FS10
                 * Flow Split Diversion: Main path to CWI510, Diversion to CWI500
                 * 19% of flow is diverted to CWI500

3694             KK    D508
3695             KO       0       0     0.0       0      22
3696             DT   DO508     0.0     0.0
3697             DI       0   10000
3698             DQ       0    1900
                 *
                 *

3699             KK  WI510A
3700             KO       0       0     0.0       1      22
3701             BA  1.1293
3702             LG   0.337    0.26   4.622   0.338   5.191
3703             UC   0.813   0.521
                 * Natural Time-Area Relation
3704             UA       0       3       5       8      12      20      43      75      90      96
3705             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE130

LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3706             KK   R510A
3707             KO       0       0     0.0       0      22
3708             RS       8    FLOW     0.0     0.0
3709             RC    0.04    0.04    0.04   17257  0.0051
                 * WITS70
3710             RX       0     450     700    1284    1435    1499    1745    2500
3711             RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
                 *
                 *
```

```
3712          KK   WI510
3713          KO       0       0     0.0       1      22
3714          BA  1.2273
3715          LG   0.339   0.274   5.732   0.204   5.364
3716          UC   1.313   1.287
              * Natural Time-Area Relation
3717          UA       0       3       5       8      12      20      43      75      90      96
3718          UA     100
              *
              *
              * COMBINES CWI508, WI510 AND R510A

3719          KK  CWI510
3720          KO       0       0     0.0       0      22
              * Hard Coded
3721          HC       3   35.84
              *
              *
              * ROUTE UPDATED 4/14/04

3722          KK  RWI510
3723          KO       0       0     0.0       0      22
3724          RS       2    FLOW     0.0     0.0
3725          RC    0.04    0.04    0.04    6492  0.0048
              * WITS70
3726          RX       0     450     700    1284    1435    1499    1745    2500
3727          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
```

```
                 * Combines RD525 and WI524

3824             KK  CWI524
3825             KO       0       0     0.0       0      22
                 * Hard Coded
3826             HC       2    1.51
                 *
                 *
                 * Railroad Diversion: Main path to CWI506, Diversion to CPI639
                 * From Structure RR650, See Appendix D.5 for analysis

3827             KK    D524
3828             KO       0       0     0.0       0      22
3829             DT   DO524     0.0     0.0
3830             DI       0     595     906    1295    1748
3831             DQ       0       0      38     119     230
                 *
                 *
                 * ROUTE UPDATED 4/14/04

3832             KK  RWI524
3833             KO       0       0     0.0       0      22
3834             RS       2    FLOW     0.0     0.0
3835             RC   0.043   0.035   0.043    4526  0.0062
                 * WITS130
3836             RX       0     400     456     575     620     650     660     682
3837             RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                 *
                 *

3838             KK   PI639
3839             KO       0       0     0.0       1      22
3840             BA  0.3431
3841             LG   0.335    0.25   4.598   0.341   9.561
3842             UC   0.946   1.173
                 * Natural Time-Area Relation
3843             UA       0       3       5       8      12      20      43      75      90      96
3844             UA     100
                 *
                 *
                 * Railroad Diversion Recovery: Outflow from structure RR650

3845             KK    D524
3846             KO       0       0     0.0       0      22
3847             DR   DO524
                 *
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
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LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3848             KK   RD524
3849             KO       0       0     0.0       0      22
3850             RS       1    FLOW     0.0     0.0
3851             RC   0.043   0.035   0.043    2235  0.0027
                 * WITS130
3852             RX       0     400     456     575     620     650     660     682
3853             RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                 *
                 *
                 * Combines RD524 and PI639

3854             KK  CPI639
3855             KO       0       0     0.0       0      22
                 * Hard Coded
3856             HC       2    0.37
                 *
                 * ROUTE UPDATED 05/04/2005

3857             KK  RPI639
```

```
3858          KO       0       0     0.0       0      22
3859          RS       2    FLOW     0.0     0.0
3860          RC   0.043   0.035   0.043    2635  0.0061
              * WITS130
3861          RX       0     400     456     575     620     650     660     682
3862          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *

3863          KK   WI506
3864          KO       0       0     0.0       1      22
3865          BA  1.5757
3866          LG   0.326    0.25   5.331   0.254  10.467
3867          UC   1.083   0.781
              * Urban Time-Area Relation
3868          UA       0       5      16      30      65      77      84      90      94      97
3869          UA     100
              *
              *
              * COMBINES WI506, RWI525 AND RW524

3870          KK  CWI506
3871          KO       0       0     0.0       0      22
              * Hard Coded
3872          HC       4   12.35
              *
              *
              * ROUTE UPDATED 4/14/04

3873          KK  RWI506
3874          KO       0       0     0.0       0      22
3875          RS       3    FLOW     0.0     0.0
3876          RC    0.04    0.04    0.04    5235  0.0042
              * WITS70
3877          RX       0     450     700    1284    1435    1499    1745    2500
                                            HEC-1 INPUT
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3878          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *
              * Diversion Recovery: Flow split FS10

3879          KK    D508
3880          KO       0       0     0.0       0      22
3881          DR   DO508
              *
              *
              * ROUTE UPDATED 4/14/4

3882          KK   RD508
3883          KO       0       0     0.0       0      22
3884          RS       2    FLOW     0.0     0.0
3885          RC    0.04    0.04    0.04    5200  0.0065
              * WITS70
3886          RX       0     450     700    1284    1435    1499    1745    2500
3887          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *

3888          KK   WI500
3889          KO       0       0     0.0       1      22
3890          BA  1.0487
3891          LG   0.349    0.25   5.521   0.224   5.124
3892          UC   0.979   0.695
              * Natural Time-Area Relation
3893          UA       0       3       5       8      12      20      43      75      90      96
3894          UA     100
              *
              *
              * COMBINES WI500, RD508, RWI506 AND RWI502
```

```
3895          KK  CWI500
3896          KO       0       0     0.0       0      22
              * Hard Coded
3897          HC       4  222.69
              *
              *
              * STORAGE AT MCMICKEN DAM SPILLWAY
              *
              *

3898          KK  SSPILL
3899          KM   MCMICKEN DAM OUTLET AND SPILLWAY RATING CURVES USED HERE
3900          RS       1    STOR       0       0
3901          SV       0    1370    5505   17501   20816   25623   30850   36661   38754   39849
3902          SQ       0     675     810    4080    4325   21150   47400   81650   93160   99300
3903          SE    1335    1340    1345  1352.5 1353.65 1355.65 1357.65 1359.65 1360.35  1360.7
3904          ST  1360.7   12775    3.05     1.5
              *
              *
              * ROUTE UPDATED 4/14/04
1                                          HEC-1 INPUT
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3905          KK  RWI500
3906          KO       0       0     0.0       0      22
3907          RS       3    FLOW     0.0     0.0
3908          RC   0.045   0.035   0.045    5659   0.001
              * McMicken Dam Channel
3909          RX       0      46     101     121     171     181    1421    3621
3910          RY      25      14       4       0       0       4      14      25
              *
              *

3911          KK   PI635
3912          KO       0       0     0.0       1      22
3913          BA  0.6106
3914          LG    0.29    0.27   5.391   0.237  15.959
3915          UC   0.683   0.465
              * Natural Time-Area Relation
3916          UA       0       3       5       8      12      20      43      75      90      96
3917          UA     100
              *
              *
              * COMBINES PI635 AND RWI500

3918          KK  CPI635
3919          KO       0       0     0.0       0      22
3920          HC       2
              *
              * ROUTE UPDATED 4/14/04

3921          KK  RPI635
3922          KO       0       0     0.0       0      22
3923          RS       6    FLOW     0.0     0.0
3924          RC   0.045   0.035   0.045    7557   0.001
              * McMicken Dam Channel
3925          RX       0      46     101     121     171     181    1421    3621
3926          RY      25      14       4       0       0       4      14      25
              *
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP110

3927          KK  DCAP11
3928          KO       0       0     0.0       0      22
3929          DR  DOCP11
              *
              *
              * ROUTE UPDATED 4/14/4

3930          KK  RDCP11
```

```
3931          KO        0        0      0.0        0       22
3932          RS        5     FLOW      0.0      0.0
3933          RC    0.043    0.035    0.043     6377   0.0094
              * PITS10_2
3934          RX        0       89      103      136      185      206      261      280
3935          RY     1612   1610.5     1610   1608.5     1610     1611   1611.8     1612
              *
              * CAP Diversion Recovery: Outflow from structure CAP120
1                                                HEC-1 INPUT
PAGE138

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3936          KK  DCAP12
3937          KO        0        0      0.0        0       22
3938          DR  DOCP12
              *
              *
              * Diversion Out: Flow split FS11
              * Flow Split Diversion: Main path to CPI618, Diversion to CPI615
              * 53% of flow is diverted to CPI615

3939          KK    D618
3940          KO        0        0      0.0        0       22
3941          DT   DO618      0.0      0.0
3942          DI        0    10000
3943          DQ        0     5300
              *
              *
              * ROUTE UPDATED 4/14/4

3944          KK  RDCP12
3945          KO        0        0      0.0        0       22
3946          RS        2     FLOW      0.0      0.0
3947          RC    0.043    0.035    0.043     6159   0.0094
              * PITS30
3948          RX        0       49      199      206      222      231      299      375
3949          RY     1532     1532     1530     1528     1528     1530     1532     1532
              *
              *

3950          KK   PI618
3951          KO        0        0      0.0        1       22
3952          BA   0.2886
3953          LG    0.281    0.235    4.623    0.332     9.32
3954          UC    0.500    0.407
              * Natural Time-Area Relation
3955          UA        0        3        5        8       12       20       43       75       90       96
3956          UA      100
              *
              *
              * Combines PI618, RDCP12 and RDCP11

3957          KK  CPI618
3958          KO        0        0      0.0        0       22
              * Hard Coded
3959          HC        3     5.48
              *
              *
              * ROUTE UPDATED 4/14/04

3960          KK  RPI618
3961          KO        0        0      0.0        0       22
3962          RS        5     FLOW      0.0      0.0
3963          RC    0.043    0.035    0.043    10443   0.0075
              * PITS20
3964          RX        0       50       84       87      123      125      156      285
1                                                HEC-1 INPUT
PAGE139

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3965          RY     1454     1453     1452     1450     1450     1452     1452     1454
```

```
                 *
                 *
                 * CAP Diversion Recovery: Outflow from structure CAP130

3966             KK  DCAP13
3967             KO       0       0     0.0       0      22
3968             DR  DOCP13
                 *
                 *
                 * ROUTE UPDATED 4/14/4

3969             KK  RDCP13
3970             KO       0       0     0.0       0      22
3971             RS       6    FLOW     0.0     0.0
3972             RC   0.043   0.035   0.043   11034  0.0089
                 * PITS30
3973             RX       0      49     199     206     222     231     299     375
3974             RY    1532    1532    1530    1528    1528    1530    1532    1532
                 *
                 *

3975             KK   PI615
3976             KO       0       0     0.0       1      22
3977             BA  0.8419
3978             LG   0.299   0.243   4.318   0.409   8.997
3979             UC   0.771    0.57
                 * Urban Time-Area Relation
3980             UA       0       5      16      30      65      77      84      90      94      97
3981             UA     100
                 *
                 *
                 * Diversion Recovery: Flow split FS11

3982             KK    D618
3983             KO       0       0     0.0       0      22
3984             DR   DO618
                 *
                 *
                 * ROUTE UPDATED 05/04/2005

3985             KK   RD618
3986             KO       0       0     0.0       0      22
3987             RS       5    FLOW     0.0     0.0
3988             RC   0.043   0.035   0.043    9630  0.0091
                 * PITS20
3989             RX       0      50      84      87     123     125     156     285
3990             RY    1454    1453    1452    1450    1450    1452    1452    1454
                 *
                 *
                 *
                 * Combines RD618, PI615 and RDCP13
1                                                HEC-1 INPUT
PAGE140

LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3991             KK  CPI615
3992             KO       0       0     0.0       0      22
                 * Hard Coded
3993             HC       3    6.21
```

```
                    SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
 LINE       (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.       (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW


 2567          .           .           .      CTW482............
               .           .           .           .
               .           .           .           .
 2572          .           .           .           .-------->   DO482
 2570          .           .           .        D482
               .           .           .           V
               .           .           .           V
 2575          .           .           .      RTW482
               .           .           .           .
               .           .           .           .
 2581          .           .           .           .       TW480
               .           .           .           .           .
               .           .           .           .           .
 2588          .           .      CTW480........................
               .           .           .
               .           .           .
 2593          .           .           .-------->   DO480
 2591          .           .        D480
               .           .           V
               .           .           V
 2596          .           .      RTW480
               .           .           .
               .           .           .
 2602          .           .           .       TW478
               .           .           .           .
               .           .           .           .
 2609          .           .      CTW478............
               .           .           V
               .           .           V
 2612          .           .      RTW478
               .           .           .
               .           .           .
 2618          .      CTW430............
```

```
2924          .           .       WI584
              .           .           .
              .           .           .
2933          .           .           .           .<-------   DO480
2931          .           .           .        D480
              .           .           .           V
              .           .           .           V
2934          .           .           .       RD480
              .           .           .           .
              .           .           .           .
2940          .           .      CWI584............
              .           .           V
              .           .           V
2943          .           .      RWI584
              .           .           .
              .           .           .
2949          .           .           .       WI550
              .           .           .           .
              .           .           .           .
2956          .      CWI550........................
              .           V
              .           V
2959          .      SCP050
              .           V
              .           V
2966          .      RWI550
              .           .
              .           .
2972          .           .       WI514
              .           .           .
              .           .           .
2979          .      CWI514............
```

```
3808          .           .       WI524
              .           .           .
              .           .           .
3817          .           .           .           .<-------   DO525
3815          .           .           .        D525
              .           .           .           V
              .           .           .           V
3818          .           .           .       RD525
              .           .           .           .
              .           .           .           .
3824          .           .      CWI524............
              .           .           .
              .           .           .
3829          .           .           .------->   DO524
3827          .           .        D524
              .           .           V
              .           .           V
3832          .           .      RWI524
              .           .           .
              .           .           .
3838          .           .           .       PI639
              .           .           .           .
              .           .           .           .
3847          .           .           .           .           .<-------   DO524
3845          .           .           .           .        D524
              .           .           .           .           V
              .           .           .           .           V
3848          .           .           .           .       RD524
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3854          .           .           .      CPI639............
              .           .           .           V
              .           .           .           V
3857          .           .           .      RPI639
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3863          .           .           .           .       WI506
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3870          .      CWI506.................................
              .           V
              .           V
3873          .      RWI506
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3881          .           .           .<-------   DO508
3879          .           .        D508
              .           .           V
              .           .           V
3882          .           .       RD508
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3888          .           .           .       WI500
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3895     CWI500.................................
              V
              V
3898     SSPILL
              V
              V
3905     RWI500
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3911          .       PI635
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3918     CPI635............
              V
              V
3921     RPI635
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3929          .          .<-------  DOCP11
3927          .     DCAP11
              .          V
              .          V
3930          .     RDCP11
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3938          .          .          .<-------  DOCP12
3936          .          .     DCAP12
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3941          .          .          .------->   DO618
3939          .          .       D618
              .          .          V
              .          .          V
3944          .          .     RDCP12
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              .          .          .
3950          .          .          .       PI618
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3957          .     CPI618.......................
              .          V
              .          V
3960          .     RPI618
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              .          .
3968          .          .          .<-------  DOCP13
3966          .          .     DCAP13
              .          .          V
              .          .          V
3969          .          .     RDCP13
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              .          .          .
3975          .          .          .       PI615
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3984          .          .          .           .           .<-------   DO618
3982          .          .          .           .       D618
              .          .          .           .          V
              .          .          .           .          V
3985          .          .          .           .      RD618
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3991          .          .     CPI615.......................
              .          .          V
              .          .          V
3994          .          .     RPI615
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4000          .          .          .       PI612
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4007          .     CPI612.......................
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4012          .          .------->   DO612
4010          .       D612
              .          V
              .          V
4015          .     RPI612
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4023          .          .          .<-------  DOCP14
4021          .          .     DCAP14
              .          .          V
              .          .          V
4024          .          .     RDCP14
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4030          .          .          .       PI609
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4037          .     CPI609.......................
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4040             .     RPI609
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4046             .          .     PI600A
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4052             .     C600A............
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4055             .          .-------> DO600A
4054             .     D600A
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4058             .          .      PI621
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4067             .          .          .          .<-------   DO612
4065             .          .          .       D612
                 .          .          .          V
                 .          .          .          V
4068             .          .          .      RD612
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4074             .          .     CPI621............
                 .          .          V
                 .          .          V
4077             .          .     SPI621
                 .          .          V
                 .          .          V
4083             .          .     RPI621
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4091             .          .          .          .<-------  DOCP10
4089             .          .          .     DCAP10
                 .          .          .          V
                 .          .          .          V
4092             .          .          .     RDCP10
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4098             .          .          .          .       PI628
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4105             .          .          .     CPI628............
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4108             .          .          .     RPI628
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4114             .          .          .          .      PI624A
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4121             .          .          .      C624A............
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4124             .          .          .      R624A
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4130             .          .          .          .       PI636
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                 .          .          .          .          V
4137             .          .          .          .      RPI636
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4143             .          .          .          .          .       PI624
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4150             .          .          .     CPI624........................
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Wittmann ADMSU Addendum
100-year 24-hour Existing Conditions

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA
+	HYDROGRAPH AT	WT140	1911.	13.00	556.	163.	54.	3.79
+	ROUTED TO	RWT140	1804.	13.33	556.	162.	54.	3.79
+	HYDROGRAPH AT	WT130	1817.	12.67	366.	100.	33.	2.57
+	2 COMBINED AT	CWT130	2641.	13.25	910.	260.	87.	6.36
+	ROUTED TO	RWT130	2441.	13.75	908.	260.	87.	6.36
+	HYDROGRAPH AT	WT160	569.	12.58	123.	35.	12.	.81
+	ROUTED TO	RWT160	376.	14.25	121.	35.	12.	.81
+	HYDROGRAPH AT	WT150A	2779.	12.92	701.	204.	68.	4.75
+	ROUTED TO	R150A	2601.	13.17	700.	204.	68.	4.75
	HYDROGRAPH AT	WT150	901.	12.50	161.	46.	15.	1.09
+	2 COMBINED AT	CWT150	2964.	13.08	855.	248.	83.	5.84
+	ROUTED TO	RWT150	2875.	13.50	854.	248.	83.	5.84
+	HYDROGRAPH AT	WT120	1802.	12.75	383.	99.	33.	2.80
+	4 COMBINED AT	CWT120	5970.	13.50	2198.	624.	209.	15.81
+	ROUTED TO	RWT120	5726.	14.08	2195.	624.	209.	15.81
+	HYDROGRAPH AT	WT110	2415.	12.58	403.	107.	36.	2.90
+	2 COMBINED AT	CWT110	5882.	14.08	2552.	722.	242.	18.71
+	ROUTED TO	RWT110	5507.	14.75	2544.	721.	242.	18.71
+	HYDROGRAPH AT	WT100	2889.	12.67	586.	166.	56.	3.85
+	2 COMBINED AT	CWT100	5629.	14.75	3045.	868.	292.	22.55
	ROUTED TO	RWT100	5251.	15.08	3028.	868.	292.	22.55
+	HYDROGRAPH AT	TW406	375.	12.08	28.	8.	3.	.16

+	ROUTED TO RTW406	30.	16.67	23.	8.	3.	.16
+	HYDROGRAPH AT TW408	413.	12.83	141.	42.	14.	.91
+	ROUTED TO RTW408	213.	16.00	120.	42.	14.	.91
+	HYDROGRAPH AT TW404	2515.	12.42	302.	80.	27.	2.09
+	4 COMBINED AT CTW404	5271.	15.17	3351.	979.	330.	25.72
+	ROUTED TO RTW404	5210.	15.42	3341.	979.	330.	25.72
+	HYDROGRAPH AT IW371	68.	12.08	9.	3.	1.	.05
+	DIVERSION TO DO371	46.	12.08	4.	1.	0.	.05
+	HYDROGRAPH AT D371	22.	12.08	5.	2.	1.	.05
+	ROUTED TO RIW371	13.	14.58	5.	2.	1.	.05
+	HYDROGRAPH AT IW366	881.	12.58	162.	43.	14.	1.06
+	2 COMBINED AT CIW366	881.	12.58	167.	45.	15.	1.08
	ROUTED TO RIW366	771.	13.00	166.	45.	15.	1.08
+	HYDROGRAPH AT IW377	106.	12.33	17.	4.	1.	.11
+	ROUTED TO SSR010	99.	12.42	17.	4.	1.	.11
+	ROUTED TO RIW377	67.	13.25	17.	4.	1.	.11
+	HYDROGRAPH AT IW374	534.	12.33	79.	21.	7.	.39
+	HYDROGRAPH AT D371	46.	12.08	4.	1.	0.	.05
+	ROUTED TO RD371	26.	12.33	4.	1.	0.	.05
+	3 COMBINED AT CIW374	558.	12.33	98.	26.	9.	.53
+	ROUTED TO RIW374	279.	14.17	96.	26.	9.	.53
+	HYDROGRAPH AT IW386	271.	12.67	73.	19.	6.	.37
+	ROUTED TO RIW386	208.	13.75	72.	19.	6.	.37
	HYDROGRAPH AT IW382	526.	12.33	100.	26.	9.	.62
+	2 COMBINED AT CIW382	525.	12.33	168.	45.	15.	.99

	DIVERSION TO	DO382B	180.	12.00	112.	31.	10.	.99
+	HYDROGRAPH AT	D382B	345.	12.33	56.	14.	5.	.99
+	DIVERSION TO	DO382A	82.	12.33	5.	1.	0.	.99
+	HYDROGRAPH AT	D382A	263.	12.33	51.	13.	4.	.99
+	ROUTED TO	RIW382	212.	12.83	51.	13.	4.	.99
+	HYDROGRAPH AT	IW384	128.	12.25	18.	5.	2.	.08
+	HYDROGRAPH AT	D382A	82.	12.33	5.	1.	0.	.99
+	ROUTED TO	RD382A	60.	12.42	5.	1.	0.	.99
+	2 COMBINED AT	CIW384	164.	12.33	23.	6.	2.	.23
+	ROUTED TO	RIW384	120.	12.75	23.	6.	2.	.23
+	HYDROGRAPH AT	IW381	315.	12.50	83.	22.	7.	.38
+	HYDROGRAPH AT	D382B	180.	12.00	112.	31.	10.	.99
+	2 COMBINED AT	CIW381	493.	12.50	194.	53.	18.	.72
+	ROUTED TO	RIW381	460.	12.92	193.	53.	18.	.72
+	3 COMBINED AT	C359*	778.	12.83	264.	71.	24.	1.45
+	ROUTED TO	R359*	719.	13.25	261.	71.	24.	1.45
+	HYDROGRAPH AT	IW359	2442.	12.67	444.	116.	39.	2.91
+	4 COMBINED AT	CIW359	3105.	12.92	939.	253.	85.	5.97
+	ROUTED TO	RIW359	2943.	13.25	928.	253.	85.	5.97
+	HYDROGRAPH AT	IW389	118.	12.50	32.	8.	3.	.13
+	ROUTED TO	SSR190	118.	12.50	32.	8.	3.	.13
+	ROUTED TO	RIW389	76.	13.92	31.	8.	3.	.13
+	HYDROGRAPH AT	IW394	2569.	13.00	682.	192.	64.	4.17
+	ROUTED TO	RIW394	2473.	13.17	682.	192.	64.	4.17
	HYDROGRAPH AT							

+	IW390A	576.	12.75	156.	44.	15.	.90
2 COMBINED AT	C390A	2903.	13.17	832.	235.	78.	5.07
ROUTED TO +	R390A	2827.	13.42	832.	234.	78.	5.07
HYDROGRAPH AT +	IW390	146.	12.75	45.	12.	4.	.31
HYDROGRAPH AT +	IW392	1713.	12.33	213.	56.	19.	1.11
3 COMBINED AT +	CIW390	3038.	13.33	1076.	300.	100.	6.50
ROUTED TO +	SSR160	2996.	13.42	1076.	300.	100.	6.50
ROUTED TO +	RIW390	2891.	13.75	1070.	299.	100.	6.50
HYDROGRAPH AT +	IW388	867.	12.92	259.	68.	23.	1.23
3 COMBINED AT +	CIW388	3436.	13.75	1343.	373.	125.	7.85
ROUTED TO +	RIW388	3364.	14.00	1341.	373.	125.	7.85
HYDROGRAPH AT +	IW357	647.	12.50	151.	40.	14.	.75
2 COMBINED AT	CIW357	3504.	14.00	1474.	411.	138.	8.60
DIVERSION TO +	DO357	935.	14.00	387.	106.	36.	8.60
HYDROGRAPH AT +	D357	2569.	14.00	1087.	305.	102.	8.60
ROUTED TO +	RIW357	2494.	14.50	1080.	305.	102.	8.60
HYDROGRAPH AT +	IW358	98.	12.50	23.	6.	2.	.16
HYDROGRAPH AT +	IW353	2307.	12.75	524.	135.	45.	2.80
4 COMBINED AT +	CIW353	5023.	13.33	2449.	682.	229.	15.24
ROUTED TO +	RIW353	4898.	13.75	2429.	682.	229.	15.24
HYDROGRAPH AT +	IW350	1154.	13.00	368.	96.	32.	2.17
2 COMBINED AT +	CIW350	5647.	13.67	2758.	770.	259.	17.41
HYDROGRAPH AT +	IW312	346.	12.92	127.	34.	11.	.57
DIVERSION TO	DO312	95.	12.92	11.	3.	1.	.57
HYDROGRAPH AT +	D312	250.	12.92	117.	31.	10.	.57

+	ROUTED TO	RIW312	228.	13.75	114.	31.	10.	.57
+	HYDROGRAPH AT	IW363	804.	12.42	139.	37.	12.	.63
+	HYDROGRAPH AT	IW365	272.	12.92	108.	29.	10.	.47
+	HYDROGRAPH AT	D312	95.	12.92	11.	3.	1.	.57
+	ROUTED TO	RD312	86.	13.00	11.	3.	1.	.57
+	2 COMBINED AT	CIW365	353.	13.00	119.	32.	11.	.63
+	DIVERSION TO	DO365	66.	13.00	5.	1.	0.	.63
+	HYDROGRAPH AT	D365	287.	13.00	114.	30.	10.	.63
+	ROUTED TO	RIW365	282.	13.50	113.	30.	10.	.63
+	HYDROGRAPH AT	IW367	77.	12.25	13.	3.	1.	.05
+	HYDROGRAPH AT	D365	66.	13.00	5.	1.	0.	.63
+	ROUTED TO	RD365	58.	13.17	5.	1.	0.	.63
	2 COMBINED AT	CIW367	80.	13.17	19.	5.	2.	.17
+	HYDROGRAPH AT	IW369	435.	13.00	172.	46.	15.	.79
+	DIVERSION TO	DO369	230.	13.00	48.	12.	4.	.79
+	HYDROGRAPH AT	D369	205.	13.00	125.	34.	11.	.79
+	2 COMBINED AT	C363*	279.	13.08	142.	39.	13.	.54
+	ROUTED TO	RIW369	266.	13.42	141.	39.	13.	.54
+	HYDROGRAPH AT	D357	935.	14.00	387.	106.	36.	8.60
+	ROUTED TO	RD357	926.	14.08	386.	106.	36.	8.60
+	5 COMBINED AT	CIW363	1640.	14.00	873.	241.	81.	4.38
+	DIVERSION TO	DO363	519.	14.00	257.	71.	24.	4.38
+	HYDROGRAPH AT	D363	1120.	14.00	616.	170.	57.	4.38
	ROUTED TO	RIW363	1098.	14.33	610.	170.	57.	4.38
+	HYDROGRAPH AT	IW368	179.	12.58	37.	10.	3.	.29

	HYDROGRAPH AT	D369	230.	13.00	48.	12.	4.	.79
	ROUTED TO	RD369	205.	13.25	48.	12.	4.	.79
+	2 COMBINED AT	CIW368	296.	13.17	85.	22.	7.	.71
	ROUTED TO	RIW368	270.	13.75	84.	22.	7.	.71
+	HYDROGRAPH AT	IW360	670.	12.25	114.	32.	11.	.83
+	2 COMBINED AT	CIW360	666.	12.25	194.	53.	18.	1.54
	ROUTED TO	RIW360	635.	12.42	194.	53.	18.	1.54
+	HYDROGRAPH AT	IW397	3716.	12.83	959.	298.	100.	4.81
+	ROUTED TO	RIW397	3396.	13.42	956.	297.	100.	4.81
+	HYDROGRAPH AT	IW395	6223.	12.83	1393.	414.	138.	7.86
+	2 COMBINED AT	CIW395	7572.	13.17	2308.	699.	235.	12.68
+	ROUTED TO	RIW395	7399.	13.42	2305.	698.	235.	12.68
+	HYDROGRAPH AT	IW387	1110.	12.67	205.	54.	18.	1.35
+	ROUTED TO	RIW387	1106.	12.67	205.	54.	18.	1.35
+	HYDROGRAPH AT	IW396	260.	12.83	79.	21.	7.	.59
+	3 COMBINED AT	CIW396	7924.	13.33	2563.	766.	258.	14.61
+	ROUTED TO	RIW396	7858.	13.50	2560.	766.	258.	14.61
+	HYDROGRAPH AT	IW380	490.	12.42	93.	24.	8.	.50
+	2 COMBINED AT	CIW380	7968.	13.50	2642.	788.	265.	15.11
+	ROUTED TO	SSR310	7964.	13.50	2642.	788.	265.	15.11
+	DIVERSION TO	DO380	2080.	13.50	279.	70.	23.	15.11
+	HYDROGRAPH AT	D380	5883.	13.50	2363.	718.	242.	15.11
+	ROUTED TO	RIW380	5542.	14.58	2361.	718.	242.	15.11
+	HYDROGRAPH AT	IW370	433.	12.75	122.	33.	11.	.88
	2 COMBINED AT							

+	CIW370	5663.	14.58	2485.	753.	254.	12.05
ROUTED TO	RIW370	5390.	15.08	2484.	753.	254.	12.05
HYDROGRAPH AT +	IW349	172.	12.50	39.	11.	4.	.25
2 COMBINED AT +	CIW349	5399.	15.08	2512.	763.	257.	12.30
DIVERSION TO +	DO349	3348.	15.08	1557.	473.	159.	12.30
HYDROGRAPH AT +	D349	2052.	15.08	954.	290.	98.	12.30
ROUTED TO +	RIW349	2047.	15.17	954.	290.	98.	12.30
HYDROGRAPH AT +	IW352	99.	12.25	13.	3.	1.	.10
3 COMBINED AT +	CIW352	2192.	15.08	1154.	347.	117.	6.31
HYDROGRAPH AT +	IW356	275.	12.42	53.	14.	5.	.29
HYDROGRAPH AT +	D349	3348.	15.08	1557.	473.	159.	12.30
ROUTED TO +	RD349	3194.	15.42	1556.	473.	159.	12.30
3 COMBINED AT	CIW356	5308.	15.25	2726.	826.	278.	14.23
ROUTED TO +	RIW356	5244.	15.42	2722.	826.	278.	14.23
HYDROGRAPH AT +	IW354	409.	12.42	72.	18.	6.	.36
2 COMBINED AT +	CIW354	5244.	15.42	2781.	843.	284.	14.59
ROUTED TO +	RIW354	5141.	15.75	2774.	842.	284.	14.59
HYDROGRAPH AT +	IW362	183.	12.33	34.	9.	3.	.18
2 COMBINED AT +	CIW362	5141.	15.75	2798.	850.	286.	14.77
HYDROGRAPH AT +	IW372	354.	12.33	48.	13.	4.	.32
DIVERSION TO +	DO372	177.	12.33	13.	3.	1.	.32
HYDROGRAPH AT +	D372	178.	12.33	35.	10.	3.	.32
ROUTED TO +	RIW372	129.	13.50	35.	10.	3.	.32
HYDROGRAPH AT	IW375	272.	13.17	114.	31.	10.	.66
HYDROGRAPH AT +	D372	177.	12.33	13.	3.	1.	.32

	ROUTED TO							
+		RD372	101.	12.50	13.	3.	1.	.32
	2 COMBINED AT							
+		CIW375	306.	13.00	126.	34.	11.	.82
	ROUTED TO							
+		RIW375	280.	13.75	123.	34.	11.	.82
	HYDROGRAPH AT							
+		IW364	1340.	12.50	260.	68.	23.	1.15
	3 COMBINED AT							
+		CIW364	1337.	12.50	401.	110.	37.	2.13
	2 COMBINED AT							
+		C364*	5271.	15.75	3154.	952.	321.	16.90
	ROUTED TO							
+		RIW364	5152.	16.42	3142.	952.	321.	16.90
	HYDROGRAPH AT							
+		IW342	180.	12.67	47.	12.	4.	.35
	2 COMBINED AT							
+		CIW342	5157.	16.42	3177.	962.	324.	17.25
	HYDROGRAPH AT							
+		IW351	236.	12.42	43.	12.	4.	.32
	HYDROGRAPH AT							
+		D363	519.	14.00	257.	71.	24.	4.38
	ROUTED TO							
+		RD363	514.	14.08	256.	71.	24.	4.38
	2 COMBINED AT							
		CIW351	559.	13.42	300.	83.	28.	1.71
	DIVERSION TO							
+		DO351	482.	13.42	253.	70.	23.	1.71
	HYDROGRAPH AT							
+		D351	78.	13.42	47.	13.	4.	1.71
	ROUTED TO							
+		RIW351	68.	16.50	42.	13.	4.	1.71
	HYDROGRAPH AT							
+		IW346	1969.	12.92	473.	124.	41.	3.44
	3 COMBINED AT							
+		CIW346	5247.	16.42	3611.	1085.	366.	20.92
	ROUTED TO							
+		RIW346	5213.	16.58	3606.	1085.	366.	20.92
	HYDROGRAPH AT							
+		IW338	358.	12.42	53.	14.	5.	.34
	2 COMBINED AT							
+		CIW338	5213.	16.58	3632.	1097.	370.	21.26
	ROUTED TO							
+		RIW338	5156.	17.00	3617.	1096.	370.	21.26
	HYDROGRAPH AT							
+		IW326	327.	12.42	49.	13.	4.	.33
	ROUTED TO							
		RIW326	235.	13.00	49.	13.	4.	.33
	HYDROGRAPH AT							
+		IW334	1160.	12.58	191.	50.	17.	1.26

	3 COMBINED AT	CIW334	5156.	17.00	3746.	1152.	389.	22.85
+	ROUTED TO	SCP030	5143.	17.08	3737.	1149.	388.	22.85
+	ROUTED TO	RIW334	5060.	17.92	3656.	1149.	388.	22.85
+	HYDROGRAPH AT	IW302	544.	13.08	196.	55.	18.	1.33
+	2 COMBINED AT	CIW302	5078.	17.92	3731.	1195.	404.	24.18
+	DIVERSION TO	DO302	5078.	17.92	3731.	1195.	404.	24.18
+	HYDROGRAPH AT	D302	0.	.00	0.	0.	0.	24.18
+	HYDROGRAPH AT	IW361	212.	12.42	55.	14.	5.	.35
+	HYDROGRAPH AT	D351	482.	13.42	253.	70.	23.	1.71
+	ROUTED TO	RD351	475.	13.83	251.	70.	23.	1.71
+	4 COMBINED AT	CIW361	1600.	14.17	901.	252.	85.	4.82
+	ROUTED TO	RIW361	1591.	14.83	892.	252.	85.	4.82
+	2 COMBINED AT	C350*	6553.	13.83	3546.	1001.	336.	22.23
+	ROUTED TO	R350*	6462.	14.08	3523.	1001.	336.	22.23
+	HYDROGRAPH AT	IW330	619.	12.75	154.	40.	13.	1.04
+	2 COMBINED AT	CIW330	6608.	14.08	3612.	1035.	348.	23.27
+	ROUTED TO	RIW330	6525.	14.25	3596.	1035.	348.	23.27
+	HYDROGRAPH AT	IW322	932.	13.17	370.	99.	33.	1.89
+	2 COMBINED AT	CIW322	7021.	14.25	3890.	1121.	377.	25.16
+	ROUTED TO	RIW322	6912.	14.92	3843.	1121.	377.	25.16
+	HYDROGRAPH AT	IW318	409.	12.75	120.	32.	11.	.58
+	ROUTED TO	RIW318	295.	14.58	115.	32.	11.	.58
+	HYDROGRAPH AT	IW310	708.	12.92	230.	60.	20.	1.17
+	2 COMBINED AT	CIW310	708.	12.92	333.	91.	30.	1.75
	ROUTED TO							

+	RIW310	703.	13.00	333.	91.	30.	1.75
HYDROGRAPH AT	IW314	1094.	13.00	330.	87.	29.	2.18
3 COMBINED AT +	CIW314	7496.	14.92	4210.	1272.	428.	29.09
ROUTED TO +	SCP020	7253.	15.17	3819.	1270.	426.	29.09
ROUTED TO +	RIW314	6916.	16.42	3809.	1270.	426.	29.09
HYDROGRAPH AT +	IW300	686.	13.08	218.	58.	19.	1.48
2 COMBINED AT +	CIW300	6941.	16.42	3823.	1314.	442.	30.57
ROUTED TO +	RIW300	6759.	16.83	3819.	1314.	442.	30.57
HYDROGRAPH AT +	D302	5078.	17.92	3731.	1195.	404.	24.18
2 COMBINED AT +	C302*	10663.	17.25	6965.	2396.	809.	54.75
ROUTED TO +	RIW302	10637.	17.58	6955.	2395.	809.	54.75
HYDROGRAPH AT +	SV264A	1695.	13.08	527.	138.	46.	2.90
ROUTED TO	R264A	1353.	13.50	517.	138.	46.	2.90
HYDROGRAPH AT +	SV264	1336.	12.83	357.	92.	31.	1.92
2 COMBINED AT +	CSV264	2264.	13.33	862.	229.	76.	4.82
ROUTED TO +	RSV264	1931.	13.75	840.	228.	76.	4.82
HYDROGRAPH AT +	SV298	506.	13.08	204.	56.	19.	1.08
ROUTED TO +	RSV298	450.	14.42	198.	55.	19.	1.08
HYDROGRAPH AT +	SV286	1175.	12.75	273.	71.	24.	1.54
ROUTED TO +	RSV286	1023.	13.00	272.	71.	24.	1.54
HYDROGRAPH AT +	SV284	337.	12.42	56.	15.	5.	.28
2 COMBINED AT +	CSV284	1157.	12.92	325.	85.	28.	1.82
ROUTED TO +	RSV284	931.	13.75	320.	85.	28.	1.82
HYDROGRAPH AT	SV290	653.	12.58	129.	33.	11.	.81
ROUTED TO +	RSV290	385.	13.75	127.	33.	11.	.81

+	HYDROGRAPH AT SV272	976.	12.67	198.	52.	17.	1.20
+	3 COMBINED AT CSV272	1566.	13.67	629.	167.	56.	3.84
+	ROUTED TO RSV272	1550.	13.75	629.	167.	56.	3.84
+	HYDROGRAPH AT SV294	1805.	12.92	532.	138.	46.	2.65
+	ROUTED TO RSV294	1466.	13.83	523.	138.	46.	2.65
+	HYDROGRAPH AT SV276	678.	12.67	171.	44.	15.	.92
+	3 COMBINED AT CSV276	3247.	13.75	1296.	345.	115.	7.41
+	ROUTED TO RSV276	3233.	13.83	1295.	345.	115.	7.41
+	HYDROGRAPH AT SV280	707.	12.83	212.	56.	19.	1.06
+	3 COMBINED AT CSV280	3723.	13.92	1672.	452.	151.	9.54
+	ROUTED TO RSV280	3625.	14.25	1668.	452.	151.	9.54
+	HYDROGRAPH AT SV268	1349.	12.67	290.	75.	25.	1.38
	ROUTED TO RSV268	1081.	12.92	289.	75.	25.	1.38
+	HYDROGRAPH AT SV260	1154.	12.58	198.	51.	17.	1.26
+	4 COMBINED AT CSV260	5765.	14.00	2889.	783.	262.	16.99
+	ROUTED TO SCP010	4063.	14.92	2801.	782.	261.	16.99
+	ROUTED TO RSV260	4052.	15.17	2794.	782.	261.	16.99
+	HYDROGRAPH AT SV220	797.	12.33	99.	26.	9.	.60
+	HYDROGRAPH AT SV252	104.	12.33	19.	5.	2.	.15
+	ROUTED TO RSV252	62.	13.42	19.	5.	2.	.15
+	HYDROGRAPH AT SV254	99.	12.25	12.	3.	1.	.10
+	ROUTED TO RSV254	45.	13.42	12.	3.	1.	.10
+	HYDROGRAPH AT SV219	1105.	12.42	151.	39.	13.	.90
	3 COMBINED AT CSV219	1104.	12.42	180.	47.	16.	1.14
+	ROUTED TO RSV219	786.	12.83	180.	47.	16.	1.14

	HYDROGRAPH AT	SV251	204.	12.42	33.	9.	3.	.27
+	ROUTED TO	RSV251	126.	13.42	33.	9.	3.	.27
+	HYDROGRAPH AT	SV250	107.	12.33	17.	4.	1.	.12
+	ROUTED TO	RSV250	61.	13.50	16.	4.	1.	.12
+	HYDROGRAPH AT	SV218	1039.	12.58	190.	49.	16.	1.29
+	4 COMBINED AT	CSV218	1692.	12.75	412.	108.	36.	2.82
+	ROUTED TO	RSV218	1409.	13.17	411.	108.	36.	2.82
+	HYDROGRAPH AT	SV248	771.	12.67	189.	52.	17.	1.27
+	DIVERSION TO	DO248	363.	12.67	89.	24.	8.	1.27
+	HYDROGRAPH AT	D248	409.	12.67	100.	27.	9.	1.27
+	ROUTED TO	RSV248	324.	13.25	100.	27.	9.	1.27
+	HYDROGRAPH AT	SV244	435.	12.92	143.	37.	12.	.95
+	2 COMBINED AT	CSV244	720.	13.08	241.	64.	21.	1.62
+	HYDROGRAPH AT	SV246	200.	12.25	30.	8.	3.	.16
+	HYDROGRAPH AT	D248	363.	12.67	89.	24.	8.	1.27
+	ROUTED TO	RD248	324.	12.92	89.	24.	8.	1.27
+	2 COMBINED AT	CSV246	395.	12.92	119.	32.	11.	.76
+	2 COMBINED AT	C216*	1079.	13.00	355.	95.	32.	2.38
+	ROUTED TO	RSV244	977.	13.75	353.	95.	32.	2.38
+	HYDROGRAPH AT	SV216	1613.	12.50	240.	63.	21.	1.63
+	3 COMBINED AT	CSV216	2345.	13.33	981.	262.	88.	6.82
+	ROUTED TO	RSV216	2308.	13.75	976.	262.	88.	6.82
+	HYDROGRAPH AT	SV236	521.	12.42	71.	19.	6.	.59
	ROUTED TO	RSV236	258.	13.75	71.	19.	6.	.59
	HYDROGRAPH AT							

+	SV240	2841.	12.67	522.	141.	47.	3.67
HYDROGRAPH AT	SV242	63.	12.33	11.	3.	1.	.09
2 COMBINED AT +	C242*	2883.	12.67	532.	144.	48.	3.76
ROUTED TO +	R242*	2310.	13.42	532.	144.	48.	3.76
HYDROGRAPH AT +	SV214	1910.	12.50	269.	70.	23.	1.87
6 COMBINED AT +	CSV220	6753.	13.67	4355.	1234.	413.	30.63
ROUTED TO +	RSV220	6674.	14.17	4323.	1234.	413.	30.63
HYDROGRAPH AT +	SV230	1276.	12.25	140.	38.	13.	.85
HYDROGRAPH AT +	SV232	2919.	12.50	460.	123.	41.	3.06
2 COMBINED AT +	C230*	3546.	12.50	597.	160.	53.	3.91
ROUTED TO +	R230*	3214.	12.83	596.	160.	53.	3.91
HYDROGRAPH AT +	SV212	3325.	12.67	559.	146.	49.	4.14
3 COMBINED AT	CSV212	7363.	14.00	5158.	1489.	499.	38.68
ROUTED TO +	RSV212	7179.	14.67	5048.	1488.	499.	38.68
HYDROGRAPH AT +	SV202	1078.	12.75	259.	68.	23.	1.44
ROUTED TO +	RSV202	977.	13.25	258.	68.	23.	1.44
HYDROGRAPH AT +	SV210	1189.	12.17	116.	31.	10.	.72
ROUTED TO +	RSV210	642.	13.17	116.	31.	10.	.72
3 COMBINED AT +	C210*	7445.	14.58	5308.	1569.	526.	40.83
HYDROGRAPH AT +	SV208	638.	12.67	162.	46.	15.	1.07
HYDROGRAPH AT +	SV205	747.	12.17	83.	22.	7.	.50
2 COMBINED AT +	C205*	919.	12.25	243.	68.	23.	1.57
ROUTED TO +	R205*	585.	13.00	241.	68.	23.	1.57
HYDROGRAPH AT	SV203	120.	12.17	10.	3.	1.	.08
ROUTED TO +	RSV203	73.	12.67	10.	3.	1.	.08

+	3 COMBINED AT	C200*	7752.	13.67	5459.	1626.	546.	42.48
+	HYDROGRAPH AT	SV200	1931.	12.67	309.	81.	27.	2.29
+	3 COMBINED AT	CSV200	14084.	17.33	11215.	3893.	1314.	99.52
+	ROUTED TO	RSV200	14045.	17.58	11201.	3893.	1314.	99.52
+	HYDROGRAPH AT	TW416	420.	12.50	135.	44.	15.	.59
+	ROUTED TO	RTW416	359.	13.75	134.	44.	15.	.59
+	HYDROGRAPH AT	TW420	575.	12.67	124.	33.	11.	.81
+	ROUTED TO	RTW420	460.	13.58	123.	33.	11.	.81
+	HYDROGRAPH AT	TW412	1239.	12.92	326.	89.	30.	2.06
+	2 COMBINED AT	CTW412	1295.	13.25	445.	121.	40.	2.87
+	HYDROGRAPH AT	TW414	2018.	12.17	172.	46.	15.	1.17
+	ROUTED TO	RTW414	760.	13.25	170.	46.	15.	1.17
	HYDROGRAPH AT	TW410	178.	12.58	41.	11.	4.	.31
+	2 COMBINED AT	CTW410	852.	13.25	208.	56.	19.	1.48
+	4 COMBINED AT	C410*	14102.	17.58	11555.	4061.	1373.	104.45
+	ROUTED TO	RTW410	13989.	18.25	11518.	4061.	1373.	104.45
+	HYDROGRAPH AT	TW402	3179.	12.92	735.	200.	67.	4.91
+	3 COMBINED AT	CTW402	16124.	15.58	13832.	5003.	1698.	135.09
+	ROUTED TO	RTW402	16000.	15.75	13808.	5003.	1698.	135.09
+	HYDROGRAPH AT	TW448	202.	12.83	79.	21.	7.	.35
+	DIVERSION TO	DO448	47.	12.83	5.	1.	0.	.35
+	HYDROGRAPH AT	D448	155.	12.83	74.	20.	7.	.35
+	ROUTED TO	RTW448	152.	13.83	73.	20.	7.	.35
	HYDROGRAPH AT	TW446A	221.	12.75	76.	21.	7.	.34
+	HYDROGRAPH AT	D448	47.	12.83	5.	1.	0.	.35

	ROUTED TO	RD448	40.	13.00	5.	1.	0.	.35
+	2 COMBINED AT	C446A	249.	12.92	80.	22.	8.	.42
+	DIVERSION TO	DO446A	0.	.00	0.	0.	0.	.42
+	HYDROGRAPH AT	D446A	249.	12.92	80.	22.	8.	.42
+	ROUTED TO	R446A	211.	13.58	80.	22.	8.	.42
+	HYDROGRAPH AT	TW446	361.	12.42	83.	22.	7.	.35
+	3 COMBINED AT	CTW446	475.	13.50	229.	64.	21.	1.04
+	ROUTED TO	RTW446	455.	13.92	228.	64.	21.	1.04
+	HYDROGRAPH AT	TW432	588.	12.58	119.	31.	10.	.86
+	2 COMBINED AT	CTW432	770.	12.75	341.	94.	31.	1.90
+	ROUTED TO	RTW432	734.	13.33	339.	94.	31.	1.90
+	HYDROGRAPH AT	TW431	705.	12.67	161.	42.	14.	.87
+	2 COMBINED AT	CTW431	1160.	13.17	488.	134.	45.	2.78
+	HYDROGRAPH AT	TW459	401.	13.08	154.	42.	14.	1.04
+	ROUTED TO	SSR350	401.	13.08	154.	42.	14.	1.04
+	ROUTED TO	RTW459	384.	13.42	153.	42.	14.	1.04
+	HYDROGRAPH AT	TW462	129.	12.17	18.	5.	2.	.08
+	HYDROGRAPH AT	D380	2080.	13.50	279.	70.	23.	15.11
+	ROUTED TO	RD380	1954.	13.67	279.	70.	23.	15.11
+	2 COMBINED AT	CTW462	2130.	13.67	326.	82.	27.	4.02
+	ROUTED TO	SSR330	2126.	13.67	326.	82.	27.	4.02
+	ROUTED TO	RTW462	2018.	13.83	326.	82.	27.	4.02
+	HYDROGRAPH AT	TW450A	709.	12.67	173.	45.	15.	.88
+	ROUTED TO	SSR410	664.	12.83	173.	45.	15.	.88
	ROUTED TO							

+	R450A	538.	13.25	173.	45.	15.	.88
HYDROGRAPH AT	TW450B	452.	12.50	87.	23.	8.	.40
4 COMBINED AT +	C450B	2786.	13.83	715.	186.	62.	6.35
ROUTED TO +	R450B	2499.	14.50	709.	186.	62.	6.35
HYDROGRAPH AT +	TW450	661.	13.17	264.	71.	24.	1.25
HYDROGRAPH AT +	D446A	0.	.00	0.	0.	0.	.42
ROUTED TO +	RD446A	0.	.00	0.	0.	0.	.42
3 COMBINED AT +	CTW450	2832.	14.42	956.	254.	85.	7.59
DIVERSION TO +	DO450	157.	14.42	15.	4.	1.	7.59
HYDROGRAPH AT +	D450	2675.	14.42	941.	250.	84.	7.59
ROUTED TO +	RTW450	2604.	14.75	938.	250.	84.	7.59
HYDROGRAPH AT +	TW444	357.	12.25	65.	19.	6.	.35
2 COMBINED AT	CTW444	2616.	14.75	981.	268.	90.	7.49
ROUTED TO +	RTW444	2556.	14.92	977.	268.	90.	7.49
HYDROGRAPH AT +	TW440	133.	12.25	16.	4.	1.	.11
2 COMBINED AT +	CTW440	2556.	14.92	989.	272.	91.	7.60
HYDROGRAPH AT +	TW460	1213.	12.92	360.	97.	32.	2.32
ROUTED TO +	SSR540	1207.	13.00	360.	97.	32.	2.32
ROUTED TO +	RTW460	1152.	13.17	359.	97.	32.	2.32
HYDROGRAPH AT +	TW458	726.	12.50	143.	37.	12.	.67
2 COMBINED AT +	CTW458	1479.	13.08	495.	133.	44.	2.99
ROUTED TO +	RTW458	1457.	13.25	495.	133.	44.	2.99
HYDROGRAPH AT +	TW456	117.	12.58	28.	7.	2.	.18
2 COMBINED AT	CTW456	1517.	13.25	521.	140.	47.	3.16
ROUTED TO +	RTW456	1461.	13.42	520.	140.	47.	3.16

+	HYDROGRAPH AT	TW454	128.	13.00	49.	14.	5.	.36
+	2 COMBINED AT	CTW454	1564.	13.42	567.	153.	51.	3.52
+	DIVERSION TO	DO454	1001.	13.42	363.	98.	33.	3.52
+	HYDROGRAPH AT	D454	563.	13.42	204.	55.	18.	3.52
+	ROUTED TO	RTW454	509.	14.33	203.	55.	18.	3.52
+	HYDROGRAPH AT	TW452A	822.	12.67	208.	54.	18.	1.08
+	ROUTED TO	SSR450	820.	12.75	208.	54.	18.	1.08
+	ROUTED TO	R452A	675.	13.75	208.	54.	18.	1.08
+	HYDROGRAPH AT	TW452B	615.	12.92	196.	51.	17.	1.03
+	3 COMBINED AT	C452B	1302.	13.75	592.	158.	53.	3.38
+	ROUTED TO	R452B	1257.	14.42	588.	158.	53.	3.38
+	HYDROGRAPH AT	TW452	320.	12.75	104.	27.	9.	.46
	HYDROGRAPH AT	D450	157.	14.42	15.	4.	1.	7.59
+	ROUTED TO	RD450	120.	14.67	15.	4.	1.	7.59
+	3 COMBINED AT	CTW452	1465.	14.50	694.	188.	63.	4.29
+	ROUTED TO	RTW452	1415.	15.00	691.	188.	63.	4.29
+	HYDROGRAPH AT	TW442	373.	12.25	67.	18.	6.	.38
+	2 COMBINED AT	CTW442	1417.	15.00	725.	205.	69.	4.67
+	2 COMBINED AT	C442*	3831.	14.92	1680.	468.	157.	12.26
+	ROUTED TO	R442*	3623.	15.50	1668.	467.	157.	12.26
+	HYDROGRAPH AT	TW434	453.	12.50	85.	22.	7.	.57
+	3 COMBINED AT	CTW434	3912.	15.50	2148.	611.	205.	15.61
+	ROUTED TO	RTW434	3790.	16.00	2135.	611.	205.	15.61
	HYDROGRAPH AT	TW436	729.	12.25	129.	35.	12.	.67
+	ROUTED TO	RTW436	563.	13.17	128.	35.	12.	.67

	HYDROGRAPH AT	TW430	2816.	12.50	406.	106.	35.	2.49
+	HYDROGRAPH AT	TW429	510.	12.33	113.	30.	10.	.56
+	ROUTED TO	RTW429	320.	13.17	112.	30.	10.	.56
+	4 COMBINED AT	C430*	3802.	16.00	2621.	766.	257.	19.33
+	HYDROGRAPH AT	TW485	1589.	12.75	354.	93.	31.	2.37
+	HYDROGRAPH AT	D454	1001.	13.42	363.	98.	33.	3.52
+	ROUTED TO	RD454	978.	13.58	362.	98.	33.	3.52
+	HYDROGRAPH AT	WI576A	633.	12.83	188.	50.	17.	1.22
+	ROUTED TO	R576A	558.	13.42	188.	50.	17.	1.22
+	HYDROGRAPH AT	WI576B	356.	12.58	71.	19.	6.	.46
+	2 COMBINED AT	C576B	687.	13.33	255.	68.	23.	1.69
+	DIVERSION TO	DO576B	275.	13.33	102.	27.	9.	1.69
+	HYDROGRAPH AT	D576B	412.	13.33	153.	41.	14.	1.69
+	ROUTED TO	R576B	347.	15.25	151.	41.	14.	1.69
+	3 COMBINED AT	CTW485	1937.	12.92	848.	228.	76.	5.64
+	ROUTED TO	RTW485	1903.	13.00	846.	228.	76.	5.64
+	HYDROGRAPH AT	TW484	245.	12.33	61.	17.	6.	.35
+	2 COMBINED AT	CTW484	2046.	13.00	901.	245.	82.	5.99
+	ROUTED TO	RTW484	1959.	13.67	891.	245.	82.	5.99
+	HYDROGRAPH AT	WI580A	2029.	12.75	461.	124.	41.	2.79
+	HYDROGRAPH AT	WI580B	509.	12.50	105.	29.	10.	.63
+	DIVERSION TO	DO580B	234.	12.50	48.	13.	4.	.63
+	HYDROGRAPH AT	D580B	275.	12.50	57.	16.	5.	.63
	ROUTED TO	R580B	237.	12.92	57.	16.	5.	.63
	2 COMBINED AT							

+	C580A	2218.	12.75	516.	139.	46.	3.13
ROUTED TO	SSR630	2211.	12.75	516.	139.	46.	3.13
ROUTED TO +	R580A	1804.	13.83	514.	139.	46.	3.13
HYDROGRAPH AT +	WI580	1398.	12.42	187.	49.	16.	1.32
HYDROGRAPH AT +	D580B	234.	12.50	48.	13.	4.	.63
ROUTED TO +	RD580B	200.	13.00	48.	13.	4.	.63
HYDROGRAPH AT +	WI578	350.	12.58	80.	21.	7.	.48
2 COMBINED AT +	CWI578	480.	12.83	127.	34.	11.	.77
ROUTED TO +	SSR700	439.	13.08	127.	34.	11.	.77
ROUTED TO +	RWI578	411.	13.67	127.	34.	11.	.77
3 COMBINED AT +	CWI580	2239.	13.83	809.	219.	73.	5.22
ROUTED TO +	RWI580	2114.	14.25	806.	219.	73.	5.22
HYDROGRAPH AT	D576B	275.	13.33	102.	27.	9.	1.69
ROUTED TO +	RD576B	248.	14.25	101.	27.	9.	1.69
HYDROGRAPH AT +	WI576	729.	12.67	155.	41.	14.	1.18
3 COMBINED AT +	CWI576	2463.	14.25	1044.	284.	95.	7.07
DIVERSION TO +	DO576	1375.	14.25	534.	142.	48.	7.07
HYDROGRAPH AT +	D576	1088.	14.25	511.	141.	47.	7.07
ROUTED TO +	RWI576	1019.	14.67	506.	141.	47.	7.07
HYDROGRAPH AT +	TW482	678.	12.50	113.	30.	10.	.76
2 COMBINED AT +	CTW482	1050.	14.67	599.	172.	58.	3.88
DIVERSION TO +	DO482	0.	.00	0.	0.	0.	3.88
HYDROGRAPH AT +	D482	1050.	14.67	599.	172.	58.	3.88
ROUTED TO	RTW482	1001.	15.17	589.	172.	58.	3.88
HYDROGRAPH AT +	TW480	741.	12.33	144.	39.	13.	.75

	3 COMBINED AT						
+		CTW480	2780.	13.67	1542.	449.	151.	10.62
	DIVERSION TO						
+		DO480	2641.	13.67	1464.	426.	143.	10.62
	HYDROGRAPH AT						
+		D480	139.	13.67	77.	22.	8.	10.62
	ROUTED TO						
+		RTW480	124.	14.42	75.	22.	8.	10.62
	HYDROGRAPH AT						
+		TW478	351.	12.17	45.	12.	4.	.26
	2 COMBINED AT						
+		CTW478	351.	12.17	115.	35.	12.	.79
	ROUTED TO						
+		RTW478	120.	13.50	102.	35.	12.	.79
	2 COMBINED AT						
+		CTW430	3900.	16.00	2705.	796.	267.	20.12
	ROUTED TO						
+		SCP040	2857.	16.83	2201.	780.	261.	20.12
	ROUTED TO						
+		RTW430	2755.	17.33	2178.	779.	261.	20.12
	HYDROGRAPH AT						
+		TW418	1476.	12.58	285.	86.	29.	1.37
	2 COMBINED AT						
+		CTW418	2766.	17.25	2200.	847.	287.	21.49
	ROUTED TO						
		RTW418	2737.	17.58	2192.	846.	287.	21.49
	HYDROGRAPH AT						
+		TW424	2046.	12.25	268.	72.	24.	1.50
	ROUTED TO						
+		RTW424	1773.	12.50	268.	72.	24.	1.50
	HYDROGRAPH AT						
+		TW422	516.	12.67	127.	38.	13.	.70
	3 COMBINED AT						
+		CTW422	2842.	12.58	2206.	938.	319.	23.69
	ROUTED TO						
+		RTW422	2486.	20.67	2185.	937.	319.	23.69
	HYDROGRAPH AT						
+		TW400	2211.	12.67	687.	195.	65.	4.27
	3 COMBINED AT						
+		CTW400	17339.	15.83	15564.	5885.	2002.	163.05
	ROUTED TO						
+		RTW400	17199.	16.08	15524.	5884.	2002.	163.05
	HYDROGRAPH AT						
+		WI504	1395.	12.50	216.	58.	19.	1.35
	2 COMBINED AT						
+		CWI504	17199.	16.08	15527.	5928.	2017.	164.40
	ROUTED TO						
		RWI504	17161.	16.17	15515.	5927.	2016.	164.40
	HYDROGRAPH AT						
+		D576	1375.	14.25	534.	142.	48.	7.07

ROUTED TO	RD576	1331.	14.50	533.	142.	48.	7.07
+ HYDROGRAPH AT	WI574	219.	12.33	31.	8.	3.	.22
+ ROUTED TO	RWI574	118.	13.50	31.	8.	3.	.22
+ HYDROGRAPH AT	WI572	1896.	12.50	371.	104.	35.	2.06
+ ROUTED TO	RWI572	1567.	13.25	370.	104.	35.	2.06
+ HYDROGRAPH AT	WI570	1622.	12.83	439.	125.	42.	2.24
+ DIVERSION TO	DO570	341.	12.83	92.	26.	9.	2.24
+ HYDROGRAPH AT	D570	1282.	12.83	347.	99.	33.	2.24
+ ROUTED TO	RWI570	1160.	13.25	346.	99.	33.	2.24
+ HYDROGRAPH AT	WI566	119.	12.33	19.	5.	2.	.11
+ HYDROGRAPH AT	D570	341.	12.83	92.	26.	9.	2.24
2 COMBINED AT	CWI566	410.	12.75	112.	31.	11.	.58
+ ROUTED TO	SSR830	404.	12.83	112.	31.	11.	.58
+ ROUTED TO	RWI566	379.	13.33	112.	31.	11.	.58
+ HYDROGRAPH AT	WI564	810.	13.17	303.	88.	29.	1.81
+ ROUTED TO	SSR880	807.	13.17	303.	88.	29.	1.81
+ ROUTED TO	RWI564	748.	13.67	301.	88.	29.	1.81
+ HYDROGRAPH AT	WI562	569.	12.75	158.	42.	14.	.87
+ 3 COMBINED AT	CWI562	1415.	13.50	559.	159.	53.	3.26
+ 2 COMBINED AT	C562*	2509.	13.33	899.	256.	86.	5.03
+ ROUTED TO	R562*	2344.	14.00	892.	255.	86.	5.03
+ HYDROGRAPH AT	WI560A	910.	13.00	322.	90.	30.	2.04
+ ROUTED TO	R560A	780.	14.00	319.	90.	30.	2.04
+ HYDROGRAPH AT	WI560	2795.	12.67	601.	176.	59.	3.56
6 COMBINED AT							

+		CWI560	5195.	14.08	2609.	747.	251.	16.86
	ROUTED TO	RWI560	5105.	14.67	2596.	747.	251.	16.86
	HYDROGRAPH AT							
+		WI582	361.	12.42	55.	15.	5.	.38
	HYDROGRAPH AT							
+		D482	0.	.00	0.	0.	0.	3.88
	ROUTED TO							
+		RD482	0.	.00	0.	0.	0.	3.88
	2 COMBINED AT							
+		CWI582	361.	12.42	55.	15.	5.	.38
	ROUTED TO							
+		RWI582	216.	13.00	55.	14.	5.	.38
	HYDROGRAPH AT							
+		WI556	153.	12.08	12.	3.	1.	.08
	ROUTED TO							
+		RWI556	25.	13.75	11.	3.	1.	.08
	HYDROGRAPH AT							
+		WI554	833.	12.58	147.	40.	13.	1.04
	4 COMBINED AT							
+		CWI554	5164.	14.67	2751.	799.	269.	18.36
	ROUTED TO							
+		RWI554	5155.	14.75	2750.	799.	269.	18.36
	HYDROGRAPH AT							
		WI552	322.	12.50	59.	16.	5.	.41
	2 COMBINED AT							
+		CWI552	5165.	14.75	2793.	813.	274.	18.77
	ROUTED TO							
+		RWI552	5158.	14.75	2791.	813.	274.	18.77
	HYDROGRAPH AT							
+		WI584	824.	12.42	186.	50.	17.	1.26
	HYDROGRAPH AT							
+		D480	2641.	13.67	1464.	426.	143.	10.62
	ROUTED TO							
+		RD480	2450.	14.25	1452.	426.	143.	10.62
	2 COMBINED AT							
+		CWI584	2549.	14.17	1591.	472.	159.	11.35
	ROUTED TO							
+		RWI584	2435.	14.75	1572.	472.	159.	11.35
	HYDROGRAPH AT							
+		WI550	212.	12.17	23.	7.	2.	.14
	3 COMBINED AT							
+		CWI550	7251.	14.83	4191.	1243.	419.	30.26
	ROUTED TO							
+		SCP050	7180.	15.00	4188.	1243.	419.	30.26
	ROUTED TO							
		RWI550	7070.	15.25	4177.	1243.	419.	30.26
	HYDROGRAPH AT							
+		WI514	441.	12.33	52.	14.	5.	.35

+	2 COMBINED AT	CWI514	7064.	15.25	4183.	1254.	422.	30.62
+	HYDROGRAPH AT	WI548	339.	12.33	55.	14.	5.	.31
+	ROUTED TO	RWI548	224.	13.25	55.	14.	5.	.31
+	HYDROGRAPH AT	WI546	464.	12.33	128.	41.	14.	.61
+	2 COMBINED AT	CWI546	463.	12.33	180.	55.	18.	.91
+	ROUTED TO	RWI546	440.	13.33	180.	55.	18.	.91
+	HYDROGRAPH AT	WI544	1324.	12.42	335.	105.	35.	1.79
+	2 COMBINED AT	CWI544	1638.	12.50	510.	159.	53.	2.71
+	DIVERSION TO	DO544	1097.	12.50	342.	106.	36.	2.71
+	HYDROGRAPH AT	D544	541.	12.50	168.	52.	18.	2.71
+	ROUTED TO	RWI544	446.	13.33	167.	52.	18.	2.71
+	HYDROGRAPH AT	WI542	618.	12.75	151.	40.	13.	1.17
	2 COMBINED AT	CWI542	886.	13.08	317.	92.	31.	2.07
+	HYDROGRAPH AT	WI540	832.	12.75	238.	69.	23.	1.25
+	ROUTED TO	SSR940	831.	12.83	238.	69.	23.	1.25
+	ROUTED TO	RWI540	781.	13.00	238.	69.	23.	1.25
+	HYDROGRAPH AT	WI538A	553.	12.75	153.	41.	14.	.78
+	2 COMBINED AT	C538A	1278.	12.92	388.	109.	37.	2.02
+	ROUTED TO	R538A	1139.	13.67	386.	109.	37.	2.02
+	HYDROGRAPH AT	WI538	723.	13.17	278.	76.	25.	1.43
+	2 COMBINED AT	CWI538	1726.	13.58	655.	183.	61.	3.45
+	ROUTED TO	RWI538	1643.	14.25	650.	183.	61.	3.45
+	HYDROGRAPH AT	WI536	680.	13.17	291.	82.	27.	1.37
	HYDROGRAPH AT	WI534	415.	12.58	99.	27.	9.	.43
+	ROUTED TO	RWI534	379.	12.75	98.	27.	9.	.43

	HYDROGRAPH AT	WI532	353.	12.33	46.	12.	4.	.32
+	2 COMBINED AT	CWI532	539.	12.67	143.	39.	13.	.76
+	2 COMBINED AT	C530*	1068.	13.00	429.	119.	40.	2.13
+	ROUTED TO	R530*	1003.	13.75	424.	119.	40.	2.13
+	HYDROGRAPH AT	WI530	1618.	12.67	297.	78.	26.	2.38
+	HYDROGRAPH AT	D544	1097.	12.50	342.	106.	36.	2.71
+	ROUTED TO	RD544	993.	13.08	341.	106.	36.	2.71
+	4 COMBINED AT	CWI530	3248.	14.00	1649.	477.	160.	9.77
+	2 COMBINED AT	CAP1*	3739.	14.00	1946.	564.	189.	11.84
+	HYDROGRAPH AT	PI663	329.	12.92	127.	34.	11.	.60
+	ROUTED TO	RPI663	304.	13.75	125.	34.	11.	.60
+	HYDROGRAPH AT	PI657	456.	13.00	189.	51.	17.	.87
+	HYDROGRAPH AT	PI660	339.	13.25	166.	47.	16.	.84
+	3 COMBINED AT	CPI660	986.	13.50	470.	130.	43.	2.31
+	ROUTED TO	RPI660	955.	13.75	466.	130.	43.	2.31
+	HYDROGRAPH AT	PI654	2372.	13.17	841.	221.	74.	4.03
+	2 COMBINED AT	CPI654	3103.	13.33	1290.	348.	116.	6.34
+	DIVERSION TO	DO654	621.	13.33	258.	70.	23.	6.34
+	HYDROGRAPH AT	D654	2483.	13.33	1032.	278.	93.	6.34
+	ROUTED TO	RPI654	2448.	13.58	1029.	278.	93.	6.34
+	HYDROGRAPH AT	PI648	1035.	13.08	348.	91.	30.	1.73
+	HYDROGRAPH AT	PI651	308.	12.75	80.	21.	7.	.46
+	3 COMBINED AT	CPI651	3455.	13.42	1439.	386.	129.	7.26
+	ROUTED TO	RPI651	3384.	13.75	1435.	386.	129.	7.26
	HYDROGRAPH AT							

+	PI645A	912.	13.08	325.	90.	30.	1.63
ROUTED TO	R645A	876.	13.42	324.	90.	30.	1.63
HYDROGRAPH AT +	PI645	1160.	12.58	188.	49.	16.	1.56
HYDROGRAPH AT +	D654	621.	13.33	258.	70.	23.	6.34
ROUTED TO +	RD654	597.	13.83	256.	69.	23.	6.34
4 COMBINED AT +	CPI645	4921.	13.67	2151.	586.	196.	11.72
2 COMBINED AT +	CAP1*	8187.	13.83	3965.	1114.	373.	23.56
HYDROGRAPH AT +	PI689	4688.	13.00	1285.	391.	131.	6.78
HYDROGRAPH AT +	PI688	2507.	12.75	587.	178.	60.	3.20
2 COMBINED AT +	CPI689	6934.	12.92	1857.	565.	189.	9.98
ROUTED TO +	RPI689	6389.	13.33	1852.	564.	189.	9.98
HYDROGRAPH AT +	PI687	4139.	13.08	1199.	359.	120.	7.01
2 COMBINED AT	CPI687	10065.	13.25	2986.	904.	303.	16.99
ROUTED TO +	RPI687	9861.	13.42	2983.	903.	303.	16.99
HYDROGRAPH AT +	PI684	637.	12.58	145.	38.	13.	.74
2 COMBINED AT +	CPI684	10128.	13.42	3114.	938.	315.	17.73
ROUTED TO +	SSR103	9764.	13.58	3114.	938.	315.	17.73
ROUTED TO +	RPI684	9368.	13.92	3109.	937.	315.	17.73
HYDROGRAPH AT +	PI681	598.	12.92	202.	54.	18.	.99
2 COMBINED AT +	CPI681	9687.	13.83	3289.	986.	331.	18.72
ROUTED TO +	RPI681	9000.	14.50	3281.	985.	331.	18.72
HYDROGRAPH AT +	PI678	406.	12.75	115.	32.	11.	.83
2 COMBINED AT +	CPI678	9081.	14.50	3360.	1014.	341.	19.55
DIVERSION TO	DO678	2543.	14.50	941.	284.	95.	19.55
HYDROGRAPH AT +	D678	6538.	14.50	2419.	730.	245.	19.55

+	HYDROGRAPH AT	PI690	315.	12.67	80.	21.	7.	.63
+	2 COMBINED AT	CPI690	6673.	14.50	2514.	757.	254.	14.71
+	ROUTED TO	RPI690	6454.	14.67	2508.	757.	254.	14.71
+	HYDROGRAPH AT	PI675	72.	12.25	9.	2.	1.	.06
+	2 COMBINED AT	CPI675	6454.	14.67	2510.	759.	255.	14.77
+	2 COMBINED AT	CAP1*	12048.	14.50	6184.	1793.	602.	38.33
+	HYDROGRAPH AT	PI672	1172.	12.58	193.	50.	17.	1.51
+	HYDROGRAPH AT	D678	2543.	14.50	941.	284.	95.	19.55
+	ROUTED TO	RD678	2162.	14.92	935.	283.	95.	19.55
+	2 COMBINED AT	CPI672	2266.	14.92	1122.	340.	115.	6.98
+	2 COMBINED AT	CAP1*	13594.	14.58	7137.	2085.	701.	45.31
+	HYDROGRAPH AT	PI693	756.	12.50	111.	29.	10.	.84
	2 COMBINED AT	CAP1*	13594.	14.58	7219.	2109.	709.	46.15
+	HYDROGRAPH AT	PI669	144.	12.58	37.	10.	3.	.29
+	2 COMBINED AT	CAP1*	13603.	14.58	7244.	2115.	711.	46.43
+	HYDROGRAPH AT	PI642	162.	12.25	27.	7.	2.	.24
+	2 COMBINED AT	CAP1*	13603.	14.58	7261.	2120.	713.	46.67
+	HYDROGRAPH AT	PDWEST	4394.	13.25	1157.	353.	118.	7.08
+	2 COMBINED AT	CAP1*	14390.	14.50	8329.	2451.	824.	53.75
+	ROUTED TO	STOR1	6384.	16.08	4735.	2419.	824.	53.75
+	DIVERSION TO	DOCAP*	2722.	16.08	1221.	305.	102.	53.75
+	HYDROGRAPH AT	DCAP*	3663.	16.08	3514.	2114.	722.	53.75
+	DIVERSION TO	DOCP14	362.	16.08	347.	185.	62.	53.75
	HYDROGRAPH AT	DCAP14	3300.	16.08	3167.	1929.	661.	53.75
+	DIVERSION TO	DOCP13	420.	16.08	404.	248.	88.	53.75

	HYDROGRAPH AT						
		DCAP13	2880.	16.08	2764.	1682.	573.	53.75
	DIVERSION TO						
+		DOCP12	410.	16.08	394.	243.	84.	53.75
	HYDROGRAPH AT						
+		DCAP12	2469.	16.08	2370.	1438.	488.	53.75
	DIVERSION TO						
+		DOCP11	424.	16.08	411.	256.	88.	53.75
	HYDROGRAPH AT						
+		DCAP11	2045.	16.08	1959.	1183.	400.	53.75
	DIVERSION TO						
+		DOCP10	420.	16.08	404.	253.	86.	53.75
	HYDROGRAPH AT						
+		DCAP10	1625.	16.08	1556.	930.	314.	53.75
	DIVERSION TO						
+		DOCP09	410.	16.08	394.	243.	83.	53.75
	HYDROGRAPH AT						
+		DCAP09	1214.	16.08	1162.	687.	231.	53.75
	DIVERSION TO						
+		DOCP08	408.	16.08	390.	233.	79.	53.75
	HYDROGRAPH AT						
+		DCAP08	806.	16.08	772.	454.	153.	53.75
	DIVERSION TO						
+		DOCP07	408.	16.08	390.	231.	78.	53.75
	HYDROGRAPH AT						
+		DCAP07	397.	16.08	382.	223.	75.	53.75
	DIVERSION TO						
+		DOCPOT	0.	.00	0.	0.	0.	53.75
	HYDROGRAPH AT						
+		DCAPOT	397.	16.08	382.	223.	75.	53.75
	ROUTED TO						
+		RWI542	397.	16.25	382.	223.	75.	53.75
	HYDROGRAPH AT						
+		WI529	205.	12.33	28.	8.	3.	.17
	2 COMBINED AT						
+		CWI529	407.	16.00	390.	238.	80.	3.53
	DIVERSION TO						
+		DO529	0.	.00	0.	0.	0.	3.53
	HYDROGRAPH AT						
+		D529	407.	16.00	390.	238.	80.	3.53
	ROUTED TO						
+		RWI529	407.	16.25	390.	238.	80.	3.53
	HYDROGRAPH AT						
+		WI516	136.	12.33	19.	5.	2.	.14
	3 COMBINED AT						
+		CWI516	7374.	15.25	4507.	1479.	499.	34.29
	ROUTED TO						
+		RWI516	7199.	15.75	4353.	1478.	499.	34.29
	HYDROGRAPH AT						

+		WI512	1020.	12.42	219.	60.	20.	1.36
	2 COMBINED AT	CWI512	7194.	15.75	4376.	1529.	516.	35.64
	HYDROGRAPH AT							
+		DCAP07	408.	16.08	390.	231.	78.	53.75
	ROUTED TO							
+		RDCP07	407.	16.58	389.	231.	78.	53.75
	HYDROGRAPH AT							
+		WI528	305.	12.50	53.	15.	5.	.36
	HYDROGRAPH AT							
+		D529	0.	.00	0.	0.	0.	3.53
	ROUTED TO							
+		RD529	0.	.00	0.	0.	0.	3.53
	3 COMBINED AT							
+		CWI528	420.	16.33	400.	251.	85.	3.80
	ROUTED TO							
+		RWI528	417.	16.92	398.	251.	85.	3.80
	HYDROGRAPH AT							
+		DCAPOT	0.	.00	0.	0.	0.	53.75
	ROUTED TO							
+		RDCPOT	0.	.00	0.	0.	0.	53.75
	HYDROGRAPH AT							
+		WI527	645.	12.50	103.	28.	9.	.71
	2 COMBINED AT	CWI527	645.	12.50	103.	28.	9.	.71
	DIVERSION TO							
+		DO527	39.	12.50	1.	0.	0.	.71
	HYDROGRAPH AT							
+		D527	606.	12.50	102.	27.	9.	.71
	ROUTED TO							
+		RWI527	501.	12.92	102.	27.	9.	.71
	HYDROGRAPH AT							
+		WI518	466.	12.50	80.	21.	7.	.53
	3 COMBINED AT							
+		CWI518	1014.	12.75	506.	297.	101.	5.00
	2 COMBINED AT							
+		C508*	7495.	15.83	4742.	1801.	609.	40.64
	ROUTED TO							
+		R508*	7402.	16.33	4736.	1800.	609.	40.64
	HYDROGRAPH AT							
+		WI508	411.	12.75	101.	27.	9.	.70
	2 COMBINED AT							
+		CWI508	7402.	16.33	4750.	1822.	616.	41.34
	DIVERSION TO							
+		DO508	1406.	16.33	902.	346.	117.	41.34
	HYDROGRAPH AT							
		D508	5995.	16.33	3847.	1475.	499.	41.34
	HYDROGRAPH AT							
+		WI510A	937.	12.58	151.	39.	13.	1.13

+	ROUTED TO	R510A	553.	13.75	149.	39.	13.	1.13
+	HYDROGRAPH AT	WI510	563.	13.00	179.	47.	16.	1.23
+	3 COMBINED AT	CWI510	6176.	16.25	4065.	1565.	529.	35.84
+	ROUTED TO	RWI510	6035.	16.67	3938.	1565.	529.	35.84
+	HYDROGRAPH AT	WI502	669.	12.83	179.	47.	16.	1.21
+	3 COMBINED AT	CWI502	21379.	16.58	18774.	7288.	2477.	201.44
+	ROUTED TO	RWI502	21344.	16.67	18768.	7288.	2477.	201.44
+	HYDROGRAPH AT	DCAP08	408.	16.08	390.	233.	79.	53.75
+	ROUTED TO	RDCP08	408.	16.33	390.	232.	79.	53.75
+	HYDROGRAPH AT	WI526	32.	12.33	6.	2.	1.	.05
+	2 COMBINED AT	CWI526	418.	16.08	397.	241.	82.	3.49
+	ROUTED TO	RWI526	417.	16.92	396.	241.	82.	3.49
	HYDROGRAPH AT	WI525	1548.	12.58	266.	72.	24.	1.94
+	HYDROGRAPH AT	DCAP09	410.	16.08	394.	243.	83.	53.75
+	ROUTED TO	RDCP09	410.	17.00	393.	243.	83.	53.75
+	HYDROGRAPH AT	D527	39.	12.50	1.	0.	0.	.71
+	ROUTED TO	RD527	4.	13.33	1.	0.	0.	.71
+	4 COMBINED AT	CWI525	1614.	12.58	834.	557.	190.	8.92
+	DIVERSION TO	DO525	101.	12.58	37.	20.	7.	8.92
+	HYDROGRAPH AT	D525	1514.	12.58	797.	538.	183.	8.92
+	ROUTED TO	RWI525	1184.	13.33	781.	537.	183.	8.92
+	HYDROGRAPH AT	WI524	712.	12.58	138.	38.	13.	.95
+	HYDROGRAPH AT	D525	101.	12.58	37.	20.	7.	8.92
	ROUTED TO	RD525	63.	13.58	36.	20.	7.	8.92
+	2 COMBINED AT	CWI524	712.	12.58	166.	57.	19.	1.51

	DIVERSION TO						
		DO524	14.	12.58	1.	0.	0.	1.51
	HYDROGRAPH AT						
+		D524	694.	12.58	165.	56.	19.	1.51
	ROUTED TO						
+		RWI524	577.	13.00	164.	56.	19.	1.51
	HYDROGRAPH AT						
+		PI639	169.	12.67	49.	13.	4.	.34
	HYDROGRAPH AT						
+		D524	14.	12.58	1.	0.	0.	1.51
	ROUTED TO						
+		RD524	3.	12.83	1.	0.	0.	1.51
	2 COMBINED AT						
+		CPI639	173.	12.75	50.	14.	5.	.37
	ROUTED TO						
+		RPI639	149.	13.08	49.	14.	5.	.37
	HYDROGRAPH AT						
+		WI506	961.	12.50	239.	65.	22.	1.58
	4 COMBINED AT						
+		CWI506	2340.	13.17	1122.	661.	226.	12.35
	ROUTED TO						
+		RWI506	2263.	13.42	1116.	661.	226.	12.35
	HYDROGRAPH AT						
+		D508	1406.	16.33	902.	346.	117.	41.34
	ROUTED TO						
+		RD508	1389.	16.58	902.	346.	117.	41.34
	HYDROGRAPH AT						
+		WI500	765.	12.67	154.	40.	13.	1.05
	4 COMBINED AT						
+		CWI500	23146.	16.75	20261.	8191.	2785.	222.69
	ROUTED TO						
+		SSPILL	2908.	26.83	2890.	2650.	1822.	222.69
	ROUTED TO						
+		RWI500	2908.	27.33	2890.	2649.	1822.	222.69
	HYDROGRAPH AT						
+		PI635	622.	12.50	100.	28.	9.	.61
	2 COMBINED AT						
+		CPI635	2908.	27.33	2890.	2650.	1822.	223.30
	ROUTED TO						
+		RPI635	2907.	28.08	2889.	2648.	1822.	223.30
	HYDROGRAPH AT						
+		DCAP11	424.	16.08	411.	256.	88.	53.75
	ROUTED TO						
+		RDCP11	424.	16.33	410.	256.	88.	53.75
	HYDROGRAPH AT						
+		DCAP12	410.	16.08	394.	243.	84.	53.75
	DIVERSION TO						
+		DO618	218.	16.08	209.	129.	45.	53.75
	HYDROGRAPH AT						

+	D618	193.	16.08	185.	114.	40.	53.75
ROUTED TO	RDCP12	193.	16.33	185.	114.	40.	53.75
HYDROGRAPH AT							
+	PI618	323.	12.33	43.	12.	4.	.29
3 COMBINED AT							
+	CPI618	629.	16.17	605.	390.	135.	5.48
ROUTED TO							
+	RPI618	628.	16.75	604.	390.	135.	5.48
HYDROGRAPH AT							
+	DCAP13	420.	16.08	404.	248.	88.	53.75
ROUTED TO							
+	RDCP13	420.	16.67	403.	248.	88.	53.75
HYDROGRAPH AT							
+	PI615	625.	12.33	115.	31.	10.	.84
HYDROGRAPH AT							
+	D618	218.	16.08	209.	129.	45.	53.75
ROUTED TO							
+	RD618	217.	16.42	209.	129.	45.	53.75
3 COMBINED AT							
+	CPI615	701.	12.33	626.	416.	146.	6.21
ROUTED TO							
+	RPI615	653.	16.75	626.	416.	146.	6.21
HYDROGRAPH AT							
	PI612	458.	12.67	96.	26.	9.	.74
3 COMBINED AT							
+	CPI612	1406.	12.67	1232.	826.	288.	12.43
DIVERSION TO							
+	DO612	1055.	12.67	924.	620.	216.	12.43
HYDROGRAPH AT							
+	D612	352.	12.67	308.	207.	72.	12.43
ROUTED TO							
+	RPI612	335.	12.92	308.	207.	72.	12.43
HYDROGRAPH AT							
+	DCAP14	362.	16.08	347.	185.	62.	53.75
ROUTED TO							
+	RDCP14	362.	17.25	346.	185.	62.	53.75
HYDROGRAPH AT							
+	PI609	960.	12.50	262.	71.	24.	1.94
3 COMBINED AT							
+	CPI609	1197.	12.75	773.	464.	159.	8.10
ROUTED TO							
+	RPI609	1181.	12.92	770.	464.	159.	8.10
HYDROGRAPH AT							
+	PI600A	822.	12.25	76.	20.	7.	.52
2 COMBINED AT							
	C600A	1288.	12.58	813.	483.	165.	8.62
DIVERSION TO							
+	DO600A	1288.	12.58	813.	483.	165.	8.62

+	HYDROGRAPH AT	D600A	0.	.00	0.	0.	0.	8.62
+	HYDROGRAPH AT	PI621	645.	12.67	122.	32.	11.	.90
+	HYDROGRAPH AT	D612	1055.	12.67	924.	620.	216.	12.43
+	ROUTED TO	RD612	960.	17.33	924.	620.	216.	12.43
+	2 COMBINED AT	CPI621	1200.	13.25	954.	651.	227.	10.22
+	ROUTED TO	SPI621	1197.	13.33	954.	651.	223.	10.22
+	ROUTED TO	RPI621	1177.	13.42	951.	651.	223.	10.22
+	HYDROGRAPH AT	DCAP10	420.	16.08	404.	253.	86.	53.75
+	ROUTED TO	RDCP10	420.	16.50	404.	252.	86.	53.75
+	HYDROGRAPH AT	PI628	695.	12.33	81.	22.	7.	.57
+	2 COMBINED AT	CPI628	750.	12.33	413.	280.	96.	4.11
+	ROUTED TO	RPI628	507.	13.08	412.	280.	96.	4.11
	HYDROGRAPH AT	PI624A	1630.	12.83	331.	86.	29.	2.81
+	2 COMBINED AT	C624A	2060.	12.83	699.	362.	124.	6.92
+	ROUTED TO	R624A	1528.	13.83	694.	362.	124.	6.92
+	HYDROGRAPH AT	PI636	384.	12.50	70.	20.	7.	.43
+	ROUTED TO	RPI636	377.	12.50	70.	20.	7.	.43
+	HYDROGRAPH AT	PI624	847.	12.42	228.	70.	23.	1.23
+	3 COMBINED AT	CPI624	1837.	13.75	924.	441.	153.	8.57
+	ROUTED TO	SPI624	1826.	13.83	919.	433.	146.	8.57
+	ROUTED TO	RPI624	1743.	14.17	905.	432.	146.	8.57
+	HYDROGRAPH AT	PI633	280.	12.50	50.	13.	4.	.34
+	5 COMBINED AT	CPI633	3906.	24.50	3824.	3159.	2125.	241.94
	ROUTED TO	RPI633	3903.	25.08	3822.	3159.	2124.	241.94
+	HYDROGRAPH AT	PDEAST	8461.	13.25	1984.	519.	173.	16.44

HYDROGRAPH AT	DCAP*	2722.	16.08	1221.	305.	102.	53.75
2 COMBINED AT	CAP2*	8461.	13.25	3138.	855.	285.	39.36
ROUTED TO	STOR2	2738.	14.00	2468.	847.	282.	39.36
DIVERSION TO	DOCP19	957.	14.00	867.	319.	106.	39.36
HYDROGRAPH AT	DCAP19	1781.	14.00	1600.	528.	176.	39.36
DIVERSION TO	DOCP18	314.	14.00	284.	97.	32.	39.36
HYDROGRAPH AT	DCAP18	1467.	14.00	1316.	431.	144.	39.36
DIVERSION TO	DOCP17	304.	14.00	275.	93.	31.	39.36
HYDROGRAPH AT	DCAP17	1163.	14.00	1041.	339.	113.	39.36
DIVERSION TO	DOCP16	913.	14.00	825.	273.	91.	39.36
HYDROGRAPH AT	DCAP16	249.	14.00	217.	66.	22.	39.36
ROUTED TO	RDCP15	248.	14.42	216.	66.	22.	39.36
HYDROGRAPH AT	PI606A	374.	12.50	65.	18.	6.	.46
2 COMBINED AT	C606A	363.	12.50	258.	97.	32.	4.08
DIVERSION TO	DO606A	149.	12.50	106.	40.	13.	4.08
HYDROGRAPH AT	D606A	214.	12.50	152.	57.	19.	4.08
ROUTED TO	R606A	166.	17.92	151.	57.	19.	4.08
HYDROGRAPH AT	PI606	708.	12.42	147.	40.	13.	1.08
2 COMBINED AT	CPI606	701.	12.42	265.	97.	32.	3.49
ROUTED TO	RPI606	578.	12.67	259.	97.	32.	3.49
HYDROGRAPH AT	PI604	312.	12.33	63.	18.	6.	.36
HYDROGRAPH AT	D606A	149.	12.50	106.	40.	13.	4.08
ROUTED TO	RD606A	131.	12.83	105.	40.	13.	4.08
2 COMBINED AT	CPI604	321.	12.67	153.	58.	19.	2.03
ROUTED TO							

+	RPI604	312.	12.92	150.	58.	19.	2.03
HYDROGRAPH AT	PD744	531.	12.67	107.	28.	9.	.80
HYDROGRAPH AT +	D600A	1288.	12.58	813.	483.	165.	8.62
ROUTED TO +	RD600A	1120.	13.33	790.	483.	165.	8.62
HYDROGRAPH AT +	PI603	418.	12.50	74.	20.	7.	.52
5 COMBINED AT +	CPI603	2450.	12.75	1319.	666.	229.	15.46
ROUTED TO +	SPI603	2300.	13.17	1316.	666.	228.	15.46
DIVERSION TO +	DO744	0.	.00	0.	0.	0.	15.46
HYDROGRAPH AT +	D744	2300.	13.17	1316.	666.	228.	15.46
ROUTED TO +	RPI603	2239.	13.42	1300.	666.	228.	15.46
HYDROGRAPH AT +	PI600	731.	12.33	87.	23.	8.	.61
3 COMBINED AT +	CPI600	4434.	24.33	4320.	3612.	2309.	258.01
ROUTED TO	RPI600	4429.	24.83	4316.	3605.	2308.	258.01
HYDROGRAPH AT +	DCAP16	913.	14.00	825.	273.	91.	39.36
ROUTED TO +	RDCP16	907.	14.50	823.	273.	91.	39.36
HYDROGRAPH AT +	DCAP17	304.	14.00	275.	93.	31.	39.36
ROUTED TO +	RDCP17	303.	14.42	274.	93.	31.	39.36
HYDROGRAPH AT +	PD740	798.	12.75	171.	46.	15.	1.28
3 COMBINED AT +	CPD740	1273.	14.33	1199.	444.	148.	18.84
ROUTED TO +	RPD740	1269.	14.67	1199.	444.	148.	18.84
HYDROGRAPH AT +	PD726B	642.	12.67	129.	35.	12.	.93
2 COMBINED AT +	C726B	1298.	13.25	1234.	475.	158.	19.77
ROUTED TO +	R726B	1292.	14.75	1232.	475.	158.	19.77
HYDROGRAPH AT	DCAP18	314.	14.00	284.	97.	32.	39.36
ROUTED TO +	RDCP18	311.	14.58	283.	97.	32.	39.36

+	HYDROGRAPH AT	PD736	269.	13.17	101.	28.	9.	.78
+	2 COMBINED AT	CPD736	451.	14.17	373.	138.	46.	5.27
+	ROUTED TO	RPD736	449.	14.33	372.	138.	46.	5.27
+	HYDROGRAPH AT	DCAP19	957.	14.00	867.	319.	106.	39.36
+	ROUTED TO	RDCP19	955.	14.25	867.	319.	106.	39.36
+	HYDROGRAPH AT	PD760	1161.	12.33	119.	32.	11.	.87
+	ROUTED TO	SCP200	367.	12.75	119.	32.	11.	.87
+	ROUTED TO	RPD760	364.	12.92	119.	32.	11.	.87
+	HYDROGRAPH AT	PD732	461.	12.50	69.	18.	6.	.48
+	3 COMBINED AT	CPD732	1200.	13.83	1009.	395.	132.	15.04
+	ROUTED TO	RPD732	1179.	14.42	1004.	395.	132.	15.04
+	HYDROGRAPH AT	PD726A	457.	13.08	150.	41.	14.	1.10
	3 COMBINED AT	C726A	1812.	14.25	1461.	553.	185.	21.41
+	ROUTED TO	R726A	1805.	14.42	1457.	553.	185.	21.41
+	2 COMBINED AT	C726*	3037.	14.50	2569.	950.	318.	41.19
+	ROUTED TO	R726*	2943.	15.17	2514.	950.	318.	41.19
+	HYDROGRAPH AT	PD726	843.	12.58	181.	48.	16.	1.35
+	HYDROGRAPH AT	PD716	2751.	12.25	273.	73.	24.	1.75
+	3 COMBINED AT	CPD726	2998.	15.08	2543.	1048.	352.	44.29
+	ROUTED TO	SPD726	2997.	15.08	2517.	1048.	352.	44.29
+	DIVERSION TO	DO716	589.	15.08	210.	53.	18.	44.29
+	HYDROGRAPH AT	D716	2408.	15.08	2307.	995.	335.	44.29
+	ROUTED TO	RPD726	2405.	15.42	2304.	995.	335.	44.29
	HYDROGRAPH AT	PD720	668.	12.42	85.	22.	7.	.59
+	HYDROGRAPH AT	D744	0.	.00	0.	0.	0.	15.46

	ROUTED TO	RD744	0.	.00	0.	0.	0.	15.46
	4 COMBINED AT	CPD720	5843.	15.00	5391.	4357.	2569.	293.30
+	ROUTED TO	RPD720	5841.	15.08	5391.	4357.	2569.	293.30
+	HYDROGRAPH AT	D716	589.	15.08	210.	53.	18.	44.29
+	ROUTED TO	RD716	584.	15.25	210.	53.	18.	44.29
+	2 COMBINED AT	C700*	6286.	15.25	5502.	4378.	2573.	302.88
+	ROUTED TO	R700*	6167.	15.92	5482.	4370.	2571.	302.88
+	HYDROGRAPH AT	PD752	236.	12.25	34.	10.	3.	.19
+	HYDROGRAPH AT	PD748	374.	12.25	51.	16.	5.	.28
+	2 COMBINED AT	CPD748	605.	12.25	84.	26.	9.	.47
+	ROUTED TO	SCP220	460.	12.42	84.	26.	9.	.47
+	ROUTED TO	RPD748	440.	12.75	84.	26.	9.	.47
+	HYDROGRAPH AT	PD756	1528.	13.08	510.	156.	52.	3.23
+	ROUTED TO	SCP210	1506.	13.17	510.	156.	52.	3.23
+	ROUTED TO	RPD756	1459.	13.50	509.	156.	52.	3.23
+	2 COMBINED AT	C708*	1563.	13.50	589.	181.	61.	3.70
+	ROUTED TO	R708*	1504.	13.92	587.	180.	61.	3.70
+	HYDROGRAPH AT	PD708	1690.	12.75	360.	97.	33.	2.40
+	HYDROGRAPH AT	PD712A	407.	12.92	120.	34.	11.	.77
+	ROUTED TO	R712A	389.	13.25	120.	34.	11.	.77
+	HYDROGRAPH AT	PD712	755.	12.67	164.	49.	16.	.89
+	4 COMBINED AT	CPD708	2728.	12.92	1201.	354.	119.	7.76
+	ROUTED TO	RPD708	2672.	13.08	1200.	354.	119.	7.76
+	HYDROGRAPH AT	PD704	337.	12.42	46.	12.	4.	.36
	HYDROGRAPH AT							

+	AF800	736.	12.42	110.	28.	9.	.72
3 COMBINED AT	CPD704	3060.	12.92	1347.	392.	132.	8.84
ROUTED TO +	SPD704	2969.	13.17	1347.	392.	132.	8.84
DIVERSION TO +	DO800	0.	.00	0.	0.	0.	8.84
HYDROGRAPH AT +	D800	2969.	13.17	1347.	392.	132.	8.84
ROUTED TO +	RPD704	2930.	13.42	1346.	392.	132.	8.84
HYDROGRAPH AT +	PD700	1491.	12.50	201.	52.	17.	1.40
3 COMBINED AT +	CPD700	7038.	15.50	6063.	4634.	2672.	313.12
HYDROGRAPH AT +	D800	0.	.00	0.	0.	0.	8.84
ROUTED TO +	RD800	0.	.00	0.	0.	0.	8.84
HYDROGRAPH AT +	AF802	425.	12.42	57.	15.	5.	.39
3 COMBINED AT +	C802*	7038.	15.50	6066.	4638.	2675.	313.51
ROUTED TO	R810*	7022.	15.92	6064.	4636.	2673.	313.51
HYDROGRAPH AT +	AF803	1811.	12.50	483.	142.	48.	2.84
ROUTED TO +	RAF803	1744.	12.75	482.	142.	48.	2.84
HYDROGRAPH AT +	AF805	572.	12.58	91.	24.	8.	.63
ROUTED TO +	RAF805	506.	12.92	91.	23.	8.	.63
HYDROGRAPH AT +	AF807	1553.	12.25	151.	38.	13.	1.02
3 COMBINED AT +	CAF807	2508.	12.67	716.	201.	67.	4.49
ROUTED TO +	RAF807	2496.	12.75	716.	201.	67.	4.49
HYDROGRAPH AT +	AF810	1393.	12.75	293.	80.	27.	2.12
3 COMBINED AT +	CAF810	7163.	15.83	6313.	4763.	2732.	320.12
ROUTED TO +	RAF810	7154.	16.08	6309.	4761.	2730.	320.12
HYDROGRAPH AT	AF820	411.	12.67	88.	23.	8.	.70
2 COMBINED AT +	CAF820	7160.	16.08	6329.	4769.	2734.	320.81

+	HYDROGRAPH AT	AF830	244.	12.50	48.	12.	4.	.27
+	HYDROGRAPH AT	AF854	583.	12.08	71.	22.	7.	.34
+	ROUTED TO	RAF854	527.	12.17	71.	22.	7.	.34
+	HYDROGRAPH AT	AF852	340.	12.08	38.	12.	4.	.17
+	2 COMBINED AT	CAF852	812.	12.17	108.	34.	11.	.51
+	ROUTED TO	RAF852	783.	12.17	108.	34.	11.	.51
+	HYDROGRAPH AT	AF850	405.	12.08	46.	15.	5.	.22
+	2 COMBINED AT	CAF850	1140.	12.17	152.	48.	16.	.72
+	HYDROGRAPH AT	AF864	79.	12.25	20.	7.	2.	.09
+	ROUTED TO	RAF864	50.	12.75	20.	7.	2.	.09
+	HYDROGRAPH AT	AF862	365.	12.00	29.	9.	3.	.18
+	2 COMBINED AT	CAF862	373.	12.00	48.	15.	5.	.26
+	ROUTED TO	RAF862	294.	12.08	48.	15.	5.	.26
+	HYDROGRAPH AT	AF866	609.	12.17	100.	31.	10.	.45
+	ROUTED TO	RAF866	406.	12.50	99.	31.	10.	.45
+	HYDROGRAPH AT	AF860	319.	12.25	66.	20.	7.	.36
+	3 COMBINED AT	CAF860	860.	12.25	209.	66.	22.	1.08
+	HYDROGRAPH AT	SV258	669.	12.42	115.	30.	10.	.74
+	DIVERSION TO	DO258	328.	12.42	56.	15.	5.	.74
+	HYDROGRAPH AT	D258	341.	12.42	59.	16.	5.	.74
+	ROUTED TO	RSV258	313.	12.58	59.	16.	5.	.74
+	HYDROGRAPH AT	SV256	68.	12.17	7.	2.	1.	.06
+	2 COMBINED AT	CSV256	340.	12.58	66.	17.	6.	.44

*** NORMAL END OF HEC-1 ***

D.6.2. 100-yr, 6-hr Existing Conditions Model Output

Wittmann ADMSU Addendum
100-year 6-hour Existing Conditions

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN   1998               *
*           VERSION 4.1                *
*                                      *
* RUN DATE   04MAY05  TIME  12:56:47   *
*                                      *
****************************************
```

```
****************************************
*                                      *
*   U.S. ARMY CORPS OF ENGINEERS       *
*   HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET            *
*      DAVIS, CALIFORNIA 95616         *
*         (916) 756-1104               *
*                                      *
****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
1                                   HEC-1 INPUT                                                    PAGE  1

  LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

    1           ID   ******************************************************************************
    2           ID   **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
    3           ID   **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
    4           ID   ******************************************************************************
    5           ID   **                                                                            **
    6           ID   **  ADDENDUM TO THE WITTMANN AREA DRAINAGE MASTER STUDY UPDATE HYDROLOGY      **
    7           ID   **                                                                            **
    8           ID   ******************************************************************************
    9           ID   **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
   10           ID   **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
   11           ID   ******************************************************************************
   12           ID   **                                                                            **
   13           ID   ** THE FOLLOWING CHANGES HAVE BEEN MADE TO THE WITTMANN HYDROLOGY MODELS      **
   14           ID   ** DATED OCTOBER 2004:                                                        **
   15           ID   **                                                                            **
   16           ID   **     -Diversion added after CTW480                                          **
   17           ID   **          -Main flow (5%) to CTW478                                         **
   18           ID   **          -Diverted flow (95%) to CWI584                                    **
   19           ID   **          -Added concentration point CWI584 combining RD480 and WI584       **
   20           ID   **          -Hard coding was added to CTW478                                  **
   21           ID   **          -Route added after D480 (Diversion Recovery)                      **
   22           ID   **          -Route RWI584 was adjusted                                        **
   23           ID   **          -Storage Route SCP050 was adjusted                                **
   24           ID   **          -Route R508* was adjusted                                         **
   25           ID   **          -Hard coding for CWI510 was adjusted                              **
   26           ID   **                                                                            **
   27           ID   **     -Diversion D618 was moved from after CPI618 to before RDCP12            **
   28           ID   **          -Updated route RD618 information                                  **
   29           ID   **          -Hard coding on CPI618 was adjusted                               **
   30           ID   **          -Hard coding on CPI615 was adjusted                               **
   31           ID   **                                                                            **

   32           ID   **     -Route RPI639 changed from following US60 to CPI636 to route           **
   33           ID   **      through US60/RR structures and combine with CWI506                    **
   34           ID   **          -Cards PI639, D524, RD524, CPI639 and RPI639 were changed from    **
   35           ID   **           following R624A to follow RWI524                                 **
   36           ID   **          -CPI636 was removed-no longer needed to combine PI636 & RPI639    **
   37           ID   **          -RPI639 information was changed to reflect new route               **
   38           ID   **          -CWI506 changed from combining 3 to combine 4:                    **
   39           ID   **           RWI525, RWI524, RPI639 & WI506                                   **
   40           ID   **          -Hard coding on CWI506 was adjusted                               **
   41           ID   **          -Hard Coding on CWI500 was adjusted                               **
   42           ID   **                                                                            **
```

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 43          ID   ******************************************************************************
 44          ID   **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
 45          ID   **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
 46          ID   ******************************************************************************
 47          ID
 48          ID
 49          ID
 50          ID   ******************************************************************************
 51          ID   ******************************************************************************
 52          ID   **                                                                          **
 53          ID   **    WITTMANN AREA DRAINAGE MASTER STUDY UPDATE-HYDROLOGY MODEL 2004       **
 54          ID   **                                                                          **
 55          ID   ******************************************************************************
1                                          HEC-1 INPUT
PAGE  2

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 56          ID   ******************************************************************************
 57          ID
 58          ID   PROJECT:                  Wittmann ADMS Update
 59          ID   CLIENT:                   Flood Control District of Maricopa County
 60          ID   PREPARED BY:              Entellus, Inc.
 61          ID   PROJECT No:               FCD 2002C029                Entellus 310.032
 62          ID   FILE NAME: WTEC6-addendum.hc1          CREATED DATE: JUL 01, 2004
 63          ID                                         MODIFIED DATE: MAY 04, 2005
 64          ID
 65          ID   STORM:
 66          ID                        100-year 6-hour Storm
 67          ID
 68          ID   DEVELOPMENT CONDITIONS:
 69          ID                        Existing Conditions
 70          ID
 71          ID   MODELING ASSUMPTIONS:
 72          ID                        It was assumed that the US60 did not have adequate
 73          ID                        storage to cause any significant attenuation.
 74          ID
 75          ID                        The assumption was made that the CAP Canal embankment
 76          ID                        would not be breached under a large flood event.
 77          ID
 78          ID                        The assumption was made that the Beardsley Canal would
 79          ID                        not fail under a large storm event (Per District
 80          ID                        Instruction).  In addition, the berm north of the
 81          ID                        Beardsley canal and east of US60 was assumed to fail
 82          ID                        (per district Instruction).
 83          ID
 84          ID                        For both the CAP and Beardsley Canals, once the berm
 85          ID                        elevation was reached weir flow was assumed.  It was
 86          ID                        also assumed that any weir flow over the canal that
 87          ID                        might enter the canal and be diverted out of the study
 88          ID                        area was insignificant, and thus was ignored.  In other
 89          ID                        words all weir flow over the canal embankment reaches
 90          ID                        the downstream concentration point.
 91          ID
 92          ID                        Typical X-sects were developed, and it was assumed
 93          ID                        that a typical x-sect could adequately represent
 94          ID                        various reaches.
 95          ID
 96          ID                        Time-Area Relations were used base on the District's
 97          ID                        Hydrology Manual criteria.  Two Time-Area Relation
 98          ID                        Curves were utilized:
 99          ID                                -Urban
100          ID                                -Natural
101          ID                        The Time-Area Relation Curves were taken directly
102          ID                        from the manual
103          ID
104          ID   MODELING METHODS:
105          ID                        This model utilizes QI cards to input the Padelford
106          ID                        hydrographs from the 100-year 6-hour existing
107          ID                        conditions model developed by A-N West Inc. for the
108          ID                        Padelford Wash Floodplain Delineation Study.  The
109          ID                        hydrograph was altered from its original form
110          ID                        (2-minute interval to 5-minute interval) through
```

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1                                                    HEC-1 INPUT
PAGE  3

  LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

   111          ID                        simple interpolation.
   112          ID
   113          ID                        Clark Unit Hydrographs were used for all subbasins
   114          ID                        except the two subbasins directly upstream of the
   115          ID                        Bonita Dam (PD726B and PD740 use S-graphs).  The UC
   116          ID                        parameters were calculated using the WMS7.0 software.
   117          ID
   118          ID                        For Basins PD726B and PD740 S-Graphs were utilized per
   119          ID                        the request of the FCDMC.  Limited details regarding
   120          ID                        the calculations of the S-graphs can be found in the
   121          ID                        model by the basin KK card.  For full details of the
   122          ID                        S-graph calculations refer to the Appendix.
   123          ID
   124          ID                        Normal Depth routing was used for all routing reaches.
   125          ID
   126          ID                        Hard coding was used to account for the percentage of
   127          ID                        area associated with a diversion.  Because of the use
   128          ID                        of JD cards and aereal reduction, hard coding was
   129          ID                        necessary to properly account for area.  For a given
   130          ID                        diversion a percentage of the flow is routed to two
   131          ID                        different locations.  The same percentage of area
   132          ID                        follows that diverted flow.  In addition the area
   133          ID                        downstream of the main path is reduced or increased and
   134          ID                        is hard coded to account for the loss or gain of area.
   135          ID                        Hard coding was performed based on the 6-hour existing
   136          ID                        conditions model.
   137          ID
   138          ID                        Stage-storage was developed for all the structures
   139          ID                        along the CAP Canal, as well as along the Beardsley
   140          ID                        Canal.  In addition several stage-storage locations
   141          ID                        were developed for areas with significant storage
   142          ID                        along the SR74.  No storage was modeled along the US60
   143          ID                        and railroad, but the culverts were analyzed for
   144          ID                        diversion potential.  Diversions were placed in the
   145          ID                        model where deemed appropriate.  See appendix for
   146          ID                        details.
   147          ID
   148          ID                        FLO-2D was utilized to calculate the split flows at
   149          ID                        concentration points CIW351. CIW357, CIW363 and CWI576.
   150          ID                        See appendix for modeling details.
   151          ID
   152          ID   ***************************************************************************
   153          ID   ***************************************************************************
   154          ID
                *DIAGRAM
   155          IT       5              0    1500
   156          IO       5
   157          IN      15              0
   158          JD    3.40    0.01
                * 6-hour distribution
   159          PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
   160          PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
   161          PC   0.962   0.972   0.983   0.991   1.000
                *
   162          JD   3.378    0.50
1                                                    HEC-1 INPUT
PAGE  4

  LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

   163          JD   3.314    2.80
   164          PC   0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.067   0.076
   165          PC   0.087   0.100   0.120   0.163   0.252   0.451   0.694   0.837   0.900   0.938
   166          PC   0.950   0.963   0.975   0.988   1.000
                *
   167          JD   3.135   16.00
   168          PC   0.000   0.009   0.020   0.030   0.048   0.063   0.076   0.090   0.105   0.119
   169          PC   0.135   0.152   0.175   0.222   0.304   0.472   0.670   0.796   0.868   0.912
   170          PC   0.946   0.960   0.973   0.987   1.000
```

```
*
JD   2.761   90.00
PC   0.000   0.021   0.035   0.051   0.071   0.087   0.105   0.125   0.143   0.160
PC   0.179   0.201   0.232   0.281   0.364   0.500   0.658   0.773   0.841   0.888
PC   0.927   0.945   0.964   0.982   1.000
*
JD   1.938   500.00
PC   0.000   0.024   0.043   0.059   0.078   0.098   0.119   0.141   0.162   0.186
PC   0.212   0.239   0.271   0.321   0.408   0.515   0.627   0.735   0.814   0.864
PC   0.907   0.930   0.954   0.977   1.000
*
*
*
*
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
* ************************************************************************** *
* ************ BEGINNING OF WEST PORTION OF DETAILED MODEL ******************* *
* ************************************************************************** *
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
```

```
                    * Combines TW480, RTW482 and RTW484

2595                KK  CTW480
2596                KO       0       0     0.0       0      22
2597                HC       3
                    *
                    *
                    * Diversion Out
                    * Flow Split Diversion: Main path to TW478, Diversion to WI584
                    * 95% of flow is diverted to WI584

2598                KK    D480
2599                KO       0       0     0.0       0      22
2600                DT   DO480
2601                DI       0   10000
2602                DQ       0    9500
                    *
                    *
                    * ROUTE UPDATED 4/14/04

2603                KK  RTW480
2604                KO       0       0     0.0       0      22
2605                RS       2    FLOW     0.0     0.0
2606                RC    0.04    0.04    0.04    4817  0.0083
                    * TSR482
2607                RX       0     102     478     535     709     892    1441    1649
2608                RY    1610    1608    1608    1606    1606    1608    1608    1610
                    *
                    *
1                                                HEC-1 INPUT
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LINE                ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


2609                KK   TW478
2610                KO       0       0     0.0       1      22
2611                BA  0.2625
2612                LG   0.329   0.193   6.512   0.151   5.664
2613                UC   0.458   0.351
                    * Urban Time-Area Relation
2614                UA       0       5      16      30      65      77      84      90      94      97
2615                UA     100
                    *
                    *
                    * Combines TW478 and RTW480

2616                KK  CTW478
2617                KO       0       0     0.0       0      22
                    * Hard Coded
2618                HC       2    0.85
```

```
                * Diversion Recovery: Flow split from CTW480

2940            KK    D480
2941            KO       0       0     0.0       0      22
2942            DR   DO480
                *
                *
                * ROUTE UPDATED 05/04/2005

2943            KK   RD480
2944            KO       0       0     0.0       0      22
2945            RS       2    FLOW     0.0     0.0
2946            RC    0.04    0.04    0.04    5985  0.0065
                * TSR482
2947            RX       0     102     478     535     709     892    1441    1649
2948            RY    1610    1608    1608    1606    1606    1608    1608    1610
                *
                *
                * COMBINES WI584 ANDF RD480

2949            KK  CWI584
2950            KO       0       0     0.0       0      22
2951            HC       2   12.45
                *
                *
                * ROUTE UPDATED 05/04/2005

2952            KK  RWI584
2953            KO       0       0     0.0       0      22
2954            RS       2    FLOW     0.0     0.0
2955            RC    0.04    0.04    0.04    3933   0.001
                * WITS70
2956            RX       0     450     700    1284    1435    1499    1745    2500
2957            RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
                *
                *

2958            KK   WI550
2959            KO       0       0     0.0       1      22
2960            BA  0.1425
2961            LG   0.271    0.23     4.3    0.41  20.079
2962            UC   0.308   0.220
                * Natural Time-Area Relation
2963            UA       0       3       5       8      12      20      43      75      90      96
2964            UA     100
                *
                *
                * COMBINES WI550, RWI552 AND RWI584

2965            KK  CWI550
2966            KO       0       0     0.0       0      22
2967            HC       3
                *
                * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE CAP050

2968            KK  SCP050
                * Adjusted slightly  ordinate 10998/1554 was changed to 12000/1554
2969            KO       0       0     0.0       0      22
2970            RS       1    STOR       0
2971            SQ       0     209    1075    2314    3833    4684   12000
2972            SE    1545    1546    1548    1550    1552    1553    1554
2973            SA       0      .1      .7    11.5    35.3    54.1
2974            SE    1545    1546    1548    1550    1552    1553
```

```
                 * Combines CWI518 and CWI512

3665             KK   C508*
3666             KO       0       0     0.0       0      22
3667             HC       2
                 *
                 *
                 * ROUTE UPDATED 05/04/2005

3668             KK   R508*
3669             KO       0       0     0.0       0      22
3670             RS       7    FLOW     0.0     0.0
3671             RC   0.043   0.035   0.043   12366  0.0053
                 * WITS130 modified
3672             RX       0     400     456     575     620     650     660     682
3673             RY    1398    1394  1393.5  1392.5    1392  1392.5    1395    1398
                 *
                 *

3674             KK   WI508
3675             KO       0       0     0.0       1      22
3676             BA  0.6991
3677             LG   0.336   0.252   5.116   0.271    6.72
3678             UC   0.946   0.856
                 * Natural Time-Area Relation
3679             UA       0       3       5       8      12      20      43      75      90      96
3680             UA     100
                 *
                 *
                 * COMBINES WI508 AND R508*

3681             KK  CWI508
3682             KO       0       0     0.0       0      22
3683             HC       2
                 *
                 * Diversion Out: Flow split FS10
                 * Flow Split Diversion: Main path to CWI510, Diversion to CWI500
                 * 19% of flow is diverted to CWI500

3684             KK    D508
3685             KO       0       0     0.0       0      22
3686             DT   DO508
3687             DI       0   10000
3688             DQ       0    1900
                 *
                 *

3689             KK  WI510A
3690             KO       0       0     0.0       1      22
3691             BA  1.1293
3692             LG   0.337    0.26   4.622   0.338   5.191
3693             UC   0.783   0.500
                 * Natural Time-Area Relation
3694             UA       0       3       5       8      12      20      43      75      90      96
3695             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
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LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3696             KK   R510A
3697             KO       0       0     0.0       0      22
3698             RS       8    FLOW     0.0     0.0
3699             RC    0.04    0.04    0.04   17257  0.0051
                 * WITS70
3700             RX       0     450     700    1284    1435    1499    1745    2500
3701             RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
                 *
                 *
```

```
3702          KK   WI510
3703          KO       0       0     0.0       1      22
3704          BA  1.2273
3705          LG   0.339   0.274   5.732   0.204   5.364
3706          UC   1.258   1.228
              * Natural Time-Area Relation
3707          UA       0       3       5       8      12      20      43      75      90      96
3708          UA     100
              *
              *
              * COMBINES CWI508, WI510 AND R510A

3709          KK  CWI510
3710          KO       0       0     0.0       0      22
              * Hard Coded
3711          HC       3   36.72
              *
              *
              * ROUTE UPDATED 4/14/04

3712          KK  RWI510
3713          KO       0       0     0.0       0      22
3714          RS       2    FLOW     0.0     0.0
3715          RC    0.04    0.04    0.04    6492  0.0048
              * WITS70
3716          RX       0     450     700    1284    1435    1499    1745    2500
3717          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
```

```
                 * Combines RD525 and WI524

3814             KK  CWI524
3815             KO       0       0     0.0       0      22
                 * Hard Coded
3816             HC       2    1.60
                 *
                 *
                 * Railroad Diversion: Main path to CWI506, Diversion to CPI639
                 * From Structure RR650, See Appendix D.5 for analysis

3817             KK    D524
3818             KO       0       0     0.0       0      22
3819             DT   DO524
3820             DI       0     595     906    1295    1748
3821             DQ       0       0      38     119     230
                 *
                 *
                 * ROUTE UPDATED 4/14/04

3822             KK  RWI524
3823             KO       0       0     0.0       0      22
3824             RS       2    FLOW     0.0     0.0
3825             RC   0.043   0.035   0.043    4526  0.0062
                 * WITS130
3826             RX       0     400     456     575     620     650     660     682
3827             RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                 *
                 *

3828             KK   PI639
3829             KO       0       0     0.0       1      22
3830             BA  0.3431
3831             LG   0.335    0.25   4.598   0.341   9.561
3832             UC   0.854   1.047
                 * Natural Time-Area Relation
3833             UA       0       3       5       8      12      20      43      75      90      96
3834             UA     100
                 *
                 *
                 * Railroad Diversion Recovery: Outflow from structure RR650

3835             KK    D524
3836             KO       0       0     0.0       0      22
3837             DR   DO524
                 *
                 *
                 *
                 * ROUTE UPDATED 4/14/4

3838             KK   RD524
3839             KO       0       0     0.0       0      22
3840             RS       1    FLOW     0.0     0.0
3841             RC   0.043   0.035   0.043    2235  0.0027
                 * WITS130
3842             RX       0     400     456     575     620     650     660     682
3843             RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                 *
                 *
                 * Combines RD524 and PI639

3844             KK  CPI639
3845             KO       0       0     0.0       0      22
                 * Hard Coded
3846             HC       2    0.43
                 *
                 * ROUTE UPDATED 05/04/2005

3847             KK  RPI639
3848             KO       0       0     0.0       0      22
3849             RS       2    FLOW     0.0     0.0
3850             RC   0.043   0.035   0.043    2635  0.0061
                 * WITS130
3851             RX       0     400     456     575     620     650     660     682
```

```
3852          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *

3853          KK   WI506
3854          KO       0       0     0.0       1      22
3855          BA  1.5757
3856          LG   0.326    0.25   5.331   0.254  10.467
3857          UC   1.054   0.758
              * Urban Time-Area Relation
3858          UA       0       5      16      30      65      77      84      90      94      97
3859          UA     100
              *
              *
              * COMBINES WI506, RWI525 AND RW524

3860          KK  CWI506
3861          KO       0       0     0.0       0      22
              * Hard Coded
3862          HC       4   13.10
              *
              *
              * ROUTE UPDATED 4/14/04

3863          KK  RWI506
3864          KO       0       0     0.0       0      22
3865          RS       3    FLOW     0.0     0.0
3866          RC    0.04    0.04    0.04    5235  0.0042
              * WITS70
3867          RX       0     450     700    1284    1435    1499    1745    2500
1                                            HEC-1 INPUT
PAGE136

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3868          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *
              * Diversion Recovery: Flow split FS10

3869          KK    D508
3870          KO       0       0     0.0       0      22
3871          DR   DO508
              *
              *
              * ROUTE UPDATED 4/14/4

3872          KK   RD508
3873          KO       0       0     0.0       0      22
3874          RS       2    FLOW     0.0     0.0
3875          RC    0.04    0.04    0.04    5200  0.0065
              * WITS70
3876          RX       0     450     700    1284    1435    1499    1745    2500
3877          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *

3878          KK   WI500
3879          KO       0       0     0.0       1      22
3880          BA  1.0487
3881          LG   0.349    0.25   5.521   0.224   5.124
3882          UC   0.933   0.659
              * Natural Time-Area Relation
3883          UA       0       3       5       8      12      20      43      75      90      96
3884          UA     100
              *
              *
              * COMBINES WI500, RD508, RWI506 AND RWI502

3885          KK  CWI500
3886          KO       0       0     0.0       0      22
              * Hard Coded
3887          HC       4  224.56
              *
```

```
                 *
                 * STORAGE AT MCMICKEN DAM SPILLWAY
                 *
                 *

3888             KK  SSPILL
3889             KM   MCMICKEN DAM OUTLET AND SPILLWAY RATING CURVES USED HERE
3890             RS       1    STOR       0       0
3891             SV       0    1370    5505   17501   20816   25623   30850   36661   38754   39849
3892             SQ       0     675     810    4080    4325   21150   47400   81650   93160   99300
3893             SE    1335    1340    1345  1352.5 1353.65 1355.65 1357.65 1359.65 1360.35  1360.7
3894             ST  1360.7   12775    3.05     1.5
                 *
                 *
                 * ROUTE UPDATED 4/14/04
1                                                HEC-1 INPUT
PAGE137

LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3895             KK  RWI500
3896             KO       0       0     0.0       0      22
3897             RS       3    FLOW     0.0     0.0
3898             RC   0.045   0.035   0.045    5659   0.001
                 * McMicken Dam Channel
3899             RX       0      46     101     121     171     181    1421    3621
3900             RY      25      14       4       0       0       4      14      25
                 *
                 *

3901             KK   PI635
3902             KO       0       0     0.0       1      22
3903             BA  0.6106
3904             LG    0.29    0.27   5.391   0.237  15.959
3905             UC   0.638   0.430
                 * Natural Time-Area Relation
3906             UA       0       3       5       8      12      20      43      75      90      96
3907             UA     100
                 *
                 *
                 * COMBINES PI635 AND RWI500

3908             KK  CPI635
3909             KO       0       0     0.0       0      22
3910             HC       2
                 *
                 * ROUTE UPDATED 4/14/04

3911             KK  RPI635
3912             KO       0       0     0.0       0      22
3913             RS       6    FLOW     0.0     0.0
3914             RC   0.045   0.035   0.045    7557   0.001
                 * McMicken Dam Channel
3915             RX       0      46     101     121     171     181    1421    3621
3916             RY      25      14       4       0       0       4      14      25
                 *
                 *
                 *
                 * CAP Diversion Recovery: Outflow from structure CAP110

3917             KK  DCAP11
3918             KO       0       0     0.0       0      22
3919             DR  DOCP11
                 *
                 *
                 * ROUTE UPDATED 4/14/4

3920             KK  RDCP11
3921             KO       0       0     0.0       0      22
3922             RS       5    FLOW     0.0     0.0
3923             RC   0.043   0.035   0.043    6377  0.0094
                 * PITS10_2
3924             RX       0      89     103     136     185     206     261     280
```

```
3925          RY    1612  1610.5    1610  1608.5    1610    1611  1611.8    1612
              *
              * CAP Diversion Recovery: Outflow from structure CAP120
                                                HEC-1 INPUT
PAGE138

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3926          KK  DCAP12
3927          KO       0       0     0.0       0      22
3928          DR  DOCP12
              *
              *
              * Diversion Out: Flow split FS11
              * Flow Split Diversion: Main path to CPI618, Diversion to CPI615
              * 53% of flow is diverted to CPI615

3929          KK    D618
3930          KO       0       0     0.0       0      22
3931          DT   DO618
3932          DI       0   10000
3933          DQ       0    5300
              *
              *
              * ROUTE UPDATED 4/14/4

3934          KK  RDCP12
3935          KO       0       0     0.0       0      22
3936          RS       2    FLOW     0.0     0.0
3937          RC   0.043   0.035   0.043    6159  0.0094
              * PITS30
3938          RX       0      49     199     206     222     231     299     375
3939          RY    1532    1532    1530    1528    1528    1530    1532    1532
              *
              *

3940          KK   PI618
3941          KO       0       0     0.0       1      22
3942          BA  0.2886
3943          LG   0.281   0.235   4.623   0.332    9.32
3944          UC   0.463   0.374
              * Natural Time-Area Relation
3945          UA       0       3       5       8      12      20      43      75      90      96
3946          UA     100
              *
              *
              * Combines PI618, RDCP12 and RDCP11

3947          KK  CPI618
3948          KO       0       0     0.0       0      22
              * Hard Coded
3949          HC       3    6.46
              *
              *
              *
              *
              * ROUTE UPDATED 4/14/04
1                                               HEC-1 INPUT
PAGE139

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3950          KK  RPI618
3951          KO       0       0     0.0       0      22
3952          RS       5    FLOW     0.0     0.0
3953          RC   0.043   0.035   0.043   10443  0.0075
              * PITS20
3954          RX       0      50      84      87     123     125     156     285
3955          RY    1454    1453    1452    1450    1450    1452    1452    1454
              *
              *
```

```
                 * CAP Diversion Recovery: Outflow from structure CAP130

3956             KK  DCAP13
3957             KO       0       0     0.0       0      22
3958             DR  DOCP13
                 *
                 *
                 * ROUTE UPDATED 4/14/4

3959             KK  RDCP13
3960             KO       0       0     0.0       0      22
3961             RS       6    FLOW     0.0     0.0
3962             RC   0.043   0.035   0.043   11034  0.0089
                 * PITS30
3963             RX       0      49     199     206     222     231     299     375
3964             RY    1532    1532    1530    1528    1528    1530    1532    1532
                 *

                 *

3965             KK   PI615
3966             KO       0       0     0.0       1      22
3967             BA  0.8419
3968             LG   0.299   0.243   4.318   0.409   8.997
3969             UC   0.725   0.532
                 * Urban Time-Area Relation
3970             UA       0       5      16      30      65      77      84      90      94      97
3971             UA     100
                 *
                 *
                 * Diversion Recovery: Flow split FS11

3972             KK    D618
3973             KO       0       0     0.0       0      22

3974             DR   DO618
                 *
                 *
                 * ROUTE UPDATED 05/04/2005

3975             KK   RD618
3976             KO       0       0     0.0       0      22
3977             RS       5    FLOW     0.0     0.0
3978             RC   0.043   0.035   0.043    9630  0.0091
                 * PITS20
3979             RX       0      50      84      87     123     125     156     285
3980             RY    1454    1453    1452    1450    1450    1452    1452    1454
                 *
                 *
                 *
                 * Combines RD618, PI615 and RDCP13
1                                                HEC-1 INPUT
PAGE140

LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3981             KK  CPI615
3982             KO       0       0     0.0       0      22
                 * Hard Coded
3983             HC       3    7.20
                 *
                 *
                 * ROUTE UPDATED 4/14/04

3984             KK  RPI615
3985             KO       0       0     0.0       0      22
3986             RS       2    FLOW     0.0     0.0
3987             RC   0.043   0.035   0.043    5109  0.0079
                 * PITS20
3988             RX       0      50      84      87     123     125     156     285
3989             RY    1454    1453    1452    1450    1450    1452    1452    1454
```

```
                    *                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

 2574          .           .           .      CTW482............
               .           .           .           .
               .           .           .           .
 2579          .           .           .           .-------->   DO482
 2577          .           .           .        D482
               .           .           .           V
               .           .           .           V
 2582          .           .           .      RTW482
               .           .           .           .
               .           .           .           .
 2588          .           .           .           .       TW480
               .           .           .           .           .
               .           .           .           .           .
 2595          .           .      CTW480........................
               .           .           .
               .           .           .
 2600          .           .           .-------->   DO480
 2598          .           .        D480
               .           .           V
               .           .           V
 2603          .           .      RTW480
               .           .           .
               .           .           .
 2609          .           .           .       TW478
               .           .           .           .
               .           .           .           .
 2616          .           .      CTW478............
               .           .           V
               .           .           V
 2619          .           .      RTW478
               .           .           .
               .           .           .
 2625          .      CTW430............
```

```
2933          .           .       WI584
              .           .           .
              .           .           .
2942          .           .           .           .<-------   DO480
2940          .           .           .        D480
              .           .           .           V
              .           .           .           V
2943          .           .           .       RD480
              .           .           .           .
              .           .           .           .
2949          .           .      CWI584............
              .           .           V
              .           .           V
2952          .           .      RWI584
              .           .           .
              .           .           .
2958          .           .           .       WI550
              .           .           .           .
              .           .           .           .
2965          .      CWI550........................
              .           V
              .           V
2968          .      SCP050
              .           V
              .           V
2975          .      RWI550
              .           .
              .           .
2981          .           .       WI514
              .           .           .
              .           .           .
2988          .      CWI514............
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3798          .           .       WI524
              .           .           .
              .           .           .
3807          .           .           .           .<-------   DO525
3805          .           .           .        D525
              .           .           .           V
              .           .           .           V
3808          .           .           .       RD525
              .           .           .           .
              .           .           .           .
3814          .           .      CWI524............
              .           .           .
              .           .           .
3819          .           .           .------->   DO524
3817          .           .        D524
              .           .           V
              .           .           V
3822          .           .      RWI524
              .           .           .
              .           .           .
3828          .           .           .       PI639
              .           .           .           .
              .           .           .           .
3837          .           .           .           .           .<-------   DO524
3835          .           .           .           .        D524
              .           .           .           .           V
              .           .           .           .           V
3838          .           .           .           .       RD524
              .           .           .           .           .
              .           .           .           .           .
3844          .           .           .      CPI639............
              .           .           .           V
              .           .           .           V
3847          .           .           .      RPI639
              .           .           .           .
              .           .           .           .
3853          .           .           .           .       WI506
              .           .           .           .           .
              .           .           .           .           .
3860          .      CWI506.................................
              .           V
              .           V
3863          .      RWI506
              .           .
              .           .
3871          .           .           .<-------   DO508
3869          .           .        D508
              .           .           V
              .           .           V
3872          .           .       RD508
              .           .           .
              .           .           .
3878          .           .           .       WI500
              .           .           .           .
              .           .           .           .
3885     CWI500.................................
              V
              V
3888     SSPILL
              V
              V
3895     RWI500
              .
              .
3901          .       PI635
              .           .
              .           .
3908     CPI635............
              V
              V
3911     RPI635
              .
              .
```

```
3919          .          .<-------  DOCP11
3917          .     DCAP11
              .          V
              .          V
3920          .     RDCP11
              .          .
              .          .
3928          .          .          .<-------  DOCP12
3926          .          .     DCAP12
              .          .          .
              .          .          .
3931          .          .          .------->   DO618
3929          .          .       D618
              .          .          V
              .          .          V
3934          .          .     RDCP12
              .          .          .
              .          .          .
3940          .          .          .       PI618
              .          .          .           .
              .          .          .           .
3947          .     CPI618.......................
              .          V
              .          V
3950          .     RPI618
              .          .
              .          .
3958          .          .          .<-------  DOCP13
3956          .          .     DCAP13
              .          .          V
              .          .          V
3959          .          .     RDCP13
              .          .          .
              .          .          .
3965          .          .          .       PI615
              .          .          .           .
              .          .          .           .
3974          .          .          .           .           .<-------   DO618
3972          .          .          .           .       D618
              .          .          .           .          V
              .          .          .           .          V
3975          .          .          .           .      RD618
              .          .          .           .           .
              .          .          .           .           .
3981          .          .     CPI615.......................
              .          .          V
              .          .          V
3984          .          .     RPI615
              .          .          .
              .          .          .
3990          .          .          .       PI612
              .          .          .           .
              .          .          .           .
3997          .     CPI612.......................
              .          .
              .          .
4002          .          .------->   DO612
4000          .       D612
              .          V
              .          V
4005          .     RPI612
              .          .
              .          .
4013          .          .          .<-------  DOCP14
4011          .          .     DCAP14
              .          .          V
              .          .          V
4014          .          .     RDCP14
              .          .          .
              .          .          .
4020          .          .          .       PI609
              .          .          .           .
              .          .          .           .
4027          .     CPI609.......................
```

```
                 .          V
                 .          V
4030             .     RPI609
                 .          .
                 .          .
4036             .          .     PI600A
                 .          .          .
                 .          .          .
4042             .     C600A...........
                 .          .
                 .          .
4045             .          .-------> DO600A
4044             .     D600A
                 .          .
                 .          .
4048             .          .      PI621
                 .          .          .
                 .          .          .
4057             .          .          .          .<-------   DO612
4055             .          .          .       D612
                 .          .          .          V
                 .          .          .          V
4058             .          .          .      RD612
                 .          .          .          .
                 .          .          .          .
4064             .          .     CPI621...........
                 .          .          V
                 .          .          V
4067             .          .     SPI621
                 .          .          V
                 .          .          V
4073             .          .     RPI621
                 .          .          .
                 .          .          .
4081             .          .          .          .<-------  DOCP10
4079             .          .          .     DCAP10
                 .          .          .          V
                 .          .          .          V
4082             .          .          .     RDCP10
                 .          .          .          .
                 .          .          .          .
4088             .          .          .          .      PI628
                 .          .          .          .          .
                 .          .          .          .          .
4095             .          .          .     CPI628...........
                 .          .          .          V
                 .          .          .          V
4098             .          .          .     RPI628
                 .          .          .          .
                 .          .          .          .
4104             .          .          .          .     PI624A
                 .          .          .          .          .
                 .          .          .          .          .
4111             .          .          .      C624A...........
                 .          .          .          V
                 .          .          .          V
4114             .          .          .      R624A
                 .          .          .          .
                 .          .          .          .
4120             .          .          .          .      PI636
                 .          .          .          .          V
                 .          .          .          .          V
4127             .          .          .          .     RPI636
                 .          .          .          .          .
                 .          .          .          .          .
4133             .          .          .          .          .       PI624
                 .          .          .          .          .          .
                 .          .          .          .          .          .
4140             .          .          .     CPI624......................
```

1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA
+	HYDROGRAPH AT	WT140	1939.	5.17	607.	156.	52.	3.79
+	ROUTED TO	RWT140	1849.	5.42	605.	156.	52.	3.79
+	HYDROGRAPH AT	WT130	1876.	4.75	430.	109.	36.	2.57
+	2 COMBINED AT	CWT130	2655.	5.25	949.	245.	82.	6.36
+	ROUTED TO	RWT130	2498.	5.83	946.	245.	82.	6.36
+	HYDROGRAPH AT	WT160	767.	4.58	156.	40.	13.	.81
+	ROUTED TO	RWT160	501.	6.25	155.	40.	13.	.81
+	HYDROGRAPH AT	WT150A	2644.	5.08	747.	191.	64.	4.75
+	ROUTED TO	R150A	2582.	5.25	746.	191.	64.	4.75
	HYDROGRAPH AT	WT150	1126.	4.50	203.	51.	17.	1.09
+	2 COMBINED AT	CWT150	2868.	5.17	894.	229.	76.	5.84
+	ROUTED TO	RWT150	2752.	5.58	892.	229.	76.	5.84
+	HYDROGRAPH AT	WT120	1864.	4.83	452.	113.	38.	2.80
+	4 COMBINED AT	CWT120	5370.	5.67	2082.	539.	180.	15.81
+	ROUTED TO	RWT120	5198.	6.17	2081.	539.	180.	15.81
+	HYDROGRAPH AT	WT110	2333.	4.67	472.	118.	39.	2.90
+	2 COMBINED AT	CWT110	5207.	6.17	2358.	613.	204.	18.71
+	ROUTED TO	RWT110	4924.	6.83	2347.	613.	204.	18.71
+	HYDROGRAPH AT	WT100	2800.	4.75	662.	167.	56.	3.85
+	2 COMBINED AT	CWT100	4921.	6.75	2739.	727.	242.	22.55
	ROUTED TO	RWT100	4614.	7.17	2710.	724.	241.	22.55
+	HYDROGRAPH AT	TW406	521.	4.08	36.	9.	3.	.16

	ROUTED TO	RTW406	40.	8.42	30.	9.	3.	.16
+	HYDROGRAPH AT	TW408	565.	4.83	176.	46.	15.	.91
+	ROUTED TO	RTW408	298.	7.75	151.	46.	15.	.91
+	HYDROGRAPH AT	TW404	2442.	4.42	370.	93.	31.	2.09
+	4 COMBINED AT	CTW404	4612.	7.17	2987.	817.	272.	25.72
+	ROUTED TO	RTW404	4499.	7.50	2941.	808.	269.	25.72
+	HYDROGRAPH AT	IW371	103.	4.08	12.	3.	1.	.05
+	DIVERSION TO	DO371	77.	4.08	6.	2.	1.	.05
+	HYDROGRAPH AT	D371	26.	4.08	5.	1.	0.	.05
+	ROUTED TO	RIW371	15.	6.50	5.	1.	0.	.05
+	HYDROGRAPH AT	IW366	1107.	4.58	209.	52.	17.	1.06
+	2 COMBINED AT	CIW366	1105.	4.58	213.	54.	18.	1.07
+	ROUTED TO	RIW366	957.	5.00	212.	54.	18.	1.07
+	HYDROGRAPH AT	IW377	153.	4.25	22.	6.	2.	.11
+	ROUTED TO	SSR010	121.	4.50	22.	6.	2.	.11
+	ROUTED TO	RIW377	98.	5.25	22.	6.	2.	.11
+	HYDROGRAPH AT	IW374	758.	4.25	97.	24.	8.	.39
+	HYDROGRAPH AT	D371	77.	4.08	6.	2.	1.	.05
+	ROUTED TO	RD371	40.	4.33	6.	2.	1.	.05
+	3 COMBINED AT	CIW374	784.	4.25	124.	31.	10.	.54
+	ROUTED TO	RIW374	404.	5.92	121.	31.	10.	.54
+	HYDROGRAPH AT	IW386	395.	4.58	90.	23.	8.	.37
+	ROUTED TO	RIW386	301.	5.42	89.	23.	8.	.37
+	HYDROGRAPH AT	IW382	738.	4.33	131.	33.	11.	.62
	2 COMBINED AT							

+	CIW382	685.	4.33	211.	54.	18.	.99
DIVERSION TO	DO382B	180.	3.92	112.	29.	10.	.99
HYDROGRAPH AT +	D382B	505.	4.33	99.	25.	8.	.99
DIVERSION TO +	DO382A	226.	4.33	20.	5.	2.	.99
HYDROGRAPH AT +	D382A	279.	4.33	79.	20.	7.	.99
ROUTED TO +	RIW382	253.	4.83	79.	20.	7.	.99
HYDROGRAPH AT +	IW384	184.	4.17	21.	5.	2.	.08
HYDROGRAPH AT +	D382A	226.	4.33	20.	5.	2.	.99
ROUTED TO +	RD382A	196.	4.42	20.	5.	2.	.99
2 COMBINED AT +	CIW384	390.	4.33	47.	12.	4.	.41
ROUTED TO +	RIW384	310.	4.67	47.	12.	4.	.41
HYDROGRAPH AT +	IW381	454.	4.50	98.	25.	8.	.38
HYDROGRAPH AT	D382B	180.	3.92	112.	29.	10.	.99
2 COMBINED AT +	CIW381	619.	4.50	208.	54.	18.	.64
ROUTED TO +	RIW381	574.	4.83	207.	54.	18.	.64
3 COMBINED AT +	C359*	990.	4.83	320.	82.	27.	1.45
ROUTED TO +	R359*	937.	5.17	317.	82.	27.	1.45
HYDROGRAPH AT +	IW359	2496.	4.75	537.	135.	45.	2.91
4 COMBINED AT +	CIW359	3423.	5.00	1059.	274.	91.	5.97
ROUTED TO +	RIW359	3233.	5.33	1045.	274.	91.	5.97
HYDROGRAPH AT +	IW389	168.	4.42	35.	9.	3.	.13
ROUTED TO +	SSR190	166.	4.42	35.	9.	3.	.13
ROUTED TO +	RIW389	102.	5.75	34.	9.	3.	.13
HYDROGRAPH AT	IW394	2700.	5.08	777.	198.	66.	4.17
ROUTED TO +	RIW394	2613.	5.25	776.	198.	66.	4.17

+	HYDROGRAPH AT	IW390A	771.	4.75	197.	50.	17.	.90
+	2 COMBINED AT	C390A	3030.	5.25	936.	239.	80.	5.07
+	ROUTED TO	R390A	2925.	5.42	935.	239.	80.	5.07
+	HYDROGRAPH AT	IW390	221.	4.75	61.	16.	5.	.31
+	HYDROGRAPH AT	IW392	1985.	4.33	262.	66.	22.	1.11
+	3 COMBINED AT	CIW390	3093.	5.42	1193.	305.	102.	6.50
+	ROUTED TO	SSR160	3068.	5.50	1193.	305.	102.	6.50
+	ROUTED TO	RIW390	2969.	5.75	1183.	305.	102.	6.50
+	HYDROGRAPH AT	IW388	1107.	4.83	303.	76.	25.	1.23
+	3 COMBINED AT	CIW388	3532.	5.67	1464.	378.	126.	7.85
+	ROUTED TO	RIW388	3450.	5.92	1457.	378.	126.	7.85
+	HYDROGRAPH AT	IW357	879.	4.50	184.	46.	15.	.75
	2 COMBINED AT	CIW357	3583.	5.92	1595.	416.	139.	8.60
+	DIVERSION TO	DO357	937.	5.92	416.	108.	36.	8.60
+	HYDROGRAPH AT	D357	2646.	5.92	1179.	308.	103.	8.60
+	ROUTED TO	RIW357	2608.	6.42	1169.	308.	103.	8.60
+	HYDROGRAPH AT	IW358	146.	4.50	31.	8.	3.	.16
+	HYDROGRAPH AT	IW353	2512.	4.83	629.	158.	53.	2.80
+	4 COMBINED AT	CIW353	5494.	5.50	2574.	686.	229.	15.28
+	ROUTED TO	RIW353	5328.	5.75	2550.	686.	229.	15.28
+	HYDROGRAPH AT	IW350	1410.	5.08	457.	116.	39.	2.17
+	2 COMBINED AT	CIW350	6037.	5.75	2870.	771.	257.	17.45
+	HYDROGRAPH AT	IW312	492.	4.75	147.	37.	12.	.57
	DIVERSION TO	DO312	233.	4.75	31.	8.	3.	.57
+	HYDROGRAPH AT	D312	259.	4.75	116.	30.	10.	.57

	ROUTED TO						
		RIW312	238.	5.83	114.	30.	10.	.57
	HYDROGRAPH AT						
+		IW363	1112.	4.33	163.	41.	14.	.63
	HYDROGRAPH AT						
+		IW365	394.	4.83	124.	32.	11.	.47
	HYDROGRAPH AT						
+		D312	233.	4.75	31.	8.	3.	.57
	ROUTED TO						
+		RD312	223.	4.92	31.	8.	3.	.57
	2 COMBINED AT						
+		CIW365	583.	4.83	152.	39.	13.	.74
	DIVERSION TO						
+		DO365	282.	4.83	33.	8.	3.	.74
	HYDROGRAPH AT						
+		D365	301.	4.83	120.	31.	10.	.74
	ROUTED TO						
+		RIW365	298.	5.42	119.	31.	10.	.74
	HYDROGRAPH AT						
+		IW367	109.	4.25	14.	4.	1.	.05
	HYDROGRAPH AT						
+		D365	282.	4.83	33.	8.	3.	.74
	ROUTED TO						
+		RD365	268.	5.00	33.	8.	3.	.74
	2 COMBINED AT						
+		CIW367	320.	5.00	50.	12.	4.	.43
	HYDROGRAPH AT						
+		IW369	590.	4.92	199.	51.	17.	.79
	DIVERSION TO						
+		DO369	372.	4.92	75.	19.	6.	.79
	HYDROGRAPH AT						
+		D369	218.	4.92	124.	32.	11.	.79
	2 COMBINED AT						
+		C363*	508.	5.00	170.	44.	15.	.72
	ROUTED TO						
+		RIW369	463.	5.33	169.	44.	15.	.72
	HYDROGRAPH AT						
+		D357	937.	5.92	416.	108.	36.	8.60
	ROUTED TO						
+		RD357	930.	6.00	416.	108.	36.	8.60
	5 COMBINED AT						
+		CIW363	1903.	5.50	970.	254.	85.	4.26
	DIVERSION TO						
+		DO363	603.	5.50	288.	75.	25.	4.26
	HYDROGRAPH AT						
+		D363	1300.	5.50	682.	178.	59.	4.26
	ROUTED TO						
+		RIW363	1281.	6.08	674.	178.	59.	4.26
	HYDROGRAPH AT						

+	IW368	271.	4.50	51.	13.	4.	.29
HYDROGRAPH AT	D369	372.	4.92	75.	19.	6.	.79
ROUTED TO +	RD369	344.	5.17	75.	19.	6.	.79
2 COMBINED AT +	CIW368	479.	5.08	124.	31.	10.	.79
ROUTED TO +	RIW368	438.	5.67	123.	31.	10.	.79
HYDROGRAPH AT +	IW360	898.	4.25	148.	37.	12.	.83
2 COMBINED AT +	CIW360	771.	4.33	248.	63.	21.	1.62
ROUTED TO +	RIW360	751.	4.42	248.	63.	21.	1.62
HYDROGRAPH AT +	IW397	3845.	4.92	1079.	276.	92.	4.81
ROUTED TO +	RIW397	3662.	5.42	1071.	276.	92.	4.81
HYDROGRAPH AT +	IW395	5796.	5.00	1509.	383.	128.	7.86
2 COMBINED AT +	CIW395	7766.	5.25	2407.	624.	208.	12.68
ROUTED TO	RIW395	7558.	5.50	2402.	624.	208.	12.68
HYDROGRAPH AT +	IW387	1332.	4.67	260.	65.	22.	1.35
ROUTED TO +	RIW387	1332.	4.67	260.	65.	22.	1.35
HYDROGRAPH AT +	IW396	390.	4.75	108.	27.	9.	.59
3 COMBINED AT +	CIW396	8001.	5.42	2643.	686.	229.	14.61
ROUTED TO +	RIW396	7911.	5.58	2640.	686.	229.	14.61
HYDROGRAPH AT +	IW380	701.	4.42	118.	30.	10.	.50
2 COMBINED AT +	CIW380	7995.	5.58	2726.	709.	236.	15.11
ROUTED TO +	SSR310	7993.	5.58	2726.	709.	236.	15.11
DIVERSION TO +	DO380	2100.	5.58	296.	74.	25.	15.11
HYDROGRAPH AT +	D380	5893.	5.58	2430.	635.	212.	15.11
ROUTED TO	RIW380	5586.	6.67	2428.	635.	212.	15.11
HYDROGRAPH AT +	IW370	588.	4.75	160.	41.	14.	.88

+	2 COMBINED AT	CIW370	5750.	6.58	2566.	670.	223.	12.02
+	ROUTED TO	RIW370	5504.	7.17	2563.	670.	223.	12.02
+	HYDROGRAPH AT	IW349	258.	4.42	51.	13.	4.	.25
+	2 COMBINED AT	CIW349	5506.	7.17	2589.	679.	226.	12.27
+	DIVERSION TO	DO349	3414.	7.17	1605.	421.	140.	12.27
+	HYDROGRAPH AT	D349	2092.	7.17	984.	258.	86.	12.27
+	ROUTED TO	RIW349	2088.	7.25	983.	258.	86.	12.27
+	HYDROGRAPH AT	IW352	148.	4.25	18.	4.	1.	.10
+	3 COMBINED AT	CIW352	2291.	7.17	1219.	322.	107.	6.39
+	HYDROGRAPH AT	IW356	395.	4.42	67.	17.	6.	.29
+	HYDROGRAPH AT	D349	3414.	7.17	1605.	421.	140.	12.27
+	ROUTED TO	RD349	3318.	7.42	1603.	421.	140.	12.27
	3 COMBINED AT	CIW356	5452.	7.33	2781.	738.	246.	14.28
+	ROUTED TO	RIW356	5405.	7.42	2776.	738.	246.	14.28
+	HYDROGRAPH AT	IW354	596.	4.33	87.	22.	7.	.36
+	2 COMBINED AT	CIW354	5405.	7.42	2835.	756.	252.	14.64
+	ROUTED TO	RIW354	5317.	7.75	2823.	755.	252.	14.64
+	HYDROGRAPH AT	IW362	266.	4.33	42.	11.	4.	.18
+	2 COMBINED AT	CIW362	5316.	7.75	2846.	763.	254.	14.82
+	HYDROGRAPH AT	IW372	511.	4.33	65.	16.	5.	.32
+	DIVERSION TO	DO372	296.	4.33	25.	6.	2.	.32
+	HYDROGRAPH AT	D372	215.	4.33	40.	10.	3.	.32
+	ROUTED TO	RIW372	153.	5.50	40.	10.	3.	.32
	HYDROGRAPH AT	IW375	384.	5.08	146.	38.	13.	.66
+	HYDROGRAPH AT	D372	296.	4.33	25.	6.	2.	.32

	ROUTED TO	RD372	203.	4.50	25.	6.	2.	.32
+	2 COMBINED AT	CIW375	446.	4.92	166.	43.	14.	.85
+	ROUTED TO	RIW375	413.	5.58	164.	43.	14.	.85
+	HYDROGRAPH AT	IW364	1624.	4.50	295.	74.	25.	1.15
+	3 COMBINED AT	CIW364	1456.	4.50	472.	124.	41.	2.13
+	2 COMBINED AT	C364*	5401.	7.67	3186.	862.	287.	16.95
+	ROUTED TO	RIW364	5302.	8.33	3171.	862.	287.	16.95
+	HYDROGRAPH AT	IW342	279.	4.58	65.	16.	5.	.35
+	2 COMBINED AT	CIW342	5302.	8.33	3199.	871.	290.	17.30
+	HYDROGRAPH AT	IW351	354.	4.42	59.	15.	5.	.32
+	HYDROGRAPH AT	D363	603.	5.50	288.	75.	25.	4.26
	ROUTED TO	RD363	598.	5.75	287.	75.	25.	4.26
+	2 COMBINED AT	CIW351	697.	5.42	352.	92.	31.	1.67
+	DIVERSION TO	DO351	600.	5.42	299.	78.	26.	1.67
+	HYDROGRAPH AT	D351	97.	5.42	53.	14.	5.	1.67
+	ROUTED TO	RIW351	80.	8.25	47.	14.	5.	1.67
+	HYDROGRAPH AT	IW346	2036.	5.00	546.	138.	46.	3.44
+	3 COMBINED AT	CIW346	5297.	8.25	3535.	969.	323.	20.98
+	ROUTED TO	RIW346	5250.	8.50	3520.	967.	322.	20.98
+	HYDROGRAPH AT	IW338	525.	4.33	71.	18.	6.	.34
+	2 COMBINED AT	CIW338	5248.	8.50	3541.	979.	326.	21.32
+	ROUTED TO	RIW338	5177.	8.92	3523.	977.	326.	21.32
+	HYDROGRAPH AT	IW326	478.	4.33	67.	17.	6.	.33
+	ROUTED TO	RIW326	355.	4.92	67.	17.	6.	.33
	HYDROGRAPH AT							

+	IW334	1392.	4.58	245.	61.	20.	1.26
3 COMBINED AT	CIW334	5175.	8.92	3636.	1032.	344.	22.91
ROUTED TO +	SCP030	5130.	9.00	3602.	1022.	341.	22.91
ROUTED TO +	RIW334	5042.	9.83	3514.	1022.	341.	22.91
HYDROGRAPH AT +	IW302	746.	5.08	247.	64.	21.	1.33
2 COMBINED AT +	CIW302	5042.	9.83	3562.	1062.	355.	24.24
DIVERSION TO +	DO302	5023.	9.83	3546.	1058.	353.	24.24
HYDROGRAPH AT +	D302	0.	.00	0.	0.	0.	24.24
HYDROGRAPH AT +	IW361	334.	4.58	74.	19.	6.	.35
HYDROGRAPH AT +	D351	600.	5.42	299.	78.	26.	1.67
ROUTED TO +	RD351	595.	5.75	297.	78.	26.	1.67
4 COMBINED AT +	CIW361	1886.	5.92	1001.	266.	89.	4.76
ROUTED TO	RIW361	1870.	6.58	987.	266.	89.	4.76
2 COMBINED AT +	C350*	6985.	5.92	3586.	976.	325.	22.22
ROUTED TO +	R350*	6886.	6.25	3562.	976.	325.	22.22
HYDROGRAPH AT +	IW330	805.	4.75	199.	50.	17.	1.04
2 COMBINED AT +	CIW330	6979.	6.17	3633.	1004.	335.	23.25
ROUTED TO +	RIW330	6885.	6.33	3617.	1004.	335.	23.25
HYDROGRAPH AT +	IW322	1161.	5.17	437.	113.	38.	1.89
2 COMBINED AT +	CIW322	7314.	6.33	3887.	1086.	362.	25.14
ROUTED TO +	RIW322	7151.	7.00	3842.	1086.	362.	25.14
HYDROGRAPH AT +	IW318	585.	4.67	144.	36.	12.	.58
ROUTED TO +	RIW318	415.	6.33	140.	36.	12.	.58
HYDROGRAPH AT	IW310	924.	4.92	277.	70.	23.	1.17
2 COMBINED AT +	CIW310	885.	4.92	400.	104.	35.	1.75

+	ROUTED TO	RIW310	880.	5.00	399.	104.	35.	1.75
+	HYDROGRAPH AT	IW314	1305.	5.08	408.	103.	34.	2.18
+	3 COMBINED AT	CIW314	7566.	7.00	4158.	1221.	407.	29.07
+	ROUTED TO	SCP020	7214.	7.42	3764.	1215.	405.	29.07
+	ROUTED TO	RIW314	6625.	8.50	3756.	1214.	405.	29.07
+	HYDROGRAPH AT	IW300	948.	5.00	278.	70.	23.	1.48
+	2 COMBINED AT	CIW300	6611.	8.50	3753.	1255.	420.	30.55
+	ROUTED TO	RIW300	6532.	8.83	3733.	1250.	418.	30.55
+	HYDROGRAPH AT	D302	5023.	9.83	3546.	1058.	353.	24.24
+	2 COMBINED AT	C302*	9848.	9.33	6263.	2066.	691.	54.72
+	ROUTED TO	RIW302	9794.	9.67	6252.	2066.	691.	54.72
+	HYDROGRAPH AT	SV264A	2000.	5.08	639.	162.	54.	2.90
	ROUTED TO	R264A	1691.	5.50	628.	162.	54.	2.90
+	HYDROGRAPH AT	SV264	1603.	4.92	434.	109.	36.	1.92
+	2 COMBINED AT	CSV264	2714.	5.25	1010.	259.	86.	4.82
+	ROUTED TO	RSV264	2353.	5.75	986.	259.	86.	4.82
+	HYDROGRAPH AT	SV298	672.	5.00	249.	64.	21.	1.08
+	ROUTED TO	RSV298	591.	6.25	241.	64.	21.	1.08
+	HYDROGRAPH AT	SV286	1427.	4.75	340.	85.	28.	1.54
+	ROUTED TO	RSV286	1299.	5.00	339.	85.	28.	1.54
+	HYDROGRAPH AT	SV284	491.	4.33	69.	17.	6.	.28
+	2 COMBINED AT	CSV284	1449.	4.92	402.	101.	34.	1.82
+	ROUTED TO	RSV284	1213.	5.58	396.	101.	34.	1.82
	HYDROGRAPH AT	SV290	881.	4.58	168.	42.	14.	.81
+	ROUTED TO	RSV290	543.	5.67	166.	42.	14.	.81

	HYDROGRAPH AT	SV272	1212.	4.67	253.	63.	21.	1.20
+	3 COMBINED AT	CSV272	1966.	5.58	754.	194.	65.	3.84
+	ROUTED TO	RSV272	1949.	5.67	754.	194.	65.	3.84
+	HYDROGRAPH AT	SV294	2100.	5.00	620.	156.	52.	2.65
+	ROUTED TO	RSV294	1815.	5.75	610.	156.	52.	2.65
+	HYDROGRAPH AT	SV276	905.	4.67	213.	54.	18.	.92
+	3 COMBINED AT	CSV276	3738.	5.67	1460.	377.	126.	7.41
+	ROUTED TO	RSV276	3729.	5.75	1460.	377.	126.	7.41
+	HYDROGRAPH AT	SV280	925.	4.83	255.	64.	21.	1.06
+	3 COMBINED AT	CSV280	4248.	5.83	1852.	484.	161.	9.54
+	ROUTED TO	RSV280	4153.	6.08	1847.	484.	161.	9.54
+	HYDROGRAPH AT	SV268	1628.	4.67	337.	84.	28.	1.38
+	ROUTED TO	RSV268	1363.	4.92	336.	84.	28.	1.38
+	HYDROGRAPH AT	SV260	1404.	4.58	253.	63.	21.	1.26
+	4 COMBINED AT	CSV260	6422.	5.92	3107.	817.	272.	16.99
+	ROUTED TO	SCP010	4367.	6.92	3002.	815.	272.	16.99
+	ROUTED TO	RSV260	4358.	7.17	2994.	815.	272.	16.99
+	HYDROGRAPH AT	SV220	1114.	4.33	131.	33.	11.	.60
+	HYDROGRAPH AT	SV252	158.	4.33	26.	7.	2.	.15
+	ROUTED TO	RSV252	95.	5.25	26.	7.	2.	.15
+	HYDROGRAPH AT	SV254	150.	4.25	17.	4.	1.	.10
+	ROUTED TO	RSV254	71.	5.25	17.	4.	1.	.10
+	HYDROGRAPH AT	SV219	1167.	4.50	195.	49.	16.	.90
+	3 COMBINED AT	CSV219	1122.	4.50	230.	58.	19.	1.14
	ROUTED TO							

+	RSV219	903.	5.00	229.	58.	19.	1.14
HYDROGRAPH AT	SV251	313.	4.33	46.	11.	4.	.27
ROUTED TO +	RSV251	196.	5.33	46.	11.	4.	.27
HYDROGRAPH AT +	SV250	156.	4.33	23.	6.	2.	.12
ROUTED TO +	RSV250	94.	5.33	23.	6.	2.	.12
HYDROGRAPH AT +	SV218	1258.	4.58	242.	61.	20.	1.29
4 COMBINED AT +	CSV218	1767.	4.83	494.	125.	42.	2.82
ROUTED TO +	RSV218	1634.	5.25	493.	125.	42.	2.82
HYDROGRAPH AT +	SV248	944.	4.67	236.	60.	20.	1.27
DIVERSION TO +	DO248	444.	4.67	111.	28.	9.	1.27
HYDROGRAPH AT +	D248	500.	4.67	125.	32.	11.	1.27
ROUTED TO +	RSV248	423.	5.17	124.	32.	11.	1.27
HYDROGRAPH AT	SV244	576.	4.92	185.	47.	16.	.95
2 COMBINED AT +	CSV244	917.	5.08	299.	76.	25.	1.62
HYDROGRAPH AT +	SV246	287.	4.25	37.	9.	3.	.16
HYDROGRAPH AT +	D248	444.	4.67	111.	28.	9.	1.27
ROUTED TO +	RD248	407.	5.00	111.	28.	9.	1.27
2 COMBINED AT +	CSV246	514.	4.83	152.	38.	13.	.76
2 COMBINED AT +	C216*	1295.	5.08	428.	109.	36.	2.38
ROUTED TO +	RSV244	1194.	5.75	425.	109.	36.	2.38
HYDROGRAPH AT +	SV216	1787.	4.50	301.	75.	25.	1.63
3 COMBINED AT +	CSV216	2621.	5.33	1077.	276.	92.	6.82
ROUTED TO +	RSV216	2571.	5.83	1072.	276.	92.	6.82
HYDROGRAPH AT	SV236	763.	4.33	97.	24.	8.	.59
ROUTED TO +	RSV236	386.	5.58	97.	24.	8.	.59

+	HYDROGRAPH AT SV240	2706.	4.75	593.	149.	50.	3.67
+	HYDROGRAPH AT SV242	93.	4.33	16.	4.	1.	.09
+	2 COMBINED AT C242*	2739.	4.75	602.	152.	51.	3.76
+	ROUTED TO R242*	2472.	5.33	601.	152.	51.	3.76
+	HYDROGRAPH AT SV214	2019.	4.50	333.	83.	28.	1.87
+	6 COMBINED AT CSV220	6403.	5.92	4234.	1168.	389.	30.63
+	ROUTED TO RSV220	6369.	6.42	4211.	1168.	389.	30.63
+	HYDROGRAPH AT SV230	1582.	4.25	181.	45.	15.	.85
+	HYDROGRAPH AT SV232	2720.	4.58	543.	136.	45.	3.06
+	2 COMBINED AT C230*	3331.	4.50	692.	174.	58.	3.91
+	ROUTED TO R230*	3153.	4.92	689.	174.	58.	3.91
+	HYDROGRAPH AT SV212	3072.	4.75	631.	158.	53.	4.14
	3 COMBINED AT CSV212	6822.	6.08	4803.	1351.	451.	38.68
+	ROUTED TO RSV212	6708.	6.67	4703.	1351.	451.	38.68
+	HYDROGRAPH AT SV202	1323.	4.75	323.	81.	27.	1.44
+	ROUTED TO RSV202	1237.	5.17	323.	81.	27.	1.44
+	HYDROGRAPH AT SV210	1553.	4.17	152.	38.	13.	.72
+	ROUTED TO RSV210	897.	5.08	152.	38.	13.	.72
+	3 COMBINED AT C210*	6969.	6.42	4904.	1421.	474.	40.83
+	HYDROGRAPH AT SV208	831.	4.67	203.	52.	17.	1.07
+	HYDROGRAPH AT SV205	1102.	4.17	110.	27.	9.	.50
+	2 COMBINED AT C205*	1114.	4.50	297.	76.	25.	1.57
+	ROUTED TO R205*	760.	5.00	294.	76.	25.	1.57
	HYDROGRAPH AT SV203	182.	4.08	14.	3.	1.	.08
+	ROUTED TO RSV203	111.	4.67	14.	3.	1.	.08

3 COMBINED AT	C200*	7146.	6.42	4997.	1461.	487.	42.48
+ HYDROGRAPH AT	SV200	2003.	4.67	371.	93.	31.	2.29
+ 3 COMBINED AT	CSV200	11885.	9.50	8988.	3069.	1027.	99.49
+ ROUTED TO	RSV200	11835.	9.83	8978.	3069.	1027.	99.49
+ HYDROGRAPH AT	TW416	627.	4.42	164.	42.	14.	.59
+ ROUTED TO	RTW416	532.	5.58	163.	42.	14.	.59
+ HYDROGRAPH AT	TW420	778.	4.67	161.	41.	14.	.81
+ ROUTED TO	RTW420	647.	5.42	161.	41.	14.	.81
+ HYDROGRAPH AT	TW412	1453.	4.92	399.	101.	34.	2.06
+ 2 COMBINED AT	CTW412	1661.	5.25	532.	135.	45.	2.87
+ HYDROGRAPH AT	TW414	2191.	4.17	219.	55.	18.	1.17
+ ROUTED TO	RTW414	1019.	5.17	215.	55.	18.	1.17
+ HYDROGRAPH AT	TW410	254.	4.58	57.	14.	5.	.31
+ 2 COMBINED AT	CTW410	1107.	5.17	259.	66.	22.	1.48
+ 4 COMBINED AT	C410*	11834.	9.75	9199.	3189.	1067.	104.42
+ ROUTED TO	RTW410	11555.	10.42	9040.	3147.	1054.	104.42
+ HYDROGRAPH AT	TW402	3158.	5.08	825.	209.	70.	4.91
+ 3 COMBINED AT	CTW402	11555.	10.33	10181.	3663.	1228.	135.06
+ ROUTED TO	RTW402	10817.	10.42	9503.	3452.	1158.	135.06
+ HYDROGRAPH AT	TW448	291.	4.75	90.	23.	8.	.35
+ DIVERSION TO	DO448	134.	4.75	17.	4.	1.	.35
+ HYDROGRAPH AT	D448	157.	4.75	73.	19.	6.	.35
+ ROUTED TO	RTW448	155.	5.75	72.	19.	6.	.35
+ HYDROGRAPH AT	TW446A	322.	4.67	89.	23.	8.	.34
+ HYDROGRAPH AT							

+	D448	134.	4.75	17.	4.	1.	.35
ROUTED TO	RD448	118.	4.92	17.	4.	1.	.35
2 COMBINED AT +	C446A	420.	4.75	106.	27.	9.	.50
DIVERSION TO +	DO446A	22.	4.75	1.	0.	0.	.50
HYDROGRAPH AT +	D446A	398.	4.75	105.	27.	9.	.50
ROUTED TO +	R446A	356.	5.33	105.	27.	9.	.50
HYDROGRAPH AT +	TW446	522.	4.42	95.	24.	8.	.35
3 COMBINED AT +	CTW446	634.	5.25	264.	68.	23.	1.01
ROUTED TO +	RTW446	603.	5.67	262.	68.	23.	1.01
HYDROGRAPH AT +	TW432	787.	4.58	157.	39.	13.	.86
2 COMBINED AT +	CTW432	976.	4.83	400.	104.	35.	1.87
ROUTED TO +	RTW432	925.	5.42	397.	104.	35.	1.87
HYDROGRAPH AT	TW431	940.	4.58	200.	50.	17.	.87
2 COMBINED AT +	CTW431	1408.	5.08	573.	150.	50.	2.75
HYDROGRAPH AT +	TW459	535.	5.08	199.	52.	17.	1.04
ROUTED TO +	SSR350	533.	5.17	199.	52.	17.	1.04
ROUTED TO +	RTW459	524.	5.33	199.	52.	17.	1.04
HYDROGRAPH AT +	TW462	184.	4.17	21.	5.	2.	.08
HYDROGRAPH AT +	D380	2100.	5.58	296.	74.	25.	15.11
ROUTED TO +	RD380	1967.	5.75	296.	74.	25.	15.11
2 COMBINED AT +	CTW462	3039.	5.67	504.	126.	42.	4.05
ROUTED TO +	SSR330	3017.	5.67	504.	126.	42.	4.05
ROUTED TO +	RTW462	2659.	6.00	504.	126.	42.	4.05
HYDROGRAPH AT	TW450A	937.	4.67	210.	53.	18.	.88
ROUTED TO +	SSR410	878.	4.83	210.	53.	18.	.88

+	ROUTED TO	R450A	796.	5.08	209.	53.	18.	.88
+	HYDROGRAPH AT	TW450B	651.	4.42	103.	26.	9.	.40
+	4 COMBINED AT	C450B	3226.	5.92	885.	225.	75.	6.38
+	ROUTED TO	R450B	2994.	6.58	879.	225.	75.	6.38
+	HYDROGRAPH AT	TW450	857.	5.08	306.	79.	26.	1.25
+	HYDROGRAPH AT	D446A	22.	4.75	1.	0.	0.	.50
+	ROUTED TO	RD446A	7.	4.92	1.	0.	0.	.50
+	3 COMBINED AT	CTW450	3229.	6.50	1119.	290.	97.	7.62
+	DIVERSION TO	DO450	235.	6.50	32.	8.	3.	7.62
+	HYDROGRAPH AT	D450	2994.	6.50	1087.	282.	94.	7.62
+	ROUTED TO	RTW450	2904.	6.83	1083.	282.	94.	7.62
+	HYDROGRAPH AT	TW444	524.	4.25	84.	21.	7.	.35
	2 COMBINED AT	CTW444	2931.	6.83	1137.	302.	101.	7.29
+	ROUTED TO	RTW444	2877.	6.92	1134.	302.	101.	7.29
+	HYDROGRAPH AT	TW440	191.	4.25	22.	5.	2.	.11
+	2 COMBINED AT	CTW440	2872.	6.92	1145.	306.	102.	7.40
+	HYDROGRAPH AT	TW460	1412.	5.00	439.	112.	37.	2.32
+	ROUTED TO	SSR540	1244.	4.83	396.	101.	34.	2.32
+	ROUTED TO	RTW460	1201.	5.25	396.	101.	34.	2.32
+	HYDROGRAPH AT	TW458	985.	4.50	168.	42.	14.	.67
+	2 COMBINED AT	CTW458	1686.	5.08	587.	150.	50.	2.99
+	ROUTED TO	RTW458	1670.	5.25	587.	150.	50.	2.99
+	HYDROGRAPH AT	TW456	172.	4.50	37.	9.	3.	.18
	2 COMBINED AT	CTW456	1736.	5.25	615.	157.	52.	3.16
+	ROUTED TO	RTW456	1701.	5.42	614.	157.	52.	3.16

	HYDROGRAPH AT	TW454	195.	4.92	68.	18.	6.	.36
+	2 COMBINED AT	CTW454	1811.	5.42	664.	170.	57.	3.52
+	DIVERSION TO	DO454	1159.	5.42	425.	109.	36.	3.52
+	HYDROGRAPH AT	D454	652.	5.42	239.	61.	20.	3.52
+	ROUTED TO	RTW454	611.	6.25	237.	61.	20.	3.52
+	HYDROGRAPH AT	TW452A	1062.	4.67	253.	64.	21.	1.08
+	ROUTED TO	SSR450	1047.	4.75	253.	64.	21.	1.08
+	ROUTED TO	R452A	907.	5.58	252.	64.	21.	1.08
+	HYDROGRAPH AT	TW452B	813.	4.92	240.	61.	20.	1.03
+	3 COMBINED AT	C452B	1645.	5.92	699.	180.	60.	3.38
+	ROUTED TO	R452B	1578.	6.33	693.	180.	60.	3.38
	HYDROGRAPH AT	TW452	466.	4.67	120.	30.	10.	.46
+	HYDROGRAPH AT	D450	235.	6.50	32.	8.	3.	7.62
+	ROUTED TO	RD450	206.	6.67	32.	8.	3.	7.62
+	3 COMBINED AT	CTW452	1841.	6.42	824.	216.	72.	4.52
+	ROUTED TO	RTW452	1796.	6.92	820.	216.	72.	4.52
+	HYDROGRAPH AT	TW442	546.	4.25	86.	22.	7.	.38
+	2 COMBINED AT	CTW442	1793.	6.92	860.	235.	78.	4.90
+	2 COMBINED AT	C442*	4121.	6.92	1825.	494.	165.	12.29
+	ROUTED TO	R442*	3934.	7.50	1816.	494.	165.	12.29
+	HYDROGRAPH AT	TW434	657.	4.50	114.	29.	10.	.57
+	3 COMBINED AT	CTW434	4103.	7.50	2271.	628.	209.	15.61
+	ROUTED TO	RTW434	3981.	7.92	2261.	628.	209.	15.61
+	HYDROGRAPH AT	TW436	1001.	4.25	163.	41.	14.	.67
	ROUTED TO							

+	RTW436	775.	5.17	162.	41.	14.	.67
HYDROGRAPH AT	TW430	2825.	4.58	505.	126.	42.	2.49
HYDROGRAPH AT +	TW429	728.	4.33	138.	35.	12.	.56
ROUTED TO +	RTW429	450.	5.00	136.	35.	12.	.56
4 COMBINED AT +	C430*	3980.	7.92	2782.	788.	263.	19.33
HYDROGRAPH AT +	TW485	1746.	4.83	433.	109.	36.	2.37
HYDROGRAPH AT +	D454	1159.	5.42	425.	109.	36.	3.52
ROUTED TO +	RD454	1139.	5.58	424.	109.	36.	3.52
HYDROGRAPH AT +	WI576A	806.	4.83	240.	61.	20.	1.22
ROUTED TO +	R576A	755.	5.33	239.	61.	20.	1.22
HYDROGRAPH AT +	WI576B	522.	4.50	95.	24.	8.	.46
2 COMBINED AT +	C576B	919.	5.25	318.	81.	27.	1.69
DIVERSION TO	DO576B	368.	5.25	127.	33.	11.	1.69
HYDROGRAPH AT +	D576B	552.	5.25	191.	49.	16.	1.69
ROUTED TO +	R576B	420.	6.67	188.	49.	16.	1.69
3 COMBINED AT +	CTW485	2200.	5.08	958.	248.	83.	5.64
ROUTED TO +	RTW485	2168.	5.25	955.	248.	83.	5.64
HYDROGRAPH AT +	TW484	365.	4.33	79.	20.	7.	.35
2 COMBINED AT +	CTW484	2286.	5.17	1011.	263.	88.	5.99
ROUTED TO +	RTW484	2206.	5.92	999.	263.	88.	5.99
HYDROGRAPH AT +	WI580A	2197.	4.83	562.	142.	47.	2.79
HYDROGRAPH AT +	WI580B	711.	4.42	136.	34.	11.	.63
DIVERSION TO +	DO580B	327.	4.42	63.	16.	5.	.63
HYDROGRAPH AT	D580B	384.	4.42	74.	19.	6.	.63
ROUTED TO +	R580B	336.	4.92	73.	19.	6.	.63

+	2 COMBINED AT	C580A	2424.	4.83	622.	157.	52.	3.13
+	ROUTED TO	SSR630	2423.	4.83	622.	157.	52.	3.13
+	ROUTED TO	R580A	2131.	5.83	620.	157.	52.	3.13
+	HYDROGRAPH AT	WI580	1574.	4.42	238.	60.	20.	1.32
+	HYDROGRAPH AT	D580B	327.	4.42	63.	16.	5.	.63
+	ROUTED TO	RD580B	288.	4.92	63.	16.	5.	.63
+	HYDROGRAPH AT	WI578	517.	4.58	106.	27.	9.	.48
+	2 COMBINED AT	CWI578	680.	4.75	165.	42.	14.	.77
+	ROUTED TO	SSR700	615.	5.00	165.	42.	14.	.77
+	ROUTED TO	RWI578	576.	5.50	164.	42.	14.	.77
+	3 COMBINED AT	CWI580	2520.	5.83	928.	238.	79.	5.22
+	ROUTED TO	RWI580	2408.	6.17	924.	238.	79.	5.22
	HYDROGRAPH AT	D576B	368.	5.25	127.	33.	11.	1.69
+	ROUTED TO	RD576B	304.	6.50	126.	33.	11.	1.69
+	HYDROGRAPH AT	WI576	915.	4.67	198.	50.	17.	1.18
+	3 COMBINED AT	CWI576	2695.	6.17	1152.	298.	99.	7.07
+	DIVERSION TO	DO576	1065.	6.17	455.	118.	39.	7.07
+	HYDROGRAPH AT	D576	1631.	6.17	697.	181.	60.	7.07
+	ROUTED TO	RWI576	1562.	6.67	693.	181.	60.	7.07
+	HYDROGRAPH AT	TW482	909.	4.50	149.	37.	12.	.76
+	2 COMBINED AT	CTW482	1655.	6.58	820.	218.	73.	5.04
+	DIVERSION TO	DO482	0.	.00	0.	0.	0.	5.04
+	HYDROGRAPH AT	D482	1655.	6.58	820.	218.	73.	5.04
	ROUTED TO	RTW482	1596.	7.00	810.	218.	73.	5.04
+	HYDROGRAPH AT	TW480	999.	4.33	181.	45.	15.	.75

3 COMBINED AT	CTW480	3071.	5.83	1747.	483.	161.	11.78
+ DIVERSION TO	DO480	2918.	5.83	1660.	458.	153.	11.78
+ HYDROGRAPH AT	D480	154.	5.83	87.	24.	8.	11.78
+ ROUTED TO	RTW480	141.	6.58	85.	24.	8.	11.78
+ HYDROGRAPH AT	TW478	465.	4.17	59.	15.	5.	.26
+ 2 COMBINED AT	CTW478	422.	4.17	151.	43.	14.	.85
+ ROUTED TO	RTW478	167.	7.58	137.	43.	14.	.85
+ 2 COMBINED AT	CTW430	3980.	7.92	2812.	804.	268.	20.18
+ ROUTED TO	SCP040	2936.	8.75	2266.	777.	259.	20.18
+ ROUTED TO	RTW430	2687.	9.42	2240.	776.	259.	20.18
+ HYDROGRAPH AT	TW418	1784.	4.58	353.	89.	30.	1.37
+ 2 COMBINED AT	CTW418	2684.	9.42	2252.	847.	284.	21.55
+ ROUTED TO	RTW418	2616.	9.58	2218.	837.	281.	21.55
+ HYDROGRAPH AT	TW424	2266.	4.25	339.	85.	28.	1.50
+ ROUTED TO	RTW424	2063.	4.50	338.	85.	28.	1.50
+ HYDROGRAPH AT	TW422	741.	4.58	161.	41.	14.	.70
+ 3 COMBINED AT	CTW422	2609.	9.58	2231.	933.	313.	23.75
+ ROUTED TO	RTW422	2432.	12.50	2152.	919.	309.	23.75
+ HYDROGRAPH AT	TW400	2394.	4.83	778.	199.	66.	4.27
+ 3 COMBINED AT	CTW400	11450.	10.50	9977.	3833.	1289.	163.08
+ ROUTED TO	RTW400	11372.	10.75	9949.	3832.	1289.	163.08
+ HYDROGRAPH AT	WI504	1645.	4.50	273.	68.	23.	1.35
+ 2 COMBINED AT	CWI504	11356.	10.75	9936.	3856.	1297.	164.43
+ ROUTED TO	RWI504	11303.	10.83	9899.	3847.	1294.	164.43
+ HYDROGRAPH AT							

+	D576	1065.	6.17	455.	118.	39.	7.07
ROUTED TO	RD576	1020.	6.50	452.	118.	39.	7.07
HYDROGRAPH AT +	WI574	318.	4.33	43.	11.	4.	.22
ROUTED TO +	RWI574	180.	5.33	42.	11.	4.	.22
HYDROGRAPH AT +	WI572	2021.	4.50	453.	114.	38.	2.06
ROUTED TO +	RWI572	1732.	5.25	450.	114.	38.	2.06
HYDROGRAPH AT +	WI570	1907.	4.83	530.	135.	45.	2.24
DIVERSION TO +	DO570	400.	4.83	111.	28.	9.	2.24
HYDROGRAPH AT +	D570	1507.	4.83	419.	107.	36.	2.24
ROUTED TO +	RWI570	1439.	5.17	418.	107.	36.	2.24
HYDROGRAPH AT +	WI566	170.	4.33	24.	6.	2.	.11
HYDROGRAPH AT +	D570	400.	4.83	111.	28.	9.	2.24
2 COMBINED AT	CWI566	562.	4.75	141.	36.	12.	.58
ROUTED TO +	SSR830	553.	4.83	141.	36.	12.	.58
ROUTED TO +	RWI566	519.	5.25	140.	36.	12.	.58
HYDROGRAPH AT +	WI564	1005.	5.25	370.	96.	32.	1.81
ROUTED TO +	SSR880	1003.	5.25	370.	96.	32.	1.81
ROUTED TO +	RWI564	970.	5.58	368.	96.	32.	1.81
HYDROGRAPH AT +	WI562	768.	4.75	199.	50.	17.	.87
3 COMBINED AT +	CWI562	1723.	5.50	667.	173.	58.	3.26
2 COMBINED AT +	C562*	2896.	5.33	1040.	269.	90.	5.03
ROUTED TO +	R562*	2748.	6.00	1032.	269.	90.	5.03
HYDROGRAPH AT +	WI560A	1098.	5.08	393.	102.	34.	2.04
ROUTED TO	R560A	994.	5.92	390.	102.	34.	2.04
HYDROGRAPH AT +	WI560	2829.	4.75	692.	175.	58.	3.56

+	6 COMBINED AT	CWI560	5384.	5.92	2600.	693.	231.	15.70
+	ROUTED TO	RWI560	5269.	6.50	2586.	693.	231.	15.70
+	HYDROGRAPH AT	WI582	527.	4.33	75.	19.	6.	.38
+	HYDROGRAPH AT	D482	0.	.00	0.	0.	0.	5.04
+	ROUTED TO	RD482	0.	.00	0.	0.	0.	5.04
+	2 COMBINED AT	CWI582	527.	4.33	75.	19.	6.	.38
+	ROUTED TO	RWI582	321.	4.83	74.	19.	6.	.38
+	HYDROGRAPH AT	WI556	217.	4.08	16.	4.	1.	.08
+	ROUTED TO	RWI556	36.	5.58	15.	4.	1.	.08
+	HYDROGRAPH AT	WI554	1054.	4.58	189.	48.	16.	1.04
+	4 COMBINED AT	CWI554	5275.	6.50	2696.	733.	244.	17.20
+	ROUTED TO	RWI554	5262.	6.58	2695.	733.	244.	17.20
	HYDROGRAPH AT	WI552	490.	4.42	80.	20.	7.	.41
+	2 COMBINED AT	CWI552	5260.	6.58	2726.	744.	248.	17.61
+	ROUTED TO	RWI552	5245.	6.67	2721.	743.	248.	17.61
+	HYDROGRAPH AT	WI584	1038.	4.50	235.	59.	20.	1.26
+	HYDROGRAPH AT	D480	2918.	5.83	1660.	458.	153.	11.78
+	ROUTED TO	RD480	2734.	6.42	1648.	458.	153.	11.78
+	2 COMBINED AT	CWI584	2798.	6.33	1778.	501.	167.	12.45
+	ROUTED TO	RWI584	2723.	6.92	1758.	501.	167.	12.45
+	HYDROGRAPH AT	WI550	321.	4.17	31.	8.	3.	.14
+	3 COMBINED AT	CWI550	6778.	6.92	3979.	1118.	373.	30.20
+	ROUTED TO	SCP050	6612.	6.92	3977.	1118.	373.	30.20
	ROUTED TO	RWI550	6327.	7.50	3967.	1118.	373.	30.20
+	HYDROGRAPH AT	WI514	639.	4.25	71.	18.	6.	.35

	2 COMBINED AT						
		CWI514	6311.	7.50	3967.	1127.	376.	30.56
	HYDROGRAPH AT						
+		WI548	486.	4.33	71.	18.	6.	.31
	ROUTED TO						
+		RWI548	324.	5.17	71.	18.	6.	.31
	HYDROGRAPH AT						
+		WI546	660.	4.33	156.	40.	13.	.61
	2 COMBINED AT						
+		CWI546	631.	5.00	220.	57.	19.	.91
	ROUTED TO						
+		RWI546	617.	5.17	220.	57.	19.	.91
	HYDROGRAPH AT						
+		WI544	1536.	4.50	394.	100.	33.	1.79
	2 COMBINED AT						
+		CWI544	1903.	4.58	588.	151.	50.	2.71
	DIVERSION TO						
+		DO544	1275.	4.58	394.	101.	34.	2.71
	HYDROGRAPH AT						
+		D544	628.	4.58	194.	50.	17.	2.71
	ROUTED TO						
+		RWI544	545.	5.33	192.	50.	17.	2.71
	HYDROGRAPH AT						
+		WI542	783.	4.75	192.	48.	16.	1.17
	2 COMBINED AT						
+		CWI542	1117.	5.08	374.	96.	32.	2.07
	HYDROGRAPH AT						
+		WI540	1072.	4.75	292.	75.	25.	1.25
	ROUTED TO						
+		RWI540	1025.	4.92	292.	75.	25.	1.25
	HYDROGRAPH AT						
+		WI538A	756.	4.67	187.	47.	16.	.78
	2 COMBINED AT						
+		C538A	1595.	4.92	468.	119.	40.	2.02
	ROUTED TO						
+		R538A	1462.	5.58	466.	119.	40.	2.02
	HYDROGRAPH AT						
+		WI538	915.	5.17	333.	86.	29.	1.43
	2 COMBINED AT						
+		CWI538	2143.	5.50	772.	199.	66.	3.45
	ROUTED TO						
+		RWI538	2041.	6.08	766.	199.	66.	3.45
	HYDROGRAPH AT						
+		WI536	868.	5.17	337.	88.	29.	1.37
	HYDROGRAPH AT						
+		WI534	596.	4.50	115.	29.	10.	.43
	ROUTED TO						
+		RWI534	544.	4.75	115.	29.	10.	.43
	HYDROGRAPH AT						

+	WI532	490.	4.33	63.	16.	5.	.32
2 COMBINED AT	CWI532	781.	4.58	174.	44.	15.	.76
2 COMBINED AT +	C530*	1333.	4.92	496.	129.	43.	2.13
ROUTED TO +	R530*	1279.	5.58	491.	129.	43.	2.13
HYDROGRAPH AT +	WI530	1628.	4.75	349.	88.	29.	2.38
HYDROGRAPH AT +	D544	1275.	4.58	394.	101.	34.	2.71
ROUTED TO +	RD544	1182.	5.17	392.	101.	34.	2.71
4 COMBINED AT +	CWI530	3730.	5.92	1750.	466.	155.	9.78
2 COMBINED AT +	CAP1*	4214.	5.92	2022.	537.	179.	11.85
HYDROGRAPH AT +	PI663	468.	4.83	150.	38.	13.	.60
ROUTED TO +	RPI663	428.	5.58	148.	38.	13.	.60
HYDROGRAPH AT +	PI657	607.	5.00	218.	56.	19.	.87
HYDROGRAPH AT	PI660	455.	5.17	196.	53.	18.	.84
3 COMBINED AT +	CPI660	1270.	5.42	542.	143.	48.	2.31
ROUTED TO +	RPI660	1231.	5.58	538.	143.	48.	2.31
HYDROGRAPH AT +	PI654	2695.	5.25	942.	240.	80.	4.03
2 COMBINED AT +	CPI654	3587.	5.33	1421.	369.	123.	6.34
DIVERSION TO +	DO654	717.	5.33	284.	74.	25.	6.34
HYDROGRAPH AT +	D654	2870.	5.33	1137.	296.	99.	6.34
ROUTED TO +	RPI654	2828.	5.67	1134.	296.	99.	6.34
HYDROGRAPH AT +	PI648	1286.	5.08	408.	103.	34.	1.73
HYDROGRAPH AT +	PI651	459.	4.67	104.	26.	9.	.46
3 COMBINED AT +	CPI651	3894.	5.50	1582.	411.	137.	7.26
ROUTED TO	RPI651	3828.	5.75	1578.	411.	137.	7.26
HYDROGRAPH AT +	PI645A	1162.	5.08	391.	100.	33.	1.63

+	ROUTED TO R645A	1127.	5.42	390.	100.	33.	1.63
+	HYDROGRAPH AT PI645	1292.	4.58	229.	57.	19.	1.56
+	HYDROGRAPH AT D654	717.	5.33	284.	74.	25.	6.34
+	ROUTED TO RD654	692.	5.92	282.	74.	25.	6.34
+	4 COMBINED AT CPI645	5320.	5.75	2294.	601.	200.	11.72
+	2 COMBINED AT CAP1*	8564.	5.83	3966.	1051.	350.	23.57
+	HYDROGRAPH AT PI689	4695.	5.08	1410.	362.	121.	6.78
+	HYDROGRAPH AT PI688	2650.	4.83	675.	171.	57.	3.20
+	2 COMBINED AT CPI689	6591.	5.00	1977.	508.	169.	9.98
+	ROUTED TO RPI689	6362.	5.33	1968.	508.	169.	9.98
+	HYDROGRAPH AT PI687	4123.	5.17	1281.	330.	110.	7.01
+	2 COMBINED AT CPI687	9390.	5.33	3035.	787.	262.	16.99
	ROUTED TO RPI687	9166.	5.50	3027.	787.	262.	16.99
+	HYDROGRAPH AT PI684	864.	4.58	176.	44.	15.	.74
+	2 COMBINED AT CPI684	9384.	5.50	3154.	819.	273.	17.73
+	ROUTED TO SSR103	9163.	5.67	3154.	819.	273.	17.73
+	ROUTED TO RPI684	8893.	5.92	3148.	819.	273.	17.73
+	HYDROGRAPH AT PI681	792.	4.92	241.	61.	20.	.99
+	2 COMBINED AT CPI681	9152.	5.92	3323.	864.	288.	18.72
+	ROUTED TO RPI681	8711.	6.50	3313.	864.	288.	18.72
+	HYDROGRAPH AT PI678	556.	4.75	149.	38.	13.	.83
+	2 COMBINED AT CPI678	8723.	6.50	3368.	884.	295.	19.55
+	DIVERSION TO DO678	2442.	6.50	943.	248.	83.	19.55
	HYDROGRAPH AT D678	6280.	6.50	2425.	637.	212.	19.55
+	HYDROGRAPH AT PI690	447.	4.67	109.	28.	9.	.63

	2 COMBINED AT						
		CPI690	6659.	6.50	2578.	678.	226.	14.71
	ROUTED TO						
+		RPI690	6474.	6.67	2571.	678.	226.	14.71
	HYDROGRAPH AT						
+		PI675	106.	4.25	12.	3.	1.	.06
	2 COMBINED AT						
+		CPI675	6471.	6.67	2573.	679.	226.	14.77
	2 COMBINED AT						
+		CAP1*	11447.	6.42	5872.	1567.	522.	38.34
	HYDROGRAPH AT						
+		PI672	1342.	4.58	241.	60.	20.	1.51
	HYDROGRAPH AT						
+		D678	2442.	6.50	943.	248.	83.	19.55
	ROUTED TO						
+		RD678	2122.	6.92	934.	248.	83.	19.55
	2 COMBINED AT						
+		CPI672	2483.	6.83	1192.	323.	108.	6.98
	2 COMBINED AT						
+		CAP1*	12480.	6.58	6619.	1775.	592.	45.32
	HYDROGRAPH AT						
+		PI693	1003.	4.42	148.	37.	12.	.84
	2 COMBINED AT						
+		CAP1*	12442.	6.58	6661.	1789.	596.	46.16
	HYDROGRAPH AT						
+		PI669	219.	4.58	51.	13.	4.	.29
	2 COMBINED AT						
+		CAP1*	12441.	6.58	6676.	1793.	598.	46.44
	HYDROGRAPH AT						
+		PI642	247.	4.25	37.	9.	3.	.24
	2 COMBINED AT						
+		CAP1*	12429.	6.58	6680.	1795.	598.	46.68
	HYDROGRAPH AT						
+		PDWEST	3720.	5.25	1106.	284.	95.	7.08
	2 COMBINED AT						
+		CAP1*	13205.	6.33	7592.	2036.	679.	53.76
	ROUTED TO						
+		STOR1	5254.	8.17	4159.	2032.	679.	53.76
	DIVERSION TO						
+		DOCAP*	1689.	8.08	736.	184.	61.	53.76
	HYDROGRAPH AT						
+		DCAP*	3568.	8.33	3423.	1848.	617.	53.76
	DIVERSION TO						
+		DOCP14	353.	8.33	336.	161.	54.	53.76
	HYDROGRAPH AT						
+		DCAP14	3216.	8.33	3088.	1687.	564.	53.76
	DIVERSION TO						
+		DOCP13	410.	8.33	393.	220.	75.	53.76
	HYDROGRAPH AT						

+		DCAP13	2806.	8.33	2695.	1467.	489.	53.76
	DIVERSION TO	DOCP12	400.	8.33	384.	215.	72.	53.76
	HYDROGRAPH AT							
+		DCAP12	2406.	8.33	2310.	1252.	417.	53.76
	DIVERSION TO							
+		DOCP11	416.	8.33	402.	224.	75.	53.76
	HYDROGRAPH AT							
+		DCAP11	1990.	8.33	1909.	1028.	343.	53.76
	DIVERSION TO							
+		DOCP10	410.	8.33	394.	220.	73.	53.76
	HYDROGRAPH AT							
+		DCAP10	1581.	8.33	1514.	808.	269.	53.76
	DIVERSION TO							
+		DOCP09	400.	8.33	384.	212.	71.	53.76
	HYDROGRAPH AT							
+		DCAP09	1181.	8.33	1130.	596.	199.	53.76
	DIVERSION TO							
+		DOCP08	397.	8.33	379.	202.	67.	53.76
	HYDROGRAPH AT							
+		DCAP08	784.	8.33	751.	394.	131.	53.76
	DIVERSION TO							
+		DOCP07	397.	8.33	379.	200.	67.	53.76
	HYDROGRAPH AT							
		DCAP07	388.	8.33	371.	194.	65.	53.76
	DIVERSION TO							
+		DOCPOT	0.	.00	0.	0.	0.	53.76
	HYDROGRAPH AT							
+		DCAPOT	388.	8.33	371.	194.	65.	53.76
	ROUTED TO							
+		RWI542	388.	8.50	371.	194.	65.	53.76
	HYDROGRAPH AT							
+		WI529	302.	4.25	37.	9.	3.	.17
	2 COMBINED AT							
+		CWI529	466.	7.67	396.	220.	74.	4.13
	DIVERSION TO							
+		DO529	1.	7.67	0.	0.	0.	4.13
	HYDROGRAPH AT							
+		D529	465.	7.67	396.	220.	74.	4.13
	ROUTED TO							
+		RWI529	447.	7.75	395.	220.	74.	4.13
	HYDROGRAPH AT							
+		WI516	199.	4.33	26.	7.	2.	.14
	3 COMBINED AT							
+		CWI516	6473.	7.50	4211.	1307.	436.	34.83
	ROUTED TO							
		RWI516	6235.	8.08	4100.	1307.	436.	34.83
	HYDROGRAPH AT							
+		WI512	1256.	4.42	275.	69.	23.	1.36

+	2 COMBINED AT	CWI512	6187.	8.08	4097.	1347.	450.	36.18
+	HYDROGRAPH AT	DCAP07	397.	8.33	379.	200.	67.	53.76
+	ROUTED TO	RDCP07	396.	8.83	379.	200.	67.	53.76
+	HYDROGRAPH AT	WI528	469.	4.42	72.	18.	6.	.36
+	HYDROGRAPH AT	D529	1.	7.67	0.	0.	0.	4.13
+	ROUTED TO	RD529	0.	7.75	0.	0.	0.	4.13
+	3 COMBINED AT	CWI528	469.	7.83	408.	235.	79.	4.41
+	ROUTED TO	RWI528	437.	8.25	403.	233.	78.	4.41
+	HYDROGRAPH AT	DCAPOT	0.	.00	0.	0.	0.	53.76
+	ROUTED TO	RDCPOT	0.	.00	0.	0.	0.	53.76
+	HYDROGRAPH AT	WI527	886.	4.50	138.	35.	12.	.71
+	2 COMBINED AT	CWI527	886.	4.50	184.	47.	16.	.71
	DIVERSION TO	DO527	132.	4.50	8.	2.	1.	.71
+	HYDROGRAPH AT	D527	753.	4.50	177.	45.	15.	.71
+	ROUTED TO	RWI527	651.	4.83	175.	45.	15.	.71
+	HYDROGRAPH AT	WI518	718.	4.42	108.	27.	9.	.53
+	3 COMBINED AT	CWI518	1019.	4.75	512.	281.	94.	5.54
+	2 COMBINED AT	C508*	6337.	8.25	4366.	1559.	521.	41.72
+	ROUTED TO	R508*	6248.	8.75	4355.	1558.	521.	41.72
+	HYDROGRAPH AT	WI508	581.	4.67	134.	34.	11.	.70
+	2 COMBINED AT	CWI508	6228.	8.75	4351.	1573.	526.	42.42
+	DIVERSION TO	DO508	1183.	8.75	827.	299.	100.	42.42
+	HYDROGRAPH AT	D508	5044.	8.75	3525.	1274.	426.	42.42
	HYDROGRAPH AT	WI510A	1156.	4.58	194.	49.	16.	1.13
+	ROUTED TO	R510A	751.	5.67	193.	49.	16.	1.13

	HYDROGRAPH AT						
		WI510	725.	5.00	229.	58.	19.	1.23
	3 COMBINED AT						
+		CWI510	5284.	8.67	3723.	1368.	457.	36.72
	ROUTED TO						
+		RWI510	4927.	9.33	3618.	1367.	457.	36.72
	HYDROGRAPH AT						
+		WI502	851.	4.92	228.	58.	19.	1.21
	3 COMBINED AT						
+		CWI502	12654.	10.75	11092.	4361.	1467.	202.35
	ROUTED TO						
+		RWI502	12640.	10.83	11085.	4361.	1467.	202.35
	HYDROGRAPH AT						
+		DCAP08	397.	8.33	379.	202.	67.	53.76
	ROUTED TO						
+		RDCP08	396.	8.58	379.	202.	67.	53.76
	HYDROGRAPH AT						
+		WI526	48.	4.33	9.	2.	1.	.05
	2 COMBINED AT						
+		CWI526	436.	7.67	403.	222.	74.	4.10
	ROUTED TO						
+		RWI526	429.	8.58	402.	222.	74.	4.10
	HYDROGRAPH AT						
+		WI525	1695.	4.67	325.	81.	27.	1.94
	HYDROGRAPH AT						
+		DCAP09	400.	8.33	384.	212.	71.	53.76
	ROUTED TO						
+		RDCP09	399.	9.25	384.	212.	71.	53.76
	HYDROGRAPH AT						
+		D527	132.	4.50	8.	2.	1.	.71
	ROUTED TO						
+		RD527	31.	5.08	8.	2.	1.	.71
	4 COMBINED AT						
+		CWI525	1695.	4.67	904.	546.	183.	10.23
	DIVERSION TO						
+		DO525	71.	4.67	34.	18.	6.	10.23
	HYDROGRAPH AT						
+		D525	1181.	4.67	766.	491.	164.	10.23
	ROUTED TO						
+		RWI525	988.	5.42	765.	491.	164.	10.23
	HYDROGRAPH AT						
+		WI524	944.	4.58	178.	45.	15.	.95
	HYDROGRAPH AT						
+		D525	71.	4.67	34.	18.	6.	10.23
	ROUTED TO						
+		RD525	50.	5.50	34.	18.	6.	10.23
	2 COMBINED AT						
+		CWI524	940.	4.58	217.	67.	22.	1.60
	DIVERSION TO						

+		DO524	35.	4.58	2.	1.	0.	1.60
	HYDROGRAPH AT	D524	810.	4.58	201.	63.	21.	1.60
	ROUTED TO							
+		RWI524	715.	4.92	199.	63.	21.	1.60
	HYDROGRAPH AT							
+		PI639	261.	4.67	67.	17.	6.	.34
	HYDROGRAPH AT							
+		D524	35.	4.58	2.	1.	0.	1.60
	ROUTED TO							
+		RD524	16.	4.83	2.	1.	0.	1.60
	2 COMBINED AT							
+		CPI639	288.	4.67	71.	18.	6.	.43
	ROUTED TO							
+		RPI639	261.	5.00	71.	18.	6.	.43
	HYDROGRAPH AT							
+		WI506	1175.	4.58	296.	75.	25.	1.58
	4 COMBINED AT							
+		CWI506	2075.	5.25	1046.	605.	204.	13.10
	ROUTED TO							
+		RWI506	2007.	5.50	1041.	605.	204.	13.10
	HYDROGRAPH AT							
+		D508	1183.	8.75	827.	299.	100.	42.42
	ROUTED TO							
		RD508	1167.	9.00	825.	299.	100.	42.42
	HYDROGRAPH AT							
+		WI500	985.	4.67	199.	50.	17.	1.05
	4 COMBINED AT							
+		CWI500	13179.	10.83	11572.	4714.	1586.	224.56
	ROUTED TO							
+		SSPILL	1524.	18.67	1515.	1407.	1073.	224.56
	ROUTED TO							
+		RWI500	1523.	19.33	1514.	1407.	1073.	224.56
	HYDROGRAPH AT							
+		PI635	889.	4.42	132.	33.	11.	.61
	2 COMBINED AT							
+		CPI635	1523.	19.33	1514.	1407.	1073.	225.17
	ROUTED TO							
+		RPI635	1521.	20.08	1512.	1404.	1072.	225.17
	HYDROGRAPH AT							
+		DCAP11	416.	8.33	402.	224.	75.	53.76
	ROUTED TO							
+		RDCP11	416.	8.67	401.	224.	75.	53.76
	HYDROGRAPH AT							
+		DCAP12	400.	8.33	384.	215.	72.	53.76
	DIVERSION TO							
		DO618	212.	8.33	204.	114.	38.	53.76
	HYDROGRAPH AT							
+		D618	188.	8.33	181.	101.	34.	53.76

+	ROUTED TO RDCP12	188.	8.58	181.	101.	34.	53.76
+	HYDROGRAPH AT PI618	470.	4.33	58.	15.	5.	.29
+	3 COMBINED AT CPI618	661.	7.83	609.	360.	120.	6.46
+	ROUTED TO RPI618	647.	8.42	608.	359.	120.	6.46
+	HYDROGRAPH AT DCAP13	410.	8.33	393.	220.	75.	53.76
+	ROUTED TO RDCP13	409.	9.00	393.	220.	75.	53.76
+	HYDROGRAPH AT PI615	852.	4.33	151.	38.	13.	.84
+	HYDROGRAPH AT D618	212.	8.33	204.	114.	38.	53.76
+	ROUTED TO RD618	212.	8.75	204.	114.	38.	53.76
+	3 COMBINED AT CPI615	952.	4.42	700.	425.	143.	7.20
+	ROUTED TO RPI615	678.	8.33	628.	386.	131.	7.20
+	HYDROGRAPH AT PI612	656.	4.58	129.	32.	11.	.74
	3 COMBINED AT CPI612	1278.	8.58	1223.	752.	254.	14.40
+	DIVERSION TO DO612	959.	8.58	917.	564.	190.	14.40
+	HYDROGRAPH AT D612	320.	8.58	306.	188.	63.	14.40
+	ROUTED TO RPI612	319.	8.83	306.	188.	63.	14.40
+	HYDROGRAPH AT DCAP14	353.	8.33	336.	161.	54.	53.76
+	ROUTED TO RDCP14	352.	9.50	335.	161.	54.	53.76
+	HYDROGRAPH AT PI609	1135.	4.67	318.	81.	27.	1.94
+	3 COMBINED AT CPI609	1118.	4.83	751.	430.	145.	9.15
+	ROUTED TO RPI609	1101.	4.92	749.	430.	145.	9.15
+	HYDROGRAPH AT PI600A	1191.	4.25	104.	26.	9.	.52
+	2 COMBINED AT C600A	1221.	4.75	783.	447.	151.	9.67
	DIVERSION TO DO600A	1221.	4.75	783.	447.	151.	9.67
+	HYDROGRAPH AT D600A	0.	.00	0.	0.	0.	9.67

	HYDROGRAPH AT	PI621	865.	4.58	160.	40.	13.	.90
+	HYDROGRAPH AT	D612	959.	8.58	917.	564.	190.	14.40
+	ROUTED TO	RD612	958.	9.33	917.	564.	190.	14.40
+	2 COMBINED AT	CPI621	1028.	5.25	920.	594.	201.	11.70
+	ROUTED TO	SPI621	1026.	5.33	920.	586.	197.	11.70
+	ROUTED TO	RPI621	1009.	5.42	920.	586.	197.	11.70
+	HYDROGRAPH AT	DCAP10	410.	8.33	394.	220.	73.	53.76
+	ROUTED TO	RDCP10	409.	8.75	394.	220.	73.	53.76
+	HYDROGRAPH AT	PI628	1004.	4.33	111.	28.	9.	.57
+	2 COMBINED AT	CPI628	594.	4.33	419.	261.	87.	4.75
+	ROUTED TO	RPI628	468.	8.67	419.	260.	87.	4.75
+	HYDROGRAPH AT	PI624A	1577.	4.92	371.	93.	31.	2.81
+	2 COMBINED AT	C624A	1746.	5.00	674.	335.	112.	7.56
+	ROUTED TO	R624A	1342.	5.92	667.	335.	112.	7.56
+	HYDROGRAPH AT	PI636	576.	4.42	93.	23.	8.	.43
+	ROUTED TO	RPI636	573.	4.50	93.	23.	8.	.43
+	HYDROGRAPH AT	PI624	1112.	4.50	278.	71.	24.	1.23
+	3 COMBINED AT	CPI624	1564.	5.83	866.	404.	137.	9.21
+	ROUTED TO	SPI624	1559.	5.92	842.	388.	130.	9.21
+	ROUTED TO	RPI624	1499.	6.25	827.	387.	130.	9.21
+	HYDROGRAPH AT	PI633	383.	4.50	68.	17.	6.	.34
+	5 COMBINED AT	CPI633	2199.	14.42	2128.	1728.	1204.	246.48
+	ROUTED TO	RPI633	2200.	15.00	2126.	1727.	1204.	246.48
+	HYDROGRAPH AT	PDEAST	6672.	5.25	1746.	441.	147.	16.44
	HYDROGRAPH AT							

+		DCAP*	1689.	8.08	736.	184.	61.	53.76
	2 COMBINED AT							
		CAP2*	6672.	5.25	2715.	722.	241.	33.74
	ROUTED TO							
+		STOR2	2451.	6.08	2151.	712.	237.	33.74
	DIVERSION TO							
+		DOCP19	862.	6.08	761.	269.	90.	33.74
	HYDROGRAPH AT							
+		DCAP19	1589.	6.08	1390.	444.	148.	33.74
	DIVERSION TO							
+		DOCP18	282.	6.08	248.	82.	27.	33.74
	HYDROGRAPH AT							
+		DCAP18	1307.	6.08	1142.	362.	121.	33.74
	DIVERSION TO							
+		DOCP17	273.	6.08	240.	78.	26.	33.74
	HYDROGRAPH AT							
+		DCAP17	1034.	6.08	902.	284.	95.	33.74
	DIVERSION TO							
+		DOCP16	819.	6.08	722.	230.	77.	33.74
	HYDROGRAPH AT							
+		DCAP16	215.	6.08	180.	54.	18.	33.74
	ROUTED TO							
+		RDCP15	213.	6.50	180.	54.	18.	33.74
	HYDROGRAPH AT							
		PI606A	575.	4.42	89.	22.	7.	.46
	2 COMBINED AT							
+		C606A	368.	4.50	280.	110.	37.	3.55
	DIVERSION TO							
+		DO606A	151.	4.50	115.	45.	15.	3.55
	HYDROGRAPH AT							
+		D606A	217.	4.50	165.	65.	22.	3.55
	ROUTED TO							
+		R606A	192.	10.17	165.	65.	22.	3.55
	HYDROGRAPH AT							
+		PI606	921.	4.42	187.	47.	16.	1.08
	2 COMBINED AT							
+		CPI606	753.	4.50	285.	108.	36.	3.17
	ROUTED TO							
+		RPI606	668.	4.83	280.	108.	36.	3.17
	HYDROGRAPH AT							
+		PI604	469.	4.25	82.	21.	7.	.36
	HYDROGRAPH AT							
+		D606A	151.	4.50	115.	45.	15.	3.55
	ROUTED TO							
+		RD606A	142.	4.83	115.	45.	15.	3.55
	2 COMBINED AT							
		CPI604	469.	4.58	179.	70.	23.	1.82
	ROUTED TO							
+		RPI604	414.	4.92	168.	67.	22.	1.82

+	HYDROGRAPH AT PD744	732.	4.58	143.	36.	12.	.80
+	HYDROGRAPH AT D600A	1221.	4.75	783.	447.	151.	9.67
+	ROUTED TO RD600A	1049.	5.33	765.	447.	151.	9.67
+	HYDROGRAPH AT PI603	623.	4.50	102.	25.	8.	.52
+	5 COMBINED AT CPI603	2200.	4.92	1211.	606.	205.	15.98
+	ROUTED TO SPI603	2086.	5.25	1209.	606.	205.	15.98
+	DIVERSION TO DO744	0.	.00	0.	0.	0.	15.98
+	HYDROGRAPH AT D744	2086.	5.25	1209.	606.	205.	15.98
+	ROUTED TO RPI603	2033.	5.42	1195.	606.	205.	15.98
+	HYDROGRAPH AT PI600	1023.	4.33	118.	29.	10.	.61
+	3 COMBINED AT CPI600	2593.	13.25	2528.	1931.	1271.	263.07
+	ROUTED TO RPI600	2594.	14.17	2527.	1931.	1271.	263.07
	HYDROGRAPH AT DCAP16	819.	6.08	722.	230.	77.	33.74
+	ROUTED TO RDCP16	814.	6.50	720.	230.	77.	33.74
+	HYDROGRAPH AT DCAP17	273.	6.08	240.	78.	26.	33.74
+	ROUTED TO RDCP17	271.	6.50	240.	78.	26.	33.74
+	HYDROGRAPH AT PD740	991.	4.75	215.	54.	18.	1.28
+	3 COMBINED AT CPD740	1249.	9.42	1138.	413.	138.	16.31
+	ROUTED TO RPD740	1248.	9.67	1137.	413.	138.	16.31
+	HYDROGRAPH AT PD726B	832.	4.75	167.	42.	14.	.93
+	2 COMBINED AT C726B	1229.	9.67	1147.	436.	145.	17.24
+	ROUTED TO R726B	1227.	9.92	1147.	436.	145.	17.24
+	HYDROGRAPH AT DCAP18	282.	6.08	248.	82.	27.	33.74
	ROUTED TO RDCP18	279.	6.67	248.	82.	27.	33.74
+	HYDROGRAPH AT PD736	373.	5.17	136.	35.	12.	.78

	2 COMBINED AT						
		CPD736	441.	6.17	387.	149.	50.	4.64
	ROUTED TO						
+		RPD736	439.	6.25	387.	149.	50.	4.64
	HYDROGRAPH AT						
+		DCAP19	862.	6.08	761.	269.	90.	33.74
	ROUTED TO						
+		RDCP19	859.	6.33	760.	269.	90.	33.74
	HYDROGRAPH AT						
+		PD760	1444.	4.33	156.	39.	13.	.87
	ROUTED TO						
+		SCP200	398.	4.83	155.	39.	13.	.87
	ROUTED TO						
+		RPD760	396.	5.00	155.	39.	13.	.87
	HYDROGRAPH AT						
+		PD732	681.	4.42	95.	24.	8.	.48
	3 COMBINED AT						
+		CPD732	1085.	5.75	963.	377.	126.	13.11
	ROUTED TO						
+		RPD732	1073.	6.33	960.	376.	126.	13.11
	HYDROGRAPH AT						
+		PD726A	605.	5.17	192.	49.	16.	1.10
	3 COMBINED AT						
+		C726A	1657.	6.08	1346.	504.	168.	18.85
	ROUTED TO						
+		R726A	1650.	6.33	1343.	504.	168.	18.85
	2 COMBINED AT						
+		C726*	2672.	6.58	2210.	785.	262.	36.10
	ROUTED TO						
+		R726*	2568.	7.25	2164.	784.	262.	36.10
	HYDROGRAPH AT						
+		PD726	1071.	4.58	229.	58.	19.	1.35
	HYDROGRAPH AT						
+		PD716	2644.	4.33	339.	85.	28.	1.75
	3 COMBINED AT						
+		CPD726	2581.	7.17	2159.	860.	287.	39.20
	ROUTED TO						
+		SPD726	2518.	7.67	2134.	855.	286.	39.20
	DIVERSION TO						
+		DO716	201.	7.67	92.	23.	8.	39.20
	HYDROGRAPH AT						
+		D716	2317.	7.67	2042.	832.	278.	39.20
	ROUTED TO						
+		RPD726	2306.	7.92	2040.	832.	278.	39.20
	HYDROGRAPH AT						
+		PD720	942.	4.33	115.	29.	10.	.59
	HYDROGRAPH AT						
+		D744	0.	.00	0.	0.	0.	15.98
	ROUTED TO						

+		RD744	0.	.00	0.	0.	0.	15.98
	4 COMBINED AT	CPD720	4030.	9.25	3584.	2278.	1369.	296.13
+	ROUTED TO	RPD720	4030.	9.33	3584.	2277.	1369.	296.13
+	HYDROGRAPH AT	D716	201.	7.67	92.	23.	8.	39.20
+	ROUTED TO	RD716	198.	7.25	91.	23.	8.	39.20
+	2 COMBINED AT	C700*	4027.	9.33	3583.	2273.	1366.	302.88
+	ROUTED TO	R700*	3980.	9.92	3548.	2253.	1355.	302.88
+	HYDROGRAPH AT	PD752	354.	4.25	43.	11.	4.	.19
+	HYDROGRAPH AT	PD748	557.	4.25	66.	16.	5.	.28
+	2 COMBINED AT	CPD748	910.	4.25	108.	27.	9.	.47
+	ROUTED TO	SCP220	531.	4.50	108.	27.	9.	.47
+	ROUTED TO	RPD748	518.	4.75	108.	27.	9.	.47
	HYDROGRAPH AT	PD756	1655.	5.17	560.	146.	49.	3.23
+	ROUTED TO	SCP210	1639.	5.25	560.	146.	49.	3.23
+	ROUTED TO	RPD756	1599.	5.58	560.	146.	49.	3.23
+	2 COMBINED AT	C708*	1685.	5.50	640.	167.	56.	3.70
+	ROUTED TO	R708*	1638.	5.92	639.	167.	56.	3.70
+	HYDROGRAPH AT	PD708	1840.	4.83	432.	109.	36.	2.40
+	HYDROGRAPH AT	PD712A	570.	4.83	155.	39.	13.	.77
+	ROUTED TO	R712A	551.	5.17	155.	39.	13.	.77
+	HYDROGRAPH AT	PD712	1003.	4.67	205.	52.	17.	.89
+	4 COMBINED AT	CPD708	2957.	5.00	1249.	327.	109.	7.76
+	ROUTED TO	RPD708	2911.	5.17	1249.	327.	109.	7.76
	HYDROGRAPH AT	PD704	480.	4.42	65.	16.	5.	.36
+	HYDROGRAPH AT	AF800	945.	4.42	146.	37.	12.	.72

+	3 COMBINED AT	CPD704	3265.	5.08	1392.	364.	121.	8.84
+	ROUTED TO	SPD704	3181.	5.25	1392.	364.	121.	8.84
+	DIVERSION TO	DO800	0.	.00	0.	0.	0.	8.84
+	HYDROGRAPH AT	D800	3181.	5.25	1392.	364.	121.	8.84
+	ROUTED TO	RPD704	3146.	5.50	1391.	364.	121.	8.84
+	HYDROGRAPH AT	PD700	1703.	4.50	255.	64.	21.	1.40
+	3 COMBINED AT	CPD700	4058.	9.75	3620.	2325.	1379.	313.12
+	HYDROGRAPH AT	D800	0.	.00	0.	0.	0.	8.84
+	ROUTED TO	RD800	0.	.00	0.	0.	0.	8.84
+	HYDROGRAPH AT	AF802	618.	4.33	78.	20.	7.	.39
+	3 COMBINED AT	C802*	4057.	9.75	3619.	2325.	1379.	313.51
+	ROUTED TO	R810*	4053.	10.17	3613.	2320.	1377.	313.51
	HYDROGRAPH AT	AF803	2044.	4.67	563.	143.	48.	2.84
+	ROUTED TO	RAF803	2001.	4.83	562.	143.	48.	2.84
+	HYDROGRAPH AT	AF805	810.	4.50	123.	31.	10.	.63
+	ROUTED TO	RAF805	618.	5.17	123.	31.	10.	.63
+	HYDROGRAPH AT	AF807	1789.	4.25	196.	49.	16.	1.02
+	3 COMBINED AT	CAF807	2926.	4.67	812.	206.	69.	4.49
+	ROUTED TO	RAF807	2904.	4.75	811.	206.	69.	4.49
+	HYDROGRAPH AT	AF810	1543.	4.83	350.	88.	29.	2.12
+	3 COMBINED AT	CAF810	4048.	10.17	3607.	2346.	1386.	320.12
+	ROUTED TO	RAF810	4039.	10.50	3596.	2343.	1386.	320.12
+	HYDROGRAPH AT	AF820	592.	4.58	119.	30.	10.	.70
	2 COMBINED AT	CAF820	4038.	10.50	3595.	2342.	1385.	320.81
+	HYDROGRAPH AT	AF830	356.	4.42	61.	15.	5.	.27

	HYDROGRAPH AT	AF854	863.	4.08	89.	22.	7.	.34
+	ROUTED TO	RAF854	792.	4.17	89.	22.	7.	.34
+	HYDROGRAPH AT	AF852	479.	4.08	47.	12.	4.	.17
+	2 COMBINED AT	CAF852	1174.	4.08	135.	34.	11.	.51
+	ROUTED TO	RAF852	1167.	4.17	135.	34.	11.	.51
+	HYDROGRAPH AT	AF850	585.	4.08	58.	14.	5.	.22
+	2 COMBINED AT	CAF850	1545.	4.17	190.	48.	16.	.72
+	HYDROGRAPH AT	AF864	116.	4.25	24.	6.	2.	.09
+	ROUTED TO	RAF864	74.	4.67	24.	6.	2.	.09
+	HYDROGRAPH AT	AF862	542.	4.00	38.	9.	3.	.18
+	2 COMBINED AT	CAF862	555.	4.00	60.	16.	5.	.26
	ROUTED TO	RAF862	457.	4.08	60.	16.	5.	.26
+	HYDROGRAPH AT	AF866	896.	4.17	126.	32.	11.	.45
+	ROUTED TO	RAF866	616.	4.42	123.	32.	11.	.45
+	HYDROGRAPH AT	AF860	476.	4.25	84.	21.	7.	.36
+	3 COMBINED AT	CAF860	1151.	4.25	254.	66.	22.	1.08
+	HYDROGRAPH AT	SV258	888.	4.42	150.	38.	13.	.74
+	DIVERSION TO	DO258	435.	4.42	73.	18.	6.	.74
+	HYDROGRAPH AT	D258	453.	4.42	76.	19.	6.	.74
+	ROUTED TO	RSV258	420.	4.58	76.	19.	6.	.74
+	HYDROGRAPH AT	SV256	104.	4.17	10.	2.	1.	.06
+	2 COMBINED AT	CSV256	484.	4.50	88.	22.	7.	.44

*** NORMAL END OF HEC-1 ***

D.6.3. 100-yr, 24-hr Future Conditions Model Output

Wittmann ADMSU Addendum
100-year 24-hour Future Conditions

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1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN   1998               *
*           VERSION 4.1                *
*                                      *
*  RUN DATE   04MAY05  TIME  13:06:27  *
*                                      *
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*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1
PAGE 1

HEC-1 INPUT

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID  ******************************************************************************
  2           ID  **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
  3           ID  **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
  4           ID  ******************************************************************************
  5           ID  **                                                                          **
  6           ID  **  ADDENDUM TO THE WITTMANN AREA DRAINAGE MASTER STUDY UPDATE HYDROLOGY    **
  7           ID  **                                                                          **
  8           ID  ******************************************************************************
  9           ID  **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
 10           ID  **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
 11           ID  ******************************************************************************
 12           ID  **                                                                          **
 13           ID  ** THE FOLLOWING CHANGES HAVE BEEN MADE TO THE WITTMANN HYDROLOGY MODELS    **
 14           ID  ** DATED OCTOBER 2004:                                                      **
 15           ID  **                                                                          **
 16           ID  **     -Diversion added after CTW480                                        **
 17           ID  **          -Main flow (5%) to CTW478                                       **
 18           ID  **          -Diverted flow (95%) to CWI584                                  **
 19           ID  **          -Added concentration point CWI584 combining RD480 and WI584     **
 20           ID  **          -Hard coding was added to CTW478                                **
 21           ID  **          -Route added after D480 (Diversion Recovery)                    **
 22           ID  **          -Route RWI584 was adjusted                                      **
 23           ID  **          -Storage Route SCP050 was adjusted                              **
 24           ID  **          -Route R508* was adjusted                                       **
 25           ID  **          -Hard coding for CWI510 was adjusted                            **
 26           ID  **                                                                          **
 27           ID  **     -Diversion D618 was moved from after CPI618 to before RDCP12         **
 28           ID  **          -Updated route RD618 information                                **
 29           ID  **          -Hard coding on CPI618 was adjusted                             **
 30           ID  **          -Hard coding on CPI615 was adjusted                             **
 31           ID  **                                                                          **
 32           ID  **     -Route RPI639 changed from following US60 to CPI636 to route         **
 33           ID  **      through US60/RR structures and combine with CWI506                  **
 34           ID  **          -Cards PI639, D524, RD524, CPI639 and RPI639 were changed from **
 35           ID  **           following R624A to follow RWI524                               **
 36           ID  **          -CPI636 was removed-no longer needed to combine PI636 & RPI639 **
 37           ID  **          -RPI639 information was changed to reflect new route            **
 38           ID  **          -CWI506 changed from combining 3 to combine 4:                  **
 39           ID  **           RWI525, RWI524, RPI639 & WI506                                 **
 40           ID  **          -Hard coding on CWI506 was adjusted                             **
 41           ID  **          -Hard Coding on CWI500 was adjusted                             **
 42           ID  **                                                                          **
 43           ID  ******************************************************************************
 44           ID  **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
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 45          ID   **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
 46          ID   ******************************************************************************
 47          ID
 48          ID
 49          ID
 50          ID   ******************************************************************************
 51          ID   ******************************************************************************
 52          ID   **                                                                          **
 53          ID   **    WITTMANN AREA DRAINAGE MASTER STUDY UPDATE-HYDROLOGY MODEL 2004       **
 54          ID   **                                                                          **
 55          ID   ******************************************************************************
1                                    HEC-1 INPUT
PAGE  2

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 56          ID   ******************************************************************************
 57          ID
 58          ID   PROJECT:                Wittmann ADMS Update
 59          ID   CLIENT:                 Flood Control District of Maricopa County
 60          ID   PREPARED BY:            Entellus, Inc.
 61          ID   PROJECT No:             FCD 2002C029              Entellus 310.032
 62          ID   FILE NAME: WTFC24-addendum.hc1          CREATED DATE: FEB 01, 2004
 63          ID                                          MODIFIED DATE: MAY 04, 2005
 64          ID
 65          ID   STORM:
 66          ID                       100-year 24-hour Storm
 67          ID
 68          ID   DEVELOPMENT CONDITIONS:
 69          ID                       Future Conditions
 70          ID
 71          ID   MODELING ASSUMPTIONS:
 72          ID                       It was assumed that the US60 did not have adequate
 73          ID                       storage to cause any significant attenuation.
 74          ID
 75          ID                       The assumption was made that the CAP Canal embankment
 76          ID                       would not be breached under a large flood event.
 77          ID
 78          ID                       The assumption was made that the Beardsley Canal would
 79          ID                       not fail under a large storm event (Per District
 80          ID                       Instruction).  In addition, the berm north of the
 81          ID                       Beardsley canal and east of US60 was assumed to fail
 82          ID                       (per district Instruction).
 83          ID
 84          ID                       For both the CAP and Beardsley Canals, once the berm
 85          ID                       elevation was reached weir flow was assumed.  It was
 86          ID                       also assumed that any weir flow over the canal that
 87          ID                       might enter the canal and be diverted out of the study
 88          ID                       area was insignificant, and thus was ignored.  In other
 89          ID                       words all weir flow over the canal embankment reaches
 90          ID                       the downstream concentration point.
 91          ID
 92          ID                       Typical X-sects were developed, and it was assumed
 93          ID                       that a typical x-sect could adequately represent
 94          ID                       various reaches.
 95          ID
 96          ID                       Time-Area Relations were used base on the District's
 97          ID                       Hydrology Manual criteria.  Two Time-Area Relation
 98          ID                       Curves were utilized:
 99          ID                               -Urban
100          ID                               -Natural
101          ID                       The Time-Area Relation Curves were taken directly
102          ID                       from the manual
103          ID
104          ID   MODELING METHODS:
105          ID                       This model utilizes QI cards to input the Padelford
106          ID                       hydrographs from the A-N West Inc. Padelford Wash
107          ID                       Floodplain Delineation Study.  The hydrograph was
108          ID                       altered from its original form (2 minute interval to
109          ID                       5-minute interval) through simple interpolation.
110          ID
1                                    HEC-1 INPUT
PAGE  3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 111          ID                          Clark Unit Hydrographs were used for all subbasins
 112          ID                          except the two subbasins directly upstream of the
 113          ID                          Bonita Dam (PD726B and PD740 use S-graphs).  The UC
 114          ID                          parameters were calculated using the WMS7.0 software.
 115          ID
 116          ID                          For Basins PD726B and PD740 S-Graphs were utilized per
 117          ID                          the request of the FCDMC.  Limited details regarding
 118          ID                          the calculations of the S-graphs can be found in the
 119          ID                          model by the basin KK card.  For full details of the
 120          ID                          S-graph calculations refer to the Appendix.
 121          ID
 122          ID                          Normal Depth routing was used for all routing reaches.
 123          ID
 124          ID                          Hard coding was used to account for the percentage of
 125          ID                          area associated with a diversion.  Because of the use
 126          ID                          of JD cards and aereal reduction, hard coding was
 127          ID                          necessary to properly account for area.  For a given
 128          ID                          diversion a percentage of the flow is routed to two
 129          ID                          different locations.  The same percentage of area
 130          ID                          follows that diverted flow.  In addition the area
 131          ID                          downstream of the main path is reduced or increased and
 132          ID                          is hard coded to account for the loss or gain of area.
 133          ID                          Hard coding was performed based on the 24-hour existing
 134          ID                          conditions model.
 135          ID
 136          ID                          Stage-storage was developed for all the structures
 137          ID                          along the CAP Canal, as well as along the Beardsley
 138          ID                          Canal.  In addition several stage-storage locations
 139          ID                          were developed for areas with significant storage
 140          ID                          along the SR74.  No storage was modeled along the US60
 141          ID                          and railroad, but the culverts were analyzed for
 142          ID                          diversion potential.  Diversions were placed in the
 143          ID                          model where deemed appropriate.  See appendix for
 144          ID                          details.
 145          ID
 146          ID                          FLO-2D was utilized to calculate the split flows at
 147          ID                          concentration points CIW351. CIW357, CIW363 and CWI576.
 148          ID                          See appendix for modeling details.
 149          ID
 150          ID   ******************************************************************************
 151          ID   ******************************************************************************
 152          ID
              *DIAGRAM
 153          IT       5                0    1500
 154          IO       5
 155          IN      15                0
 156          JD    4.18     0.01
              * 24-hour distribution
 157          PC     0.0    0.002    0.005    0.008    0.011    0.014    0.017     0.02    0.023    0.026
 158          PC   0.029    0.032    0.035    0.038    0.041    0.044    0.048    0.052    0.056     0.06
 159          PC   0.064    0.068    0.072    0.076     0.08    0.085     0.09    0.095      0.1    0.105
 160          PC    0.11    0.115     0.12    0.126    0.133     0.14    0.147    0.155    0.163    0.172
 161          PC   0.181    0.191    0.203    0.218    0.236    0.257    0.283    0.387    0.663    0.707
 162          PC   0.735    0.758    0.776    0.791    0.804    0.815    0.825    0.834    0.842    0.849
 163          PC   0.856    0.863    0.869    0.875    0.881    0.887    0.893    0.898    0.903    0.908
1                                                HEC-1 INPUT
PAGE   4

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 164          PC   0.913    0.918    0.922    0.926     0.93    0.934    0.938    0.942    0.946     0.95
 165          PC   0.953    0.956    0.959    0.962    0.965    0.968    0.971    0.974    0.977     0.98
 166          PC   0.983    0.986    0.989    0.992    0.995    0.998      1.0
 167          JD   3.929     10.0
 168          JD   3.856     20.0
 169          JD   3.725     40.0
 170          JD   3.599     80.0
 171          JD   3.532    120.0
 172          JD   3.444    200.0
 173          JD   3.385    300.0
 174          JD   3.289    500.0
              *
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*
*
*
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
* ************************************************************************ *
* ************ BEGINNING OF WEST PORTION OF DETAILED MODEL ******************* *
* ************************************************************************ *
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
* WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
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                    * Combines TW480, RTW482 and RTW484
                                                HEC-1 INPUT
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


2592          KK  CTW480
2593          KO       0       0     0.0       0      22
2594          HC       3
              *
              *
              * Diversion Out
              * Flow Split Diversion: Main path to TW478, Diversion to WI584
              * 95% of flow is diverted to WI584

2595          KK    D480
2596          KO       0       0     0.0       0      22
2597          DT   DO480
2598          DI       0   10000
2599          DQ       0    9500
              *
              *
              * ROUTE UPDTAED 4/14/04

2600          KK  RTW480
2601          KO       0       0     0.0       0      22
2602          RS       2    FLOW     0.0     0.0
2603          RC    0.04    0.04    0.04    4817  0.0083
              * TSR482
2604          RX       0     102     478     535     709     892    1441    1649
2605          RY    1610    1608    1608    1606    1606    1608    1608    1610
              *
              *

2606          KK   TW478
2607          KO       0       0     0.0       1      22
2608          BA  0.2625
2609          LG   0.298   0.199   6.512   0.153  11.106
2610          UC   0.458   0.333
              * Urban Time-Area Relation
2611          UA       0       5      16      30      65      77      84      90      94      97
2612          UA     100
              *
              *
              * Combines TW478 and RTW480

2613          KK  CTW478
2614          KO       0       0     0.0       0      22
2615          HC       2    0.79
```

```
                 * Diversion Recovery: Flow split from CTW480

2937             KK    D480
2938             KO       0       0     0.0       0      22
2939             DR   DO480
                 *
                 *
                 * ROUTE UPDATED 05/04/2005

2940             KK   RD480
2941             KO       0       0     0.0       0      22
2942             RS       2    FLOW     0.0     0.0
2943             RC    0.04    0.04    0.04    5985  0.0065
                 * TSR482
2944             RX       0     102     478     535     709     892    1441    1649
2945             RY    1610    1608    1608    1606    1606    1608    1608    1610
                 *
                 *
                 * COMBINES WI584 ANDF RD480

2946             KK  CWI584
2947             KO       0       0     0.0       0      22
2948             HC       2   11.35
                 *
                 *
                 * ROUTE UPDATED 05/04/2005

2949             KK  RWI584
2950             KO       0       0     0.0       0      22
2951             RS       2    FLOW     0.0     0.0
2952             RC    0.04    0.04    0.04    3933   0.001
                 * WITS70
2953             RX       0     450     700    1284    1435    1499    1745    2500
2954             RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
                 *
                 *
                                          HEC-1 INPUT
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LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


2955             KK   WI550
2956             KO       0       0     0.0       1      22
2957             BA  0.1425
2958             LG   0.133    0.25     4.3   0.565    70.0
2959             UC   0.346   0.250
                 * Urban Time-Area Relation
2960             UA       0       5      16      30      65      77      84      90      94      97
2961             UA     100
                 *
                 *
                 * COMBINES WI550, RWI552 AND RWI584

2962             KK  CWI550
2963             KO       0       0     0.0       0      22
2964             HC       3
                 *
                 * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE CAP050

2965             KK  SCP050
2966             KO       0       0     0.0       0      22
2967             RS       1    STOR       0
2968             SQ       0     209    1075    2314    3833    4684   12000
2969             SE    1545    1546    1548    1550    1552    1553    1554
2970             SA       0      .1      .7    11.5    35.3    54.1
2971             SE    1545    1546    1548    1550    1552    1553
```

```
                 * Combines CWI518 and CWI512

3683             KK   C508*
3684             KO       0       0     0.0       0      22
3685             HC       2
                 *
                 *
                 * ROUTE UPDATED 05/04/2005

3686             KK   R508*
3687             KO       0       0     0.0       0      22
3688             RS       7    FLOW     0.0     0.0
3689             RC   0.043   0.035   0.043   12366  0.0053
                 * WITS130 modified
3690             RX       0     400     456     575     620     650     660     682
3691             RY    1398    1394  1393.5  1392.5    1392  1392.5    1395    1398
                 *
                 *

3692             KK   WI508
3693             KO       0       0     0.0       1      22
3694             BA  0.6991
3695             LG   0.295    0.25   5.116   0.277  13.185
3696             UC   1.021   0.932
                 * Urban Time-Area Relation
3697             UA       0       5      16      30      65      77      84      90      94      97
3698             UA     100
                 *
                 *
                 * COMBINES WI508 AND R508*

3699             KK  CWI508
3700             KO       0       0     0.0       0      22
3701             HC       2
                 *
                 * Diversion Out: Flow split FS10
                 * Flow Split Diversion: Main path to CWI510, Diversion to CWI500
                 * 19% of flow is diverted to CWI500

3702             KK    D508
3703             KO       0       0     0.0       0      22
3704             DT   DO508     0.0     0.0
3705             DI       0   10000
3706             DQ       0    1900
                 *
                 *
1                                          HEC-1 INPUT
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LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3707             KK  WI510A
3708             KO       0       0     0.0       1      22
3709             BA  1.1293
3710             LG   0.250    0.25   4.622   0.398  34.980
3711             UC   0.813   0.521
                 * Urban Time-Area Relation
3712             UA       0       5      16      30      65      77      84      90      94      97
3713             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/4

3714             KK   R510A
3715             KO       0       0     0.0       0      22
3716             RS       8    FLOW     0.0     0.0
3717             RC    0.04    0.04    0.04   17257  0.0051
                 * WITS70
3718             RX       0     450     700    1284    1435    1499    1745    2500
3719             RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
                 *
                 *
```

```
KK   WI510
KO       0       0     0.0       1      22
BA  1.2273
LG   0.258   0.250   5.732   0.237  27.923
UC   1.313   1.287
* Urban Time-Area Relation
UA       0       5      16      30      65      77      84      90      94      97
UA     100
*
*
* COMBINES CWI508, WI510 AND R510A

KK  CWI510
KO       0       0     0.0       0      22
* Hard Coded
HC       3   35.84
*
*
* ROUTE UPDATED 4/14/04

KK  RWI510
KO       0       0     0.0       0      22
RS       2    FLOW     0.0     0.0
RC    0.04    0.04    0.04    6492  0.0048
* WITS70
RX       0     450     700    1284    1435    1499    1745    2500
RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
```

```
                    * Combines RD525 and WI524

3832                KK  CWI524
3833                KO       0       0     0.0       0      22
                    * Hard Coded
3834                HC       2    1.51
                    *
                    *
                    * Railroad Diversion: Main path to CWI506, Diversion to CPI639
                    * From Structure RR650, See Appendix D.5 for analysis

3835                KK    D524
3836                KO       0       0     0.0       0      22
3837                DT   DO524     0.0     0.0
3838                DI       0     595     906    1295    1748
3839                DQ       0       0      38     119     230
                    *
                    *
                    * ROUTE UPDATED 4/14/04

3840                KK  RWI524
3841                KO       0       0     0.0       0      22
3842                RS       2    FLOW     0.0     0.0
3843                RC   0.043   0.035   0.043    4526  0.0062
                    * WITS130
3844                RX       0     400     456     575     620     650     660     682
3845                RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                    *
                    *
1                                                HEC-1 INPUT
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LINE                ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3846                KK   PI639
3847                KO       0       0     0.0       1      22
3848                BA  0.3431
3849                LG    0.25    0.25   4.598   0.401   35.27
3850                UC   0.946   1.173
                    * Urban Time-Area Relation
3851                UA       0       5      16      30      65      77      84      90      94      97
3852                UA     100
                    *
                    *
                    * Railroad Diversion Recovery: Outflow from structure RR650

3853                KK    D524
3854                KO       0       0     0.0       0      22
3855                DR   DO524
                    *
                    *
                    *
                    * ROUTE UPDATED 4/14/4

3856                KK   RD524
3857                KO       0       0     0.0       0      22
3858                RS       1    FLOW     0.0     0.0
3859                RC   0.043   0.035   0.043    2235  0.0027
                    * WITS130
3860                RX       0     400     456     575     620     650     660     682
3861                RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                    *
                    *
                    * Combines RD524 and PI639

3862                KK  CPI639
3863                KO       0       0     0.0       0      22
                    * Hard Coded
3864                HC       2    0.37
                    *
                    * ROUTE UPDATED 05/04/2005

3865                KK  RPI639
```

```
3866          KO       0       0     0.0       0      22
3867          RS       2    FLOW     0.0     0.0
3868          RC   0.043   0.035   0.043    2635  0.0061
              * WITS130
3869          RX       0     400     456     575     620     650     660     682
3870          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *

3871          KK   WI506
3872          KO       0       0     0.0       1      22
3873          BA  1.5757
3874          LG    0.27   0.253   5.331   0.266  28.348
3875          UC   1.083   0.781
              * Urban Time-Area Relation
1                                          HEC-1 INPUT
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3876          UA       0       5      16      30      65      77      84      90      94      97
3877          UA     100
              *
              *
              * COMBINES WI506, RWI525 AND RW524

3878          KK  CWI506
3879          KO       0       0     0.0       0      22
              * Hard Coded
3880          HC       4   12.35
              *
              *
              * ROUTE UPDATED 4/14/04

3881          KK  RWI506
3882          KO       0       0     0.0       0      22
3883          RS       3    FLOW     0.0     0.0
3884          RC    0.04    0.04    0.04    5235  0.0042
              * WITS70
3885          RX       0     450     700    1284    1435    1499    1745    2500
3886          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *
              * Diversion Recovery: Flow split FS10

3887          KK    D508
3888          KO       0       0     0.0       0      22
3889          DR   DO508
              *
              *
              * ROUTE UPDATED 4/14/4

3890          KK   RD508
3891          KO       0       0     0.0       0      22
3892          RS       2    FLOW     0.0     0.0
3893          RC    0.04    0.04    0.04    5200  0.0065
              * WITS70
3894          RX       0     450     700    1284    1435    1499    1745    2500
3895          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *

3896          KK   WI500
3897          KO       0       0     0.0       1      22
3898          BA  1.0487
3899          LG   0.292     0.3   5.521   0.245   24.91
3900          UC   0.979   0.695
              * Urban Time-Area Relation
3901          UA       0       5      16      30      65      77      84      90      94      97
3902          UA     100
              *
              *
              * COMBINES WI500, RD508, RWI506 AND RWI502
```

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1                                                    HEC-1 INPUT
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3903          KK  CWI500
3904          KO       0       0     0.0       0      22
              * Hard Coded
3905          HC       4  222.69
              *
              *
              * STORAGE AT MCMICKEN DAM SPILLWAY
              *
              *

3906          KK  SSPILL
3907          KM   MCMICKEN DAM OUTLET AND SPILLWAY RATING CURVES USED HERE
3908          RS       1    STOR       0       0
3909          SV       0    1370    5505   17501   20816   25623   30850   36661   38754   39849
3910          SQ       0     675     810    4080    4325   21150   47400   81650   93160   99300
3911          SE    1335    1340    1345  1352.5 1353.65 1355.65 1357.65 1359.65 1360.35  1360.7
3912          ST  1360.7   12775    3.05     1.5
              *
              *
              * ROUTE UPDATED 4/14/04

3913          KK  RWI500
3914          KO       0       0     0.0       0      22
3915          RS       3    FLOW     0.0     0.0
3916          RC   0.045   0.035   0.045    5659   0.001
              * McMicken Dam Channel
3917          RX       0      46     101     121     171     181    1421    3621
3918          RY      25      14       4       0       0       4      14      25
              *
              *

3919          KK   PI635
3920          KO       0       0     0.0       1      22
3921          BA  0.6106
3922          LG   0.346   0.373   5.391   0.229    1.55
3923          UC   0.683   0.465
              * Natural Time-Area Relation
3924          UA       0       3       5       8      12      20      43      75      90      96
3925          UA     100
              *
              *
              * COMBINES PI635 AND RWI500

3926          KK  CPI635
3927          KO       0       0     0.0       0      22
3928          HC       2
              *
              * ROUTE UPDATED 4/14/04
1                                                    HEC-1 INPUT
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3929          KK  RPI635
3930          KO       0       0     0.0       0      22
3931          RS       6    FLOW     0.0     0.0
3932          RC   0.045   0.035   0.045    7557   0.001
              * McMicken Dam Channel
3933          RX       0      46     101     121     171     181    1421    3621
3934          RY      25      14       4       0       0       4      14      25
              *
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP110

3935          KK  DCAP11
3936          KO       0       0     0.0       0      22
```

```
3937          DR  DOCP11
              *
              *
              * ROUTE UPDATED 4/14/4

3938          KK  RDCP11
3939          KO       0       0     0.0       0      22
3940          RS       5    FLOW     0.0     0.0
3941          RC   0.043   0.035   0.043    6377  0.0094
              * PITS10_2
3942          RX       0      89     103     136     185     206     261     280
3943          RY    1612  1610.5    1610  1608.5    1610    1611  1611.8    1612
              *
              * CAP Diversion Recovery: Outflow from structure CAP120

3944          KK  DCAP12
3945          KO       0       0     0.0       0      22
3946          DR  DOCP12
              *
              *
              * Diversion Out: Flow split FS11
              * Flow Split Diversion: Main path to CPI618, Diversion to CPI615
              * 53% of flow is diverted to CPI615

3947          KK    D618
3948          KO       0       0     0.0       0      22
3949          DT   DO618     0.0     0.0
3950          DI       0   10000
3951          DQ       0    5300
              *
              *
              * ROUTE UPDATED 4/14/4

3952          KK  RDCP12
3953          KO       0       0     0.0       0      22
3954          RS       2    FLOW     0.0     0.0
3955          RC   0.043   0.035   0.043    6159  0.0094
              * PITS30
3956          RX       0      49     199     206     222     231     299     375
3957          RY    1532    1532    1530    1528    1528    1530    1532    1532
              *
              *
```



```
                                          HEC-1 INPUT

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3958          KK   PI618
3959          KO       0       0     0.0       1      22
3960          BA  0.2886
3961          LG     0.3    0.25   4.623   0.336    10.0
3962          UC   0.500   0.407
              * Urban Time-Area Relation
3963          UA       0       5      16      30      65      77      84      90      94      97
3964          UA     100
              *
              *
              * Combines PI618, RDCP12 and RDCP11

3965          KK  CPI618
3966          KO       0       0     0.0       0      22
              * Hard Coded
3967          HC       3    5.48
              *
              *
              * ROUTE UPDATED 4/14/04

3968          KK  RPI618
3969          KO       0       0     0.0       0      22
3970          RS       5    FLOW     0.0     0.0
3971          RC   0.043   0.035   0.043   10443  0.0075
              * PITS20
3972          RX       0      50      84      87     123     125     156     285
```

```
3973          RY    1454    1453    1452    1450    1450    1452    1452    1454
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP130

3974          KK  DCAP13
3975          KO       0       0     0.0       0      22
3976          DR  DOCP13
              *
              *
              * ROUTE UPDATED 4/14/4

3977          KK  RDCP13
3978          KO       0       0     0.0       0      22
3979          RS       6    FLOW     0.0     0.0
3980          RC   0.043   0.035   0.043   11034  0.0089
              * PITS30
3981          RX       0      49     199     206     222     231     299     375
3982          RY    1532    1532    1530    1528    1528    1530    1532    1532
              *
              *

3983          KK   PI615
3984          KO       0       0     0.0       1      22
3985          BA  0.8419
3986          LG   0.297    0.25   4.318   0.415  11.355
3987          UC   0.771    0.57
              * Urban Time-Area Relation
1                                          HEC-1 INPUT
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3988          UA       0       5      16      30      65      77      84      90      94      97
3989          UA     100
              *
              *
              * Diversion Recovery: Flow split FS11

3990          KK    D618
3991          KO       0       0     0.0       0      22
3992          DR   DO618
              *
              *
              * ROUTE UPDATED 05/04/2005

3993          KK   RD618
3994          KO       0       0     0.0       0      22
3995          RS       5    FLOW     0.0     0.0
3996          RC   0.043   0.035   0.043    9630  0.0091
              * PITS20
3997          RX       0      50      84      87     123     125     156     285
3998          RY    1454    1453    1452    1450    1450    1452    1452    1454
              *
              *
              *
              * Combines RD618, PI615 and RDCP13

3999          KK  CPI615
4000          KO       0       0     0.0       0      22
              * Hard Coded
4001          HC       3    6.21
              *
              *
              * ROUTE UPDATED 4/14/04

4002          KK  RPI615
4003          KO       0       0     0.0       0      22
4004          RS       2    FLOW     0.0     0.0
4005          RC   0.043   0.035   0.043    5109  0.0079
              * PITS20
4006          RX       0      50      84      87     123     125     156     285
4007          RY    1454    1453    1452    1450    1450    1452    1452    1454
```

Wittmann ADMSU Addendum
100-year 24-hour Future Conditions

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

 NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW


2571          .           .           .      CTW482............
              .           .           .           .
              .           .           .           .
 2576         .           .           .           .-------->   DO482
 2574         .           .           .        D482
              .           .           .           V
              .           .           .           V
 2579         .           .           .      RTW482
              .           .           .           .
              .           .           .           .
 2585         .           .           .           .       TW480
              .           .           .           .           .
              .           .           .           .           .
 2592         .           .      CTW480........................
              .           .           .
              .           .           .
 2597         .           .           .-------->   DO480
 2595         .           .        D480
              .           .           V
              .           .           V
 2600         .           .      RTW480
              .           .           .
              .           .           .
 2606         .           .           .       TW478
              .           .           .           .
              .           .           .           .
 2613         .           .      CTW478............
              .           .           V
              .           .           V
 2616         .           .      RTW478
              .           .           .
              .           .           .
 2622         .      CTW430............
```

```
2930          .           .       WI584
              .           .           .
              .           .           .
2939          .           .           .           .<-------   DO480
2937          .           .           .        D480
              .           .           .           V
              .           .           .           V
2940          .           .           .       RD480
              .           .           .           .
              .           .           .           .
2946          .           .      CWI584............
              .           .           V
              .           .           V
2949          .           .      RWI584
              .           .           .
              .           .           .
2955          .           .           .       WI550
              .           .           .           .
              .           .           .           .
2962          .      CWI550........................
              .           V
              .           V
2965          .      SCP050
              .           V
              .           V
2972          .      RWI550
              .           .
              .           .
2978          .           .       WI514
              .           .           .
              .           .           .
2985          .      CWI514............
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3816          .           .       WI524
              .           .           .
              .           .           .
3825          .           .           .           .<-------   DO525
3823          .           .           .        D525
              .           .           .           V
              .           .           .           V
3826          .           .           .       RD525
              .           .           .           .
              .           .           .           .
3832          .           .      CWI524............
              .           .           .
              .           .           .
3837          .           .           .------->   DO524
3835          .           .        D524
              .           .           V
              .           .           V
3840          .           .      RWI524
              .           .           .
              .           .           .
3846          .           .           .       PI639
              .           .           .           .
              .           .           .           .
3855          .           .           .           .           .<-------   DO524
3853          .           .           .           .        D524
              .           .           .           .           V
              .           .           .           .           V
3856          .           .           .           .       RD524
              .           .           .           .           .
              .           .           .           .           .
3862          .           .           .      CPI639............
              .           .           .           V
              .           .           .           V
3865          .           .           .      RPI639
              .           .           .           .
              .           .           .           .
3871          .           .           .           .       WI506
              .           .           .           .           .
              .           .           .           .           .
3878          .      CWI506.................................
              .           V
              .           V
3881          .      RWI506
              .           .
              .           .
3889          .           .           .<-------   DO508
3887          .           .        D508
              .           .           V
              .           .           V
3890          .           .       RD508
              .           .           .
              .           .           .
3896          .           .           .       WI500
              .           .           .           .
              .           .           .           .
3903     CWI500.................................
              V
              V
3906     SSPILL
              V
              V
3913     RWI500
              .
              .
3919          .       PI635
              .           .
              .           .
3926     CPI635............
              V
              V
3929     RPI635
              .
              .
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3937          .          .<-------  DOCP11
3935          .     DCAP11
              .          V
              .          V
3938          .     RDCP11
              .          .
              .          .
3946          .          .          .<-------  DOCP12
3944          .          .     DCAP12
              .          .          .
              .          .          .
3949          .          .          .------->   DO618
3947          .          .       D618
              .          .          V
              .          .          V
3952          .          .     RDCP12
              .          .          .
              .          .          .
3958          .          .          .       PI618
              .          .          .           .
              .          .          .           .
3965          .     CPI618.......................
              .          V
              .          V
3968          .     RPI618
              .          .
              .          .
3976          .          .          .<-------  DOCP13
3974          .          .     DCAP13
              .          .          V
              .          .          V
3977          .          .     RDCP13
              .          .          .
              .          .          .
3983          .          .          .       PI615
              .          .          .           .
              .          .          .           .
3992          .          .          .           .          .<-------   DO618
3990          .          .          .           .       D618
              .          .          .           .          V
              .          .          .           .          V
3993          .          .          .           .      RD618
              .          .          .           .          .
              .          .          .           .          .
3999          .          .     CPI615.......................
              .          .          V
              .          .          V
4002          .          .     RPI615
              .          .          .
              .          .          .
4008          .          .          .       PI612
              .          .          .           .
              .          .          .           .
4015          .     CPI612.......................
              .          .
              .          .
4020          .          .------->   DO612
4018          .       D612
              .          V
              .          V
4023          .     RPI612
              .          .
              .          .
4031          .          .          .<-------  DOCP14
4029          .          .     DCAP14
              .          .          V
              .          .          V
4032          .          .     RDCP14
              .          .          .
              .          .          .
4038          .          .          .       PI609
              .          .          .           .
              .          .          .           .
4045          .     CPI609.......................
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                 .          V
                 .          V
4048             .     RPI609
                 .          .
                 .          .
4054             .          .      PI600A
                 .          .           .
                 .          .           .
4060             .     C600A............
                 .          .
                 .          .
4063             .          .-------> DO600A
4062             .     D600A
                 .          .
                 .          .
4066             .          .       PI621
                 .          .           .
                 .          .           .
4075             .          .           .           .<-------   DO612
4073             .          .           .       D612
                 .          .           .          V
                 .          .           .          V
4076             .          .           .      RD612
                 .          .           .          .
                 .          .           .          .
4082             .          .      CPI621............
                 .          .           V
                 .          .           V
4085             .          .      SPI621
                 .          .           V
                 .          .           V
4091             .          .      RPI621
                 .          .           .
                 .          .           .
4099             .          .           .           .<-------  DOCP10
4097             .          .           .     DCAP10
                 .          .           .          V
                 .          .           .          V
4100             .          .           .     RDCP10
                 .          .           .          .
                 .          .           .          .
4106             .          .           .           .       PI628
                 .          .           .           .           .
                 .          .           .           .           .
4113             .          .           .     CPI628............
                 .          .           .          V
                 .          .           .          V
4116             .          .           .     RPI628
                 .          .           .          .
                 .          .           .          .
4122             .          .           .           .      PI624A
                 .          .           .           .           .
                 .          .           .           .           .
4129             .          .           .      C624A............
                 .          .           .          V
                 .          .           .          V
4132             .          .           .      R624A
                 .          .           .          .
                 .          .           .          .
4138             .          .           .           .       PI636
                 .          .           .           .           V
                 .          .           .           .           V
4145             .          .           .           .      RPI636
                 .          .           .           .           .
                 .          .           .           .           .
4151             .          .           .           .           .       PI624
                 .          .           .           .           .           .
                 .          .           .           .           .           .
4158             .          .           .     CPI624......................
```

Wittmann ADMSU Addendum
100-year 24-hour Future Conditions

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

TIME OF MAX STAGE	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE
+	HYDROGRAPH AT	WT140	2090.	13.00	622.	185.	62.	3.79	
+	ROUTED TO	RWT140	1981.	13.33	622.	185.	62.	3.79	
+	HYDROGRAPH AT	WT130	1936.	12.67	406.	114.	38.	2.57	
+	2 COMBINED AT	CWT130	2914.	13.17	1014.	296.	99.	6.36	
+	ROUTED TO	RWT130	2705.	13.75	1013.	296.	99.	6.36	
+	HYDROGRAPH AT	WT160	614.	12.58	137.	40.	13.	.81	
+	ROUTED TO	RWT160	409.	14.25	136.	40.	13.	.81	
+	HYDROGRAPH AT	WT150A	3034.	12.92	784.	233.	78.	4.75	
	ROUTED TO	R150A	2850.	13.17	783.	232.	78.	4.75	
+	HYDROGRAPH AT	WT150	970.	12.50	181.	52.	17.	1.09	
+	2 COMBINED AT	CWT150	3269.	13.08	957.	283.	95.	5.84	
+	ROUTED TO	RWT150	3161.	13.50	956.	282.	95.	5.84	
+	HYDROGRAPH AT	WT120	1889.	12.75	418.	112.	37.	2.80	
+	4 COMBINED AT	CWT120	6604.	13.50	2452.	711.	239.	15.81	
+	ROUTED TO	RWT120	6330.	14.08	2450.	711.	239.	15.81	
+	HYDROGRAPH AT	WT110	2523.	12.58	444.	123.	41.	2.90	
+	2 COMBINED AT	CWT110	6522.	14.08	2846.	824.	277.	18.71	
+	ROUTED TO	RWT110	6116.	14.75	2840.	823.	277.	18.71	
+	HYDROGRAPH AT	WT100	3045.	12.67	648.	190.	64.	3.85	
+	2 COMBINED AT	CWT100	6289.	14.67	3399.	993.	335.	22.55	
+	ROUTED TO	RWT100	5872.	15.08	3380.	992.	335.	22.55	
	HYDROGRAPH AT								

+	TW406	378.	12.08	28.	8.	3.	.16
ROUTED TO	RTW406	31.	16.67	24.	8.	3.	.16
HYDROGRAPH AT +	TW408	437.	12.83	151.	45.	15.	.91
ROUTED TO +	RTW408	235.	15.92	130.	45.	15.	.91
HYDROGRAPH AT +	TW404	2509.	12.25	373.	111.	37.	2.09
4 COMBINED AT +	CTW404	5951.	15.08	3753.	1133.	383.	25.72
ROUTED TO +	RTW404	5878.	15.33	3739.	1133.	383.	25.72
HYDROGRAPH AT +	IW371	63.	12.08	7.	2.	1.	.05
DIVERSION TO +	DO371	41.	12.08	3.	1.	0.	.05
HYDROGRAPH AT +	D371	22.	12.08	4.	1.	0.	.05
ROUTED TO +	RIW371	11.	14.67	4.	1.	0.	.05
HYDROGRAPH AT +	IW366	785.	12.33	151.	40.	13.	1.06
2 COMBINED AT	CIW366	785.	12.33	154.	41.	14.	1.08
ROUTED TO +	RIW366	693.	12.83	153.	41.	14.	1.08
HYDROGRAPH AT +	IW377	104.	12.17	17.	4.	1.	.11
ROUTED TO +	SSR010	98.	12.33	17.	4.	1.	.11
ROUTED TO +	RIW377	68.	13.17	17.	4.	1.	.11
HYDROGRAPH AT +	IW374	512.	12.17	78.	21.	7.	.39
HYDROGRAPH AT +	D371	41.	12.08	3.	1.	0.	.05
ROUTED TO +	RD371	22.	12.33	3.	1.	0.	.05
3 COMBINED AT +	CIW374	526.	12.17	97.	26.	9.	.53
ROUTED TO +	RIW374	272.	14.08	94.	25.	9.	.53
HYDROGRAPH AT +	IW386	265.	12.67	70.	18.	6.	.37
ROUTED TO	RIW386	201.	13.75	69.	18.	6.	.37
HYDROGRAPH AT +	IW382	541.	12.33	104.	28.	9.	.62

2 COMBINED AT							
+	CIW382	539.	12.33	169.	46.	15.	.99
DIVERSION TO							
+	DO382B	180.	12.00	111.	31.	10.	.99
HYDROGRAPH AT							
+	D382B	359.	12.33	58.	14.	5.	.99
DIVERSION TO							
+	DO382A	95.	12.33	6.	1.	0.	.99
HYDROGRAPH AT							
+	D382A	265.	12.33	52.	13.	4.	.99
ROUTED TO							
+	RIW382	218.	12.83	52.	13.	4.	.99
HYDROGRAPH AT							
+	IW384	127.	12.17	18.	5.	2.	.08
HYDROGRAPH AT							
+	D382A	95.	12.33	6.	1.	0.	.99
ROUTED TO							
+	RD382A	70.	12.42	6.	1.	0.	.99
2 COMBINED AT							
+	CIW384	157.	12.33	24.	6.	2.	.23
ROUTED TO							
+	RIW384	123.	12.75	24.	6.	2.	.23
HYDROGRAPH AT							
+	IW381	299.	12.42	82.	22.	7.	.38
HYDROGRAPH AT							
+	D382B	180.	12.00	111.	31.	10.	.99
2 COMBINED AT							
+	CIW381	477.	12.42	192.	53.	18.	.72
ROUTED TO							
+	RIW381	452.	12.75	191.	53.	18.	.72
3 COMBINED AT							
+	C359*	780.	12.83	265.	71.	24.	1.45
ROUTED TO							
+	R359*	729.	13.17	262.	71.	24.	1.45
HYDROGRAPH AT							
+	IW359	2210.	12.42	443.	120.	40.	2.91
4 COMBINED AT							
+	CIW359	2625.	12.83	922.	253.	85.	5.97
ROUTED TO							
+	RIW359	2516.	13.17	911.	252.	85.	5.97
HYDROGRAPH AT							
+	IW389	110.	12.33	29.	8.	3.	.13
ROUTED TO							
+	SSR190	110.	12.33	29.	8.	3.	.13
ROUTED TO							
+	RIW389	72.	13.83	29.	8.	3.	.13
HYDROGRAPH AT							
+	IW394	2624.	13.00	708.	202.	68.	4.17
ROUTED TO							
+	RIW394	2479.	13.25	707.	202.	68.	4.17

	HYDROGRAPH AT	IW390A	560.	12.75	151.	43.	14.	.90
+	2 COMBINED AT	C390A	2890.	13.17	853.	244.	82.	5.07
+	ROUTED TO	R390A	2824.	13.42	852.	244.	82.	5.07
+	HYDROGRAPH AT	IW390	129.	12.58	42.	11.	4.	.31
+	HYDROGRAPH AT	IW392	1572.	12.17	190.	50.	17.	1.11
+	3 COMBINED AT	CIW390	2945.	13.42	1072.	302.	101.	6.50
+	ROUTED TO	SSR160	2909.	13.42	1072.	302.	101.	6.50
+	ROUTED TO	RIW390	2814.	13.75	1066.	302.	101.	6.50
+	HYDROGRAPH AT	IW388	803.	12.58	259.	69.	23.	1.23
+	3 COMBINED AT	CIW388	3268.	13.75	1335.	376.	126.	7.85
+	ROUTED TO	RIW388	3194.	14.00	1331.	376.	126.	7.85
+	HYDROGRAPH AT	IW357	617.	12.33	152.	40.	13.	.75
+	2 COMBINED AT	CIW357	3311.	14.00	1465.	414.	139.	8.60
+	DIVERSION TO	DO357	858.	14.00	382.	106.	35.	8.60
+	HYDROGRAPH AT	D357	2462.	14.08	1083.	308.	103.	8.60
+	ROUTED TO	RIW357	2382.	14.58	1076.	308.	103.	8.60
+	HYDROGRAPH AT	IW358	95.	12.33	24.	7.	2.	.16
+	HYDROGRAPH AT	IW353	2180.	12.50	554.	150.	50.	2.80
+	4 COMBINED AT	CIW353	4662.	13.33	2456.	698.	235.	15.24
+	ROUTED TO	RIW353	4564.	13.58	2435.	698.	235.	15.24
+	HYDROGRAPH AT	IW350	1130.	12.75	421.	123.	41.	2.17
+	2 COMBINED AT	CIW350	5297.	13.50	2813.	811.	274.	17.41
+	HYDROGRAPH AT	IW312	328.	12.67	129.	35.	12.	.57
+	DIVERSION TO	DO312	79.	12.67	10.	2.	1.	.57
	HYDROGRAPH AT							

+		D312	249.	12.67	119.	33.	11.	.57
	ROUTED TO	RIW312	229.	13.50	116.	33.	11.	.57
+	HYDROGRAPH AT	IW363	784.	12.25	139.	37.	12.	.63
+	HYDROGRAPH AT	IW365	259.	12.67	110.	30.	10.	.47
+	HYDROGRAPH AT	D312	79.	12.67	10.	2.	1.	.57
+	ROUTED TO	RD312	74.	12.83	10.	2.	1.	.57
+	2 COMBINED AT	CIW365	330.	12.75	119.	32.	11.	.63
+	DIVERSION TO	DO365	45.	12.75	4.	1.	0.	.63
+	HYDROGRAPH AT	D365	285.	12.75	116.	31.	11.	.63
+	ROUTED TO	RIW365	282.	13.25	115.	31.	11.	.63
+	HYDROGRAPH AT	IW367	75.	12.17	13.	3.	1.	.05
+	HYDROGRAPH AT	D365	45.	12.75	4.	1.	0.	.63
	ROUTED TO	RD365	40.	12.92	4.	1.	0.	.63
+	2 COMBINED AT	CIW367	75.	12.17	17.	4.	1.	.17
+	HYDROGRAPH AT	IW369	411.	12.75	176.	48.	16.	.79
+	DIVERSION TO	DO369	209.	12.75	49.	12.	4.	.79
+	HYDROGRAPH AT	D369	203.	12.75	127.	36.	12.	.79
+	2 COMBINED AT	C363*	264.	12.92	143.	40.	13.	.54
+	ROUTED TO	RIW369	257.	13.17	142.	40.	13.	.54
+	HYDROGRAPH AT	D357	858.	14.00	382.	106.	35.	8.60
+	ROUTED TO	RD357	828.	14.08	382.	106.	35.	8.60
+	5 COMBINED AT	CIW363	1570.	13.08	876.	244.	82.	4.38
+	DIVERSION TO	DO363	497.	13.08	258.	72.	24.	4.38
	HYDROGRAPH AT	D363	1072.	13.08	618.	172.	58.	4.38
+	ROUTED TO	RIW363	1032.	13.58	612.	172.	58.	4.38

+	HYDROGRAPH AT	IW368	169.	12.33	39.	11.	4.	.29
+	HYDROGRAPH AT	D369	209.	12.75	49.	12.	4.	.79
+	ROUTED TO	RD369	195.	13.08	49.	12.	4.	.79
+	2 COMBINED AT	CIW368	301.	12.83	88.	23.	8.	.71
+	ROUTED TO	RIW368	279.	13.50	87.	23.	8.	.71
+	HYDROGRAPH AT	IW360	671.	12.25	111.	30.	10.	.83
+	2 COMBINED AT	CIW360	668.	12.25	195.	53.	18.	1.54
+	ROUTED TO	RIW360	636.	12.42	195.	53.	18.	1.54
+	HYDROGRAPH AT	IW397	3909.	12.83	1031.	323.	108.	4.81
+	ROUTED TO	RIW397	3498.	13.42	1028.	322.	108.	4.81
+	HYDROGRAPH AT	IW395	6506.	12.83	1489.	448.	150.	7.86
+	2 COMBINED AT	CIW395	8032.	13.17	2476.	758.	255.	12.68
	ROUTED TO	RIW395	7775.	13.42	2471.	757.	255.	12.68
+	HYDROGRAPH AT	IW387	1083.	12.67	199.	53.	18.	1.35
+	ROUTED TO	RIW387	1080.	12.67	199.	53.	18.	1.35
+	HYDROGRAPH AT	IW396	256.	12.83	77.	20.	7.	.59
+	3 COMBINED AT	CIW396	8342.	13.33	2722.	823.	277.	14.61
+	ROUTED TO	RIW396	8246.	13.50	2719.	823.	277.	14.61
+	HYDROGRAPH AT	IW380	439.	12.25	83.	21.	7.	.50
+	2 COMBINED AT	CIW380	8319.	13.50	2790.	842.	283.	15.11
+	ROUTED TO	SSR310	8317.	13.50	2790.	842.	283.	15.11
+	DIVERSION TO	DO380	2332.	13.50	323.	81.	27.	15.11
+	HYDROGRAPH AT	D380	5986.	13.50	2467.	762.	257.	15.11
	ROUTED TO	RIW380	5653.	14.58	2465.	762.	257.	15.11
+	HYDROGRAPH AT	IW370	410.	12.50	126.	34.	12.	.88

2 COMBINED AT	CIW370	5761.	14.58	2589.	798.	269.	12.05
+ ROUTED TO	RIW370	5501.	15.08	2588.	798.	269.	12.05
+ HYDROGRAPH AT	IW349	162.	12.33	37.	10.	3.	.25
+ 2 COMBINED AT	CIW349	5508.	15.08	2614.	807.	272.	12.30
+ DIVERSION TO	DO349	3415.	15.08	1621.	500.	169.	12.30
+ HYDROGRAPH AT	D349	2093.	15.08	993.	307.	103.	12.30
+ ROUTED TO	RIW349	2089.	15.17	993.	307.	103.	12.30
+ HYDROGRAPH AT	IW352	99.	12.17	14.	4.	1.	.10
+ 3 COMBINED AT	CIW352	2204.	15.08	1196.	364.	123.	6.31
+ HYDROGRAPH AT	IW356	266.	12.25	55.	15.	5.	.29
+ HYDROGRAPH AT	D349	3415.	15.08	1621.	500.	169.	12.30
+ ROUTED TO	RD349	3262.	15.42	1620.	500.	169.	12.30
+ 3 COMBINED AT	CIW356	5397.	15.25	2835.	871.	294.	14.23
+ ROUTED TO	RIW356	5333.	15.42	2831.	871.	294.	14.23
+ HYDROGRAPH AT	IW354	402.	12.25	74.	20.	7.	.36
+ 2 COMBINED AT	CIW354	5334.	15.42	2889.	889.	300.	14.59
+ ROUTED TO	RIW354	5226.	15.75	2883.	888.	300.	14.59
+ HYDROGRAPH AT	IW362	180.	12.25	35.	9.	3.	.18
+ 2 COMBINED AT	CIW362	5227.	15.75	2907.	897.	302.	14.77
+ HYDROGRAPH AT	IW372	339.	12.17	48.	13.	4.	.32
+ DIVERSION TO	DO372	165.	12.17	13.	3.	1.	.32
+ HYDROGRAPH AT	D372	174.	12.17	35.	10.	3.	.32
+ ROUTED TO	RIW372	129.	13.42	35.	10.	3.	.32
+ HYDROGRAPH AT	IW375	259.	12.92	118.	33.	11.	.66
HYDROGRAPH AT							

+	D372	165.	12.17	13.	3.	1.	.32
ROUTED TO	RD372	100.	12.42	13.	3.	1.	.32
2 COMBINED AT +	CIW375	329.	12.58	131.	36.	12.	.82
ROUTED TO +	RIW375	294.	13.42	128.	36.	12.	.82
HYDROGRAPH AT +	IW364	1274.	12.33	264.	70.	23.	1.15
3 COMBINED AT +	CIW364	1273.	12.33	411.	114.	38.	2.13
2 COMBINED AT +	C364*	5346.	15.75	3269.	1003.	338.	16.90
ROUTED TO +	RIW364	5221.	16.50	3256.	1002.	338.	16.90
HYDROGRAPH AT +	IW342	175.	12.50	51.	14.	5.	.35
2 COMBINED AT +	CIW342	5226.	16.50	3292.	1014.	342.	17.25
HYDROGRAPH AT +	IW351	228.	12.25	45.	12.	4.	.32
HYDROGRAPH AT +	D363	497.	13.08	258.	72.	24.	4.38
ROUTED TO	RD363	486.	13.25	257.	72.	24.	4.38
2 COMBINED AT +	CIW351	568.	13.08	302.	84.	28.	1.71
DIVERSION TO +	DO351	490.	13.08	255.	71.	24.	1.71
HYDROGRAPH AT +	D351	78.	13.08	47.	13.	5.	1.71
ROUTED TO +	RIW351	68.	16.33	42.	13.	5.	1.71
HYDROGRAPH AT +	IW346	1855.	12.58	507.	137.	46.	3.44
3 COMBINED AT +	CIW346	5319.	16.42	3745.	1149.	388.	20.92
ROUTED TO +	RIW346	5289.	16.67	3739.	1149.	388.	20.92
HYDROGRAPH AT +	IW338	349.	12.25	55.	15.	5.	.34
2 COMBINED AT +	CIW338	5289.	16.67	3771.	1162.	393.	21.26
ROUTED TO +	RIW338	5234.	17.08	3747.	1161.	393.	21.26
HYDROGRAPH AT	IW326	319.	12.25	52.	14.	5.	.33
ROUTED TO +	RIW326	239.	12.92	52.	14.	5.	.33

+	HYDROGRAPH AT	IW334	1258.	12.33	299.	98.	33.	1.26
+	3 COMBINED AT	CIW334	5266.	17.08	3932.	1255.	427.	22.85
+	ROUTED TO	SCP030	5259.	17.08	3931.	1255.	427.	22.85
+	ROUTED TO	RIW334	5178.	17.92	3870.	1254.	427.	22.85
+	HYDROGRAPH AT	IW302	648.	12.83	301.	103.	35.	1.33
+	2 COMBINED AT	CIW302	5239.	17.92	4015.	1340.	459.	24.18
+	DIVERSION TO	DO302	5239.	17.92	4015.	1340.	459.	24.18
+	HYDROGRAPH AT	D302	0.	.00	0.	0.	0.	24.18
+	HYDROGRAPH AT	IW361	218.	12.42	58.	16.	5.	.35
+	HYDROGRAPH AT	D351	490.	13.08	255.	71.	24.	1.71
+	ROUTED TO	RD351	481.	13.42	253.	71.	24.	1.71
+	4 COMBINED AT	CIW361	1588.	13.50	911.	257.	86.	4.82
+	ROUTED TO	RIW361	1557.	14.25	901.	257.	86.	4.82
+	2 COMBINED AT	C350*	6347.	13.67	3603.	1046.	353.	22.23
+	ROUTED TO	R350*	6253.	14.00	3580.	1046.	353.	22.23
+	HYDROGRAPH AT	IW330	587.	12.50	164.	44.	15.	1.04
+	2 COMBINED AT	CIW330	6392.	14.00	3681.	1083.	366.	23.27
+	ROUTED TO	RIW330	6314.	14.17	3666.	1083.	366.	23.27
+	HYDROGRAPH AT	IW322	893.	12.92	394.	112.	37.	1.89
+	2 COMBINED AT	CIW322	6791.	14.08	3975.	1181.	399.	25.16
+	ROUTED TO	RIW322	6681.	14.75	3934.	1181.	399.	25.16
+	HYDROGRAPH AT	IW318	390.	12.50	124.	33.	11.	.58
+	ROUTED TO	RIW318	299.	14.42	119.	33.	11.	.58
+	HYDROGRAPH AT	IW310	685.	12.67	252.	74.	25.	1.17
+	2 COMBINED AT	CIW310	686.	12.67	358.	106.	35.	1.75

	ROUTED TO	RIW310	683.	12.75	358.	106.	35.	1.75
+	HYDROGRAPH AT	IW314	1214.	12.75	483.	158.	53.	2.18
+	3 COMBINED AT	CIW314	7416.	14.75	4434.	1410.	479.	29.09
+	ROUTED TO	SCP020	7278.	14.92	4064.	1407.	476.	29.09
+	ROUTED TO	RIW314	6992.	16.08	4053.	1407.	476.	29.09
+	HYDROGRAPH AT	IW300	703.	12.75	276.	85.	29.	1.48
+	2 COMBINED AT	CIW300	7056.	16.08	4095.	1477.	502.	30.57
+	ROUTED TO	RIW300	6894.	16.50	4092.	1477.	502.	30.57
+	HYDROGRAPH AT	D302	5239.	17.92	4015.	1340.	459.	24.18
+	2 COMBINED AT	C302*	10627.	17.25	7551.	2701.	921.	54.75
+	ROUTED TO	RIW302	10613.	17.50	7539.	2701.	921.	54.75
+	HYDROGRAPH AT	SV264A	1691.	12.75	637.	197.	66.	2.90
+	ROUTED TO	R264A	1460.	13.25	628.	196.	66.	2.90
+	HYDROGRAPH AT	SV264	1279.	12.58	391.	110.	37.	1.92
+	2 COMBINED AT	CSV264	2474.	13.00	1008.	304.	102.	4.82
+	ROUTED TO	RSV264	2153.	13.50	994.	303.	102.	4.82
+	HYDROGRAPH AT	SV298	493.	12.83	222.	65.	22.	1.08
+	ROUTED TO	RSV298	460.	14.17	217.	65.	22.	1.08
+	HYDROGRAPH AT	SV286	1181.	12.50	348.	109.	36.	1.54
+	ROUTED TO	RSV286	1082.	12.75	347.	108.	36.	1.54
+	HYDROGRAPH AT	SV284	341.	12.25	67.	21.	7.	.28
+	2 COMBINED AT	CSV284	1270.	12.67	412.	128.	43.	1.82
+	ROUTED TO	RSV284	1076.	13.42	410.	128.	43.	1.82
+	HYDROGRAPH AT	SV290	664.	12.42	166.	51.	17.	.81
	ROUTED TO							

+	RSV290	453.	13.58	164.	50.	17.	.81
HYDROGRAPH AT	SV272	932.	12.42	215.	59.	20.	1.20
3 COMBINED AT +	CSV272	1843.	13.33	774.	234.	79.	3.84
ROUTED TO +	RSV272	1825.	13.42	774.	234.	79.	3.84
HYDROGRAPH AT +	SV294	1761.	12.67	615.	186.	62.	2.65
ROUTED TO +	RSV294	1541.	13.50	610.	186.	62.	2.65
HYDROGRAPH AT +	SV276	643.	12.50	177.	48.	16.	.92
3 COMBINED AT +	CSV276	3634.	13.42	1539.	462.	155.	7.41
ROUTED TO +	RSV276	3627.	13.50	1539.	462.	155.	7.41
HYDROGRAPH AT +	SV280	664.	12.58	217.	58.	20.	1.06
3 COMBINED AT +	CSV280	4203.	13.58	1939.	580.	195.	9.54
ROUTED TO +	RSV280	4120.	13.83	1937.	580.	195.	9.54
HYDROGRAPH AT	SV268	1292.	12.42	315.	91.	30.	1.38
ROUTED TO +	RSV268	1073.	12.75	315.	91.	30.	1.38
HYDROGRAPH AT +	SV260	1091.	12.33	216.	61.	20.	1.26
4 COMBINED AT +	CSV260	6663.	13.67	3355.	1009.	340.	16.99
ROUTED TO +	SCP010	4525.	14.67	3234.	1008.	339.	16.99
ROUTED TO +	RSV260	4514.	14.92	3224.	1008.	339.	16.99
HYDROGRAPH AT +	SV220	792.	12.25	123.	37.	12.	.60
HYDROGRAPH AT +	SV252	108.	12.25	23.	7.	2.	.15
ROUTED TO +	RSV252	70.	13.25	23.	7.	2.	.15
HYDROGRAPH AT +	SV254	113.	12.17	19.	6.	2.	.10
ROUTED TO +	RSV254	64.	13.25	19.	6.	2.	.10
HYDROGRAPH AT	SV219	1105.	12.25	184.	55.	18.	.90
3 COMBINED AT +	CSV219	1112.	12.25	223.	68.	23.	1.14

+	ROUTED TO	RSV219	834.	12.75	223.	67.	23.	1.14
+	HYDROGRAPH AT	SV251	204.	12.25	36.	10.	3.	.27
+	ROUTED TO	RSV251	134.	13.33	36.	10.	3.	.27
+	HYDROGRAPH AT	SV250	104.	12.25	18.	5.	2.	.12
+	ROUTED TO	RSV250	64.	13.42	18.	5.	2.	.12
+	HYDROGRAPH AT	SV218	986.	12.33	201.	54.	18.	1.29
+	4 COMBINED AT	CSV218	1668.	12.58	470.	134.	45.	2.82
+	ROUTED TO	RSV218	1456.	13.00	469.	134.	45.	2.82
+	HYDROGRAPH AT	SV248	845.	12.67	222.	64.	22.	1.27
+	DIVERSION TO	DO248	397.	12.67	104.	30.	10.	1.27
+	HYDROGRAPH AT	D248	448.	12.67	118.	34.	11.	1.27
+	ROUTED TO	RSV248	364.	13.17	117.	34.	11.	1.27
+	HYDROGRAPH AT	SV244	470.	12.92	161.	43.	15.	.95
+	2 COMBINED AT	CSV244	804.	13.08	276.	77.	26.	1.62
+	HYDROGRAPH AT	SV246	197.	12.17	31.	8.	3.	.16
+	HYDROGRAPH AT	D248	397.	12.67	104.	30.	10.	1.27
+	ROUTED TO	RD248	358.	12.92	104.	30.	10.	1.27
+	2 COMBINED AT	CSV246	421.	12.92	135.	38.	13.	.76
+	2 COMBINED AT	C216*	1193.	13.00	407.	115.	38.	2.38
+	ROUTED TO	RSV244	1087.	13.75	405.	115.	38.	2.38
+	HYDROGRAPH AT	SV216	1551.	12.33	269.	76.	25.	1.63
+	3 COMBINED AT	CSV216	2364.	13.42	1117.	320.	108.	6.82
+	ROUTED TO	RSV216	2346.	13.75	1113.	320.	108.	6.82
+	HYDROGRAPH AT	SV236	527.	12.25	79.	22.	7.	.59
+	ROUTED TO	RSV236	275.	13.58	79.	22.	7.	.59

	HYDROGRAPH AT	SV240	3045.	12.67	582.	162.	54.	3.67
+	HYDROGRAPH AT	SV242	63.	12.25	12.	3.	1.	.09
+	2 COMBINED AT	C242*	3084.	12.67	594.	165.	55.	3.76
+	ROUTED TO	R242*	2572.	13.33	594.	165.	55.	3.76
+	HYDROGRAPH AT	SV214	1944.	12.33	364.	113.	38.	1.87
+	6 COMBINED AT	CSV220	7844.	13.58	5076.	1587.	534.	30.63
+	ROUTED TO	RSV220	7777.	14.00	5046.	1586.	534.	30.63
+	HYDROGRAPH AT	SV230	1261.	12.17	151.	43.	14.	.85
+	HYDROGRAPH AT	SV232	3041.	12.50	497.	136.	45.	3.06
+	2 COMBINED AT	C230*	3549.	12.50	643.	177.	59.	3.91
+	ROUTED TO	R230*	3225.	12.83	642.	177.	59.	3.91
	HYDROGRAPH AT	SV212	3361.	12.42	723.	219.	73.	4.14
+	3 COMBINED AT	CSV212	8859.	13.75	6053.	1922.	649.	38.68
+	ROUTED TO	RSV212	8668.	14.33	5978.	1920.	649.	38.68
+	HYDROGRAPH AT	SV202	1032.	12.50	289.	84.	28.	1.44
+	ROUTED TO	RSV202	971.	13.00	289.	84.	28.	1.44
+	HYDROGRAPH AT	SV210	1216.	12.08	152.	48.	16.	.72
+	ROUTED TO	RSV210	706.	13.08	152.	47.	16.	.72
+	3 COMBINED AT	C210*	9095.	14.25	6303.	2030.	686.	40.83
+	HYDROGRAPH AT	SV208	676.	12.67	176.	51.	17.	1.07
+	HYDROGRAPH AT	SV205	739.	12.17	81.	22.	7.	.50
+	2 COMBINED AT	C205*	932.	12.25	255.	72.	24.	1.57
+	ROUTED TO	R205*	606.	13.08	253.	72.	24.	1.57
+	HYDROGRAPH AT	SV203	111.	12.17	8.	2.	1.	.08
	ROUTED TO							

+	RSV203	63.	12.75	8.	2.	1.	.08
	3 COMBINED AT						
+	C200*	9392.	14.25	6487.	2090.	707.	42.48
	HYDROGRAPH AT						
+	SV200	2114.	12.42	480.	155.	52.	2.29
	3 COMBINED AT						
+	CSV200	14856.	17.00	12863.	4700.	1604.	99.52
	ROUTED TO						
+	RSV200	14818.	17.25	12849.	4700.	1604.	99.52
	HYDROGRAPH AT						
+	TW416	456.	12.50	158.	54.	18.	.59
	ROUTED TO						
+	RTW416	398.	13.75	157.	54.	18.	.59
	HYDROGRAPH AT						
+	TW420	662.	12.42	205.	69.	23.	.81
	ROUTED TO						
+	RTW420	589.	13.33	205.	69.	23.	.81
	HYDROGRAPH AT						
+	TW412	1403.	12.58	507.	171.	57.	2.06
	2 COMBINED AT						
+	CTW412	1711.	13.08	706.	238.	80.	2.87
	HYDROGRAPH AT						
+	TW414	2027.	12.08	183.	50.	17.	1.17
	ROUTED TO						
	RTW414	809.	13.17	180.	49.	17.	1.17
	HYDROGRAPH AT						
+	TW410	204.	12.42	64.	21.	7.	.31
	2 COMBINED AT						
+	CTW410	931.	13.17	239.	69.	23.	1.48
	4 COMBINED AT						
+	C410*	15013.	17.25	13443.	4989.	1707.	104.45
	ROUTED TO						
+	RTW410	14917.	17.92	13403.	4988.	1707.	104.45
	HYDROGRAPH AT						
+	TW402	3492.	12.58	1088.	355.	119.	4.91
	3 COMBINED AT						
+	CTW402	19464.	15.42	16390.	6213.	2129.	135.09
	ROUTED TO						
+	RTW402	19357.	15.50	16362.	6212.	2129.	135.09
	HYDROGRAPH AT						
+	TW448	194.	12.67	81.	22.	7.	.35
	DIVERSION TO						
+	DO448	39.	12.67	5.	1.	0.	.35
	HYDROGRAPH AT						
+	D448	155.	12.67	76.	21.	7.	.35
	ROUTED TO						
	RTW448	152.	13.58	75.	21.	7.	.35
	HYDROGRAPH AT						
+	TW446A	210.	12.58	77.	22.	7.	.34

	HYDROGRAPH AT						
+		D448	39.	12.67	5.	1.	0.	.35
	ROUTED TO						
+		RD448	35.	12.83	5.	1.	0.	.35
	2 COMBINED AT						
+		C446A	238.	12.75	81.	23.	8.	.42
	DIVERSION TO						
+		DO446A	0.	.00	0.	0.	0.	.42
	HYDROGRAPH AT						
+		D446A	238.	12.75	81.	23.	8.	.42
	ROUTED TO						
+		R446A	209.	13.33	81.	23.	8.	.42
	HYDROGRAPH AT						
+		TW446	345.	12.33	84.	22.	7.	.35
	3 COMBINED AT						
+		CTW446	488.	13.25	233.	65.	22.	1.04
	ROUTED TO						
+		RTW446	471.	13.67	232.	65.	22.	1.04
	HYDROGRAPH AT						
+		TW432	574.	12.42	130.	35.	12.	.86
	2 COMBINED AT						
+		CTW432	769.	12.75	356.	99.	33.	1.90
	ROUTED TO						
+		RTW432	748.	13.17	353.	99.	33.	1.90
	HYDROGRAPH AT						
+		TW431	682.	12.42	171.	46.	15.	.87
	2 COMBINED AT						
+		CTW431	1180.	12.92	513.	143.	48.	2.78
	HYDROGRAPH AT						
+		TW459	348.	12.83	145.	39.	13.	1.04
	ROUTED TO						
+		SSR350	348.	12.83	145.	39.	13.	1.04
	ROUTED TO						
+		RTW459	339.	13.08	144.	39.	13.	1.04
	HYDROGRAPH AT						
+		TW462	124.	12.08	17.	4.	1.	.08
	HYDROGRAPH AT						
+		D380	2332.	13.50	323.	81.	27.	15.11
	ROUTED TO						
+		RD380	2185.	13.67	323.	81.	27.	15.11
	2 COMBINED AT						
+		CTW462	2355.	13.67	369.	92.	31.	4.02
	ROUTED TO						
+		SSR330	2351.	13.58	369.	92.	31.	4.02
	ROUTED TO						
+		RTW462	2167.	13.92	369.	92.	31.	4.02
	HYDROGRAPH AT						
		TW450A	692.	12.67	164.	43.	14.	.88
	ROUTED TO						
+		SSR410	648.	12.83	164.	43.	14.	.88

	ROUTED TO	R450A	518.	13.25	164.	42.	14.	.88
+	HYDROGRAPH AT	TW450B	430.	12.33	88.	23.	8.	.40
+	4 COMBINED AT	C450B	2834.	13.83	743.	193.	64.	6.35
+	ROUTED TO	R450B	2593.	14.50	738.	193.	64.	6.35
+	HYDROGRAPH AT	TW450	625.	12.83	271.	75.	25.	1.25
+	HYDROGRAPH AT	D446A	0.	.00	0.	0.	0.	.42
+	ROUTED TO	RD446A	0.	.00	0.	0.	0.	.42
+	3 COMBINED AT	CTW450	2877.	14.50	990.	265.	88.	7.59
+	DIVERSION TO	DO450	167.	14.50	16.	4.	1.	7.59
+	HYDROGRAPH AT	D450	2710.	14.50	974.	261.	87.	7.59
+	ROUTED TO	RTW450	2634.	14.75	971.	261.	87.	7.59
	HYDROGRAPH AT	TW444	351.	12.25	60.	16.	5.	.35
+	2 COMBINED AT	CTW444	2641.	14.75	1018.	276.	92.	7.49
+	ROUTED TO	RTW444	2586.	14.92	1014.	276.	92.	7.49
+	HYDROGRAPH AT	TW440	134.	12.17	18.	5.	2.	.11
+	2 COMBINED AT	CTW440	2586.	14.92	1026.	280.	94.	7.60
+	HYDROGRAPH AT	TW460	1171.	12.92	345.	93.	31.	2.32
+	ROUTED TO	SSR540	1167.	12.92	345.	93.	31.	2.32
+	ROUTED TO	RTW460	1108.	13.17	345.	93.	31.	2.32
+	HYDROGRAPH AT	TW458	725.	12.50	142.	37.	12.	.67
+	2 COMBINED AT	CTW458	1435.	13.08	480.	129.	43.	2.99
+	ROUTED TO	RTW458	1410.	13.25	480.	129.	43.	2.99
+	HYDROGRAPH AT	TW456	113.	12.42	29.	8.	3.	.18
+	2 COMBINED AT	CTW456	1464.	13.25	508.	137.	46.	3.16
	ROUTED TO							

+	RTW456	1410.	13.42	507.	137.	46.	3.16
HYDROGRAPH AT	TW454	123.	12.75	53.	15.	5.	.36
2 COMBINED AT +	CTW454	1504.	13.42	557.	151.	51.	3.52
DIVERSION TO +	DO454	963.	13.42	356.	97.	32.	3.52
HYDROGRAPH AT +	D454	542.	13.42	200.	54.	18.	3.52
ROUTED TO +	RTW454	488.	14.33	199.	54.	18.	3.52
HYDROGRAPH AT +	TW452A	816.	12.67	204.	53.	18.	1.08
ROUTED TO +	SSR450	814.	12.75	204.	53.	18.	1.08
ROUTED TO +	R452A	667.	13.75	204.	53.	18.	1.08
HYDROGRAPH AT +	TW452B	580.	12.67	203.	54.	18.	1.03
3 COMBINED AT +	C452B	1239.	13.75	590.	160.	53.	3.38
ROUTED TO +	R452B	1188.	14.42	585.	160.	53.	3.38
HYDROGRAPH AT	TW452	304.	12.58	107.	29.	10.	.46
HYDROGRAPH AT +	D450	167.	14.50	16.	4.	1.	7.59
ROUTED TO +	RD450	128.	14.67	16.	4.	1.	7.59
3 COMBINED AT +	CTW452	1389.	14.58	695.	192.	64.	4.29
ROUTED TO +	RTW452	1328.	15.08	691.	192.	64.	4.29
HYDROGRAPH AT +	TW442	386.	12.25	72.	19.	6.	.38
2 COMBINED AT +	CTW442	1330.	15.08	737.	210.	70.	4.67
2 COMBINED AT +	C442*	3721.	15.00	1728.	481.	161.	12.26
ROUTED TO +	R442*	3553.	15.58	1716.	481.	161.	12.26
HYDROGRAPH AT +	TW434	443.	12.33	91.	25.	8.	.57
3 COMBINED AT +	CTW434	3821.	15.50	2210.	636.	213.	15.61
ROUTED TO	RTW434	3717.	16.00	2199.	636.	213.	15.61
HYDROGRAPH AT +	TW436	733.	12.25	128.	34.	11.	.67

+	ROUTED TO	RTW436	567.	13.17	128.	34.	11.	.67
+	HYDROGRAPH AT	TW430	2732.	12.33	452.	127.	42.	2.49
+	HYDROGRAPH AT	TW429	520.	12.33	123.	35.	12.	.56
+	ROUTED TO	RTW429	333.	13.17	121.	35.	12.	.56
+	4 COMBINED AT	C430*	3754.	15.92	2732.	813.	274.	19.33
+	HYDROGRAPH AT	TW485	1536.	12.50	400.	113.	38.	2.37
+	HYDROGRAPH AT	D454	963.	13.42	356.	97.	32.	3.52
+	ROUTED TO	RD454	940.	13.58	356.	97.	32.	3.52
+	HYDROGRAPH AT	WI576A	603.	12.83	178.	48.	16.	1.22
+	ROUTED TO	R576A	513.	13.42	178.	48.	16.	1.22
+	HYDROGRAPH AT	WI576B	337.	12.33	74.	20.	7.	.46
+	2 COMBINED AT	C576B	619.	13.42	247.	67.	22.	1.69
	DIVERSION TO	DO576B	248.	13.42	99.	27.	9.	1.69
+	HYDROGRAPH AT	D576B	371.	13.42	148.	40.	13.	1.69
+	ROUTED TO	R576B	321.	15.25	146.	40.	13.	1.69
+	3 COMBINED AT	CTW485	1727.	12.92	879.	246.	83.	5.64
+	ROUTED TO	RTW485	1719.	13.00	878.	246.	83.	5.64
+	HYDROGRAPH AT	TW484	265.	12.33	75.	24.	8.	.35
+	2 COMBINED AT	CTW484	1902.	12.75	947.	269.	90.	5.99
+	ROUTED TO	RTW484	1864.	13.42	940.	269.	90.	5.99
+	HYDROGRAPH AT	WI580A	1748.	12.42	425.	114.	38.	2.79
+	HYDROGRAPH AT	WI580B	457.	12.33	99.	28.	9.	.63
+	DIVERSION TO	DO580B	210.	12.33	46.	13.	4.	.63
	HYDROGRAPH AT	D580B	247.	12.33	54.	15.	5.	.63
+	ROUTED TO	R580B	218.	12.83	53.	15.	5.	.63

	2 COMBINED AT	C580A	1878.	12.58	477.	129.	43.	3.13
	ROUTED TO							
+		SSR630	1877.	12.58	477.	129.	43.	3.13
	ROUTED TO							
+		R580A	1617.	13.75	475.	129.	43.	3.13
	HYDROGRAPH AT							
+		WI580	1354.	12.25	201.	55.	18.	1.32
	HYDROGRAPH AT							
+		D580B	210.	12.33	46.	13.	4.	.63
	ROUTED TO							
+		RD580B	184.	12.83	46.	13.	4.	.63
	HYDROGRAPH AT							
+		WI578	306.	12.42	73.	19.	6.	.48
	2 COMBINED AT							
+		CWI578	429.	12.75	118.	32.	11.	.77
	ROUTED TO							
+		SSR700	395.	12.92	118.	32.	11.	.77
	ROUTED TO							
+		RWI578	370.	13.50	117.	31.	11.	.77
	3 COMBINED AT							
+		CWI580	2028.	13.67	774.	212.	71.	5.22
	ROUTED TO							
+		RWI580	1938.	14.08	771.	212.	71.	5.22
	HYDROGRAPH AT							
+		D576B	248.	13.42	99.	27.	9.	1.69
	ROUTED TO							
+		RD576B	230.	14.25	98.	27.	9.	1.69
	HYDROGRAPH AT							
+		WI576	711.	12.42	169.	46.	15.	1.18
	3 COMBINED AT							
+		CWI576	2277.	14.08	1021.	282.	94.	7.07
	DIVERSION TO							
+		DO576	1271.	14.08	521.	140.	47.	7.07
	HYDROGRAPH AT							
+		D576	1006.	14.08	500.	141.	47.	7.07
	ROUTED TO							
+		RWI576	949.	14.50	495.	141.	47.	7.07
	HYDROGRAPH AT							
+		TW482	758.	12.33	183.	61.	20.	.76
	2 COMBINED AT							
+		CTW482	1032.	14.50	651.	201.	68.	3.88
	DIVERSION TO							
+		DO482	0.	.00	0.	0.	0.	3.88
	HYDROGRAPH AT							
+		D482	1032.	14.50	651.	201.	68.	3.88
	ROUTED TO							
+		RTW482	990.	15.00	644.	201.	68.	3.88
	HYDROGRAPH AT							

+	TW480	746.	12.33	145.	39.	13.	.75
3 COMBINED AT	CTW480	2882.	13.42	1672.	502.	169.	10.62
DIVERSION TO +	DO480	2738.	13.42	1589.	477.	160.	10.62
HYDROGRAPH AT +	D480	144.	13.42	84.	25.	8.	10.62
ROUTED TO +	RTW480	132.	14.17	81.	25.	8.	10.62
HYDROGRAPH AT +	TW478	353.	12.17	47.	13.	4.	.26
2 COMBINED AT +	CTW478	357.	12.17	124.	38.	13.	.79
ROUTED TO +	RTW478	135.	15.08	112.	38.	13.	.79
2 COMBINED AT +	CTW430	3863.	15.92	2825.	847.	285.	20.12
ROUTED TO +	SCP040	2962.	16.75	2327.	833.	279.	20.12
ROUTED TO +	RTW430	2777.	17.42	2303.	832.	279.	20.12
HYDROGRAPH AT +	TW418	1473.	12.33	345.	114.	38.	1.37
2 COMBINED AT	CTW418	2817.	17.25	2355.	921.	314.	21.49
ROUTED TO +	RTW418	2761.	17.58	2348.	921.	314.	21.49
HYDROGRAPH AT +	TW424	2112.	12.25	316.	95.	32.	1.50
ROUTED TO +	RTW424	1844.	12.50	315.	95.	32.	1.50
HYDROGRAPH AT +	TW422	546.	12.42	168.	56.	19.	.70
3 COMBINED AT +	CTW422	3320.	12.50	2433.	1047.	359.	23.69
ROUTED TO +	RTW422	2726.	20.42	2354.	1047.	359.	23.69
HYDROGRAPH AT +	TW400	2765.	12.67	1044.	354.	119.	4.27
3 COMBINED AT +	CTW400	21188.	15.58	18589.	7323.	2517.	163.05
ROUTED TO +	RTW400	21097.	15.83	18560.	7323.	2517.	163.05
HYDROGRAPH AT +	WI504	1342.	12.33	244.	72.	24.	1.35
2 COMBINED AT	CWI504	21107.	15.83	18575.	7376.	2536.	164.40
ROUTED TO +	RWI504	21072.	15.92	18563.	7376.	2536.	164.40

+	HYDROGRAPH AT D576	1271.	14.08	521.	140.	47.	7.07
+	ROUTED TO RD576	1235.	14.33	520.	140.	47.	7.07
+	HYDROGRAPH AT WI574	212.	12.25	33.	9.	3.	.22
+	ROUTED TO RWI574	123.	13.33	33.	9.	3.	.22
+	HYDROGRAPH AT WI572	1739.	12.33	357.	101.	34.	2.06
+	ROUTED TO RWI572	1392.	13.17	356.	101.	34.	2.06
+	HYDROGRAPH AT WI570	1433.	12.50	410.	118.	39.	2.24
+	DIVERSION TO DO570	301.	12.50	86.	25.	8.	2.24
+	HYDROGRAPH AT D570	1132.	12.50	324.	93.	31.	2.24
+	ROUTED TO RWI570	1046.	13.00	323.	93.	31.	2.24
+	HYDROGRAPH AT WI566	107.	12.25	17.	4.	1.	.11
+	HYDROGRAPH AT D570	301.	12.50	86.	25.	8.	2.24
	2 COMBINED AT CWI566	387.	12.42	104.	29.	10.	.58
+	ROUTED TO SSR830	381.	12.50	104.	29.	10.	.58
+	ROUTED TO RWI566	358.	13.08	104.	29.	10.	.58
+	HYDROGRAPH AT WI564	785.	13.17	293.	85.	29.	1.81
+	ROUTED TO SSR880	783.	13.17	293.	85.	29.	1.81
+	ROUTED TO RWI564	737.	13.67	291.	85.	29.	1.81
+	HYDROGRAPH AT WI562	516.	12.58	153.	41.	14.	.87
+	3 COMBINED AT CWI562	1265.	13.42	536.	153.	51.	3.26
+	2 COMBINED AT C562*	2152.	13.25	853.	245.	82.	5.03
+	ROUTED TO R562*	2071.	13.92	846.	244.	82.	5.03
+	HYDROGRAPH AT WI560A	802.	12.75	310.	87.	29.	2.04
	ROUTED TO R560A	722.	13.75	307.	87.	29.	2.04
+	HYDROGRAPH AT WI560	2845.	12.42	735.	233.	78.	3.56

	6 COMBINED AT						
		CWI560	4991.	13.58	2650.	785.	265.	16.86
	ROUTED TO						
+		RWI560	4955.	14.33	2640.	785.	265.	16.86
	HYDROGRAPH AT						
+		WI582	411.	12.25	90.	30.	10.	.38
	HYDROGRAPH AT						
+		D482	0.	.00	0.	0.	0.	3.88
	ROUTED TO						
+		RD482	0.	.00	0.	0.	0.	3.88
	2 COMBINED AT						
+		CWI582	411.	12.25	90.	30.	10.	.38
	ROUTED TO						
+		RWI582	269.	12.83	90.	30.	10.	.38
	HYDROGRAPH AT						
+		WI556	169.	12.00	21.	7.	2.	.08
	ROUTED TO						
+		RWI556	46.	13.42	21.	7.	2.	.08
	HYDROGRAPH AT						
+		WI554	939.	12.33	227.	74.	25.	1.04
	4 COMBINED AT						
+		CWI554	5150.	14.25	2912.	886.	300.	18.36
	ROUTED TO						
+		RWI554	5146.	14.33	2910.	886.	300.	18.36
	HYDROGRAPH AT						
+		WI552	329.	12.33	75.	23.	8.	.41
	2 COMBINED AT						
+		CWI552	5175.	14.33	2971.	907.	307.	18.77
	ROUTED TO						
+		RWI552	5170.	14.33	2970.	907.	307.	18.77
	HYDROGRAPH AT						
+		WI584	875.	12.42	216.	63.	21.	1.26
	HYDROGRAPH AT						
+		D480	2738.	13.42	1589.	477.	160.	10.62
	ROUTED TO						
+		RD480	2575.	14.00	1576.	476.	160.	10.62
	2 COMBINED AT						
+		CWI584	2748.	13.92	1751.	535.	181.	11.35
	ROUTED TO						
+		RWI584	2670.	14.42	1731.	535.	181.	11.35
	HYDROGRAPH AT						
+		WI550	234.	12.08	36.	12.	4.	.14
	3 COMBINED AT						
+		CWI550	7522.	14.42	4521.	1401.	474.	30.26
	ROUTED TO						
+		SCP050	7482.	14.58	4517.	1401.	474.	30.26
	ROUTED TO						
+		RWI550	7414.	14.83	4507.	1401.	474.	30.26
	HYDROGRAPH AT						

+	WI514	446.	12.17	68.	21.	7.	.35
2 COMBINED AT	CWI514	7416.	14.83	4525.	1418.	480.	30.62
HYDROGRAPH AT +	WI548	329.	12.25	58.	15.	5.	.31
ROUTED TO +	RWI548	228.	13.17	57.	15.	5.	.31
HYDROGRAPH AT +	WI546	500.	12.33	147.	49.	17.	.61
2 COMBINED AT +	CWI546	521.	13.00	202.	64.	22.	.91
ROUTED TO +	RWI546	511.	13.17	201.	64.	22.	.91
HYDROGRAPH AT +	WI544	1458.	12.42	400.	132.	44.	1.79
2 COMBINED AT +	CWI544	1817.	12.50	596.	195.	65.	2.71
DIVERSION TO +	DO544	1217.	12.50	399.	131.	44.	2.71
HYDROGRAPH AT +	D544	600.	12.50	197.	64.	22.	2.71
ROUTED TO +	RWI544	509.	13.33	196.	64.	22.	2.71
HYDROGRAPH AT	WI542	691.	12.50	225.	72.	24.	1.17
2 COMBINED AT +	CWI542	996.	13.08	419.	136.	46.	2.07
HYDROGRAPH AT +	WI540	823.	12.75	234.	68.	23.	1.25
ROUTED TO +	SSR940	822.	12.83	234.	68.	23.	1.25
ROUTED TO +	RWI540	771.	13.00	234.	68.	23.	1.25
HYDROGRAPH AT +	WI538A	552.	12.75	152.	41.	14.	.78
2 COMBINED AT +	C538A	1268.	12.92	383.	108.	36.	2.02
ROUTED TO +	R538A	1128.	13.67	381.	108.	36.	2.02
HYDROGRAPH AT +	WI538	726.	12.83	326.	104.	35.	1.43
2 COMBINED AT +	CWI538	1679.	13.58	696.	209.	70.	3.45
ROUTED TO +	RWI538	1599.	14.25	692.	209.	70.	3.45
HYDROGRAPH AT	WI536	705.	12.92	354.	121.	41.	1.37
HYDROGRAPH AT +	WI534	422.	12.33	124.	42.	14.	.43

+	ROUTED TO	RWI534	398.	12.58	124.	42.	14.	.43
+	HYDROGRAPH AT	WI532	419.	12.17	88.	30.	10.	.32
+	2 COMBINED AT	CWI532	687.	12.42	210.	71.	24.	.76
+	2 COMBINED AT	C530*	1309.	12.58	555.	191.	64.	2.13
+	ROUTED TO	R530*	1241.	13.25	553.	190.	64.	2.13
+	HYDROGRAPH AT	WI530	1616.	12.42	357.	103.	34.	2.38
+	HYDROGRAPH AT	D544	1217.	12.50	399.	131.	44.	2.71
+	ROUTED TO	RD544	1117.	13.08	398.	130.	44.	2.71
+	4 COMBINED AT	CWI530	3488.	13.17	1942.	622.	210.	9.77
+	2 COMBINED AT	CAP1*	4426.	13.17	2337.	751.	253.	11.84
+	HYDROGRAPH AT	PI663	324.	12.92	123.	33.	11.	.60
+	ROUTED TO	RPI663	298.	13.75	121.	33.	11.	.60
	HYDROGRAPH AT	PI657	432.	12.83	191.	53.	18.	.87
+	HYDROGRAPH AT	PI660	320.	13.00	165.	48.	16.	.84
+	3 COMBINED AT	CPI660	906.	13.50	466.	132.	44.	2.31
+	ROUTED TO	RPI660	883.	13.67	463.	132.	44.	2.31
+	HYDROGRAPH AT	PI654	2194.	12.83	850.	229.	76.	4.03
+	2 COMBINED AT	CPI654	2831.	12.92	1296.	358.	120.	6.34
+	DIVERSION TO	DO654	566.	12.92	259.	72.	24.	6.34
+	HYDROGRAPH AT	D654	2265.	12.92	1037.	286.	96.	6.34
+	ROUTED TO	RPI654	2245.	13.25	1035.	286.	96.	6.34
+	HYDROGRAPH AT	PI648	969.	12.75	359.	99.	33.	1.73
+	HYDROGRAPH AT	PI651	290.	12.50	83.	23.	8.	.46
	3 COMBINED AT	CPI651	3308.	13.08	1460.	405.	135.	7.26
+	ROUTED TO	RPI651	3252.	13.33	1457.	405.	135.	7.26

	HYDROGRAPH AT						
		PI645A	893.	12.75	367.	114.	38.	1.63
	ROUTED TO						
+		R645A	876.	13.17	366.	114.	38.	1.63
	HYDROGRAPH AT						
+		PI645	1143.	12.33	211.	58.	19.	1.56
	HYDROGRAPH AT						
+		D654	566.	12.92	259.	72.	24.	6.34
	ROUTED TO						
+		RD654	553.	13.58	257.	72.	24.	6.34
	4 COMBINED AT						
+		CPI645	4890.	13.25	2243.	638.	214.	11.72
	2 COMBINED AT						
+		CAP1*	9019.	13.25	4446.	1350.	454.	23.56
	HYDROGRAPH AT						
+		PI689	4972.	13.00	1394.	429.	143.	6.78
	HYDROGRAPH AT						
+		PI688	2636.	12.75	632.	194.	65.	3.20
	2 COMBINED AT						
+		CPI689	7340.	12.92	2010.	619.	207.	9.98
	ROUTED TO						
+		RPI689	6797.	13.33	2006.	618.	207.	9.98
	HYDROGRAPH AT						
+		PI687	4342.	13.08	1280.	389.	130.	7.01
	2 COMBINED AT						
+		CPI687	10688.	13.25	3221.	986.	331.	16.99
	ROUTED TO						
+		RPI687	10371.	13.42	3217.	986.	331.	16.99
	HYDROGRAPH AT						
+		PI684	632.	12.58	142.	37.	12.	.74
	2 COMBINED AT						
+		CPI684	10632.	13.42	3346.	1019.	342.	17.73
	ROUTED TO						
+		SSR103	10266.	13.58	3346.	1019.	342.	17.73
	ROUTED TO						
+		RPI684	9741.	13.92	3339.	1018.	342.	17.73
	HYDROGRAPH AT						
+		PI681	585.	12.67	225.	68.	23.	.99
	2 COMBINED AT						
+		CPI681	10027.	13.83	3539.	1081.	363.	18.72
	ROUTED TO						
+		RPI681	9383.	14.50	3530.	1080.	363.	18.72
	HYDROGRAPH AT						
+		PI678	514.	12.50	196.	66.	22.	.83
	2 COMBINED AT						
+		CPI678	9528.	14.50	3673.	1140.	384.	19.55
	DIVERSION TO						
+		DO678	2668.	14.50	1028.	319.	108.	19.55
	HYDROGRAPH AT						

+	D678	6860.	14.50	2645.	821.	277.	19.55
HYDROGRAPH AT	PI690	334.	12.50	105.	32.	11.	.63
2 COMBINED AT +	CPI690	7007.	14.50	2762.	858.	289.	14.71
ROUTED TO +	RPI690	6800.	14.67	2748.	858.	289.	14.71
HYDROGRAPH AT +	PI675	72.	12.17	9.	3.	1.	.06
2 COMBINED AT +	CPI675	6800.	14.67	2751.	860.	290.	14.77
2 COMBINED AT +	CAP1*	12176.	14.50	6896.	2122.	716.	38.33
HYDROGRAPH AT +	PI672	1128.	12.33	209.	57.	19.	1.51
HYDROGRAPH AT +	D678	2668.	14.50	1028.	319.	108.	19.55
ROUTED TO +	RD678	2306.	14.92	1022.	319.	108.	19.55
2 COMBINED AT +	CPI672	2407.	14.92	1221.	382.	129.	6.98
2 COMBINED AT +	CAP1*	13895.	14.58	7948.	2453.	829.	45.31
HYDROGRAPH AT	PI693	732.	12.25	119.	32.	11.	.84
2 COMBINED AT +	CAP1*	13895.	14.58	8038.	2479.	837.	46.15
HYDROGRAPH AT +	PI669	145.	12.42	42.	11.	4.	.29
2 COMBINED AT +	CAP1*	13908.	14.58	8068.	2487.	840.	46.43
HYDROGRAPH AT +	PI642	184.	12.25	32.	9.	3.	.24
2 COMBINED AT +	CAP1*	13909.	14.58	8091.	2494.	842.	46.67
HYDROGRAPH AT +	PDWEST	5033.	13.17	1447.	483.	163.	7.08
2 COMBINED AT +	CAP1*	15575.	13.17	9450.	2954.	998.	53.75
ROUTED TO +	STOR1	8299.	15.75	5786.	2888.	998.	53.75
DIVERSION TO +	DOCAP*	4539.	15.75	2187.	549.	183.	53.75
HYDROGRAPH AT +	DCAP*	3761.	15.75	3599.	2339.	815.	53.75
DIVERSION TO	DOCP14	372.	15.75	356.	207.	70.	53.75
HYDROGRAPH AT +	DCAP14	3388.	15.75	3243.	2132.	745.	53.75

+	DIVERSION TO	DOCP13	432.	15.75	413.	273.	98.	53.75
+	HYDROGRAPH AT	DCAP13	2957.	15.75	2830.	1859.	647.	53.75
+	DIVERSION TO	DOCP12	422.	15.75	403.	269.	95.	53.75
+	HYDROGRAPH AT	DCAP12	2535.	15.75	2427.	1590.	552.	53.75
+	DIVERSION TO	DOCP11	433.	15.75	418.	282.	99.	53.75
+	HYDROGRAPH AT	DCAP11	2102.	15.75	2008.	1308.	453.	53.75
+	DIVERSION TO	DOCP10	432.	15.75	413.	278.	98.	53.75
+	HYDROGRAPH AT	DCAP10	1670.	15.75	1595.	1030.	355.	53.75
+	DIVERSION TO	DOCP09	422.	15.75	403.	269.	94.	53.75
+	HYDROGRAPH AT	DCAP09	1249.	15.75	1192.	761.	261.	53.75
+	DIVERSION TO	DOCP08	421.	15.75	400.	257.	89.	53.75
+	HYDROGRAPH AT	DCAP08	828.	15.75	791.	504.	173.	53.75
	DIVERSION TO	DOCP07	421.	15.75	400.	256.	88.	53.75
+	HYDROGRAPH AT	DCAP07	407.	15.75	391.	248.	85.	53.75
+	DIVERSION TO	DOCPOT	0.	.00	0.	0.	0.	53.75
+	HYDROGRAPH AT	DCAPOT	407.	15.75	391.	248.	85.	53.75
+	ROUTED TO	RWI542	407.	15.92	391.	248.	85.	53.75
+	HYDROGRAPH AT	WI529	231.	12.17	44.	15.	5.	.17
+	2 COMBINED AT	CWI529	455.	15.42	407.	268.	92.	3.53
+	DIVERSION TO	DO529	14.	15.42	1.	0.	0.	3.53
+	HYDROGRAPH AT	D529	441.	15.42	406.	268.	92.	3.53
+	ROUTED TO	RWI529	437.	15.58	405.	268.	92.	3.53
+	HYDROGRAPH AT	WI516	150.	12.25	29.	9.	3.	.14
	3 COMBINED AT	CWI516	7745.	14.83	4882.	1671.	569.	34.29
+	ROUTED TO	RWI516	7615.	15.42	4684.	1671.	569.	34.29

	HYDROGRAPH AT						
		WI512	1173.	12.42	311.	101.	34.	1.36
	2 COMBINED AT						
+		CWI512	7664.	15.42	4779.	1755.	599.	35.64
	HYDROGRAPH AT						
+		DCAP07	421.	15.75	400.	256.	88.	53.75
	ROUTED TO						
+		RDCP07	420.	16.25	400.	256.	88.	53.75
	HYDROGRAPH AT						
+		WI528	360.	12.33	91.	31.	10.	.36
	HYDROGRAPH AT						
+		D529	14.	15.42	1.	0.	0.	3.53
	ROUTED TO						
+		RD529	7.	15.83	1.	0.	0.	3.53
	3 COMBINED AT						
+		CWI528	475.	15.67	428.	290.	101.	3.80
	ROUTED TO						
+		RWI528	461.	16.00	427.	290.	101.	3.80
	HYDROGRAPH AT						
+		DCAPOT	0.	.00	0.	0.	0.	53.75
	ROUTED TO						
+		RDCPOT	0.	.00	0.	0.	0.	53.75
	HYDROGRAPH AT						
+		WI527	717.	12.33	167.	55.	19.	.71
	2 COMBINED AT						
+		CWI527	717.	12.33	173.	58.	19.	.71
	DIVERSION TO						
+		DO527	62.	12.33	4.	1.	0.	.71
	HYDROGRAPH AT						
+		D527	655.	12.33	169.	57.	19.	.71
	ROUTED TO						
+		RWI527	585.	12.75	169.	57.	19.	.71
	HYDROGRAPH AT						
+		WI518	519.	12.33	126.	42.	14.	.53
	3 COMBINED AT						
+		CWI518	1316.	12.58	668.	375.	132.	5.00
	2 COMBINED AT						
+		C508*	8068.	15.42	5285.	2102.	722.	40.64
	ROUTED TO						
+		R508*	7983.	15.92	5275.	2101.	722.	40.64
	HYDROGRAPH AT						
+		WI508	390.	12.50	109.	30.	10.	.70
	2 COMBINED AT						
+		CWI508	7988.	15.92	5306.	2126.	731.	41.34
	DIVERSION TO						
+		DO508	1518.	15.92	1008.	404.	139.	41.34
	HYDROGRAPH AT						
+		D508	6470.	15.92	4298.	1722.	592.	41.34
	HYDROGRAPH AT						

+		WI510A	988.	12.33	207.	64.	21.	1.13
	ROUTED TO	R510A	672.	13.50	206.	64.	21.	1.13
+	HYDROGRAPH AT	WI510	573.	12.67	220.	67.	22.	1.23
+	3 COMBINED AT	CWI510	6728.	15.83	4640.	1850.	637.	35.84
+	ROUTED TO	RWI510	6600.	16.25	4548.	1850.	637.	35.84
+	HYDROGRAPH AT	WI502	687.	12.58	230.	71.	24.	1.21
+	3 COMBINED AT	CWI502	26281.	16.17	22413.	9020.	3104.	201.44
+	ROUTED TO	RWI502	26242.	16.25	22407.	9020.	3104.	201.44
+	HYDROGRAPH AT	DCAP08	421.	15.75	400.	257.	89.	53.75
+	ROUTED TO	RDCP08	420.	16.00	400.	257.	89.	53.75
+	HYDROGRAPH AT	WI526	37.	12.25	10.	3.	1.	.05
+	2 COMBINED AT	CWI526	435.	15.58	409.	267.	92.	3.49
	ROUTED TO	RWI526	431.	16.50	408.	267.	92.	3.49
+	HYDROGRAPH AT	WI525	1641.	12.33	375.	118.	40.	1.94
+	HYDROGRAPH AT	DCAP09	422.	15.75	403.	269.	94.	53.75
+	ROUTED TO	RDCP09	421.	16.67	403.	269.	94.	53.75
+	HYDROGRAPH AT	D527	62.	12.33	4.	1.	0.	.71
+	ROUTED TO	RD527	12.	13.00	4.	1.	0.	.71
+	4 COMBINED AT	CWI525	1802.	12.42	984.	647.	227.	8.92
+	DIVERSION TO	DO525	116.	12.42	49.	25.	8.	8.92
+	HYDROGRAPH AT	D525	1686.	12.42	934.	622.	219.	8.92
+	ROUTED TO	RWI525	1453.	13.08	921.	621.	219.	8.92
+	HYDROGRAPH AT	WI524	734.	12.42	178.	55.	18.	.95
	HYDROGRAPH AT	D525	116.	12.42	49.	25.	8.	8.92
+	ROUTED TO	RD525	83.	13.42	48.	25.	8.	8.92

	2 COMBINED AT						
+		CWI524	734.	12.42	216.	77.	27.	1.51
	DIVERSION TO						
+		DO524	17.	12.42	1.	0.	0.	1.51
	HYDROGRAPH AT						
+		D524	715.	12.42	214.	77.	27.	1.51
	ROUTED TO						
+		RWI524	640.	12.83	213.	77.	27.	1.51
	HYDROGRAPH AT						
+		PI639	178.	12.50	63.	20.	7.	.34
	HYDROGRAPH AT						
+		D524	17.	12.42	1.	0.	0.	1.51
	ROUTED TO						
+		RD524	6.	12.67	1.	0.	0.	1.51
	2 COMBINED AT						
+		CPI639	184.	12.58	64.	20.	7.	.37
	ROUTED TO						
+		RPI639	171.	12.92	64.	20.	7.	.37
	HYDROGRAPH AT						
+		WI506	1036.	12.50	285.	85.	28.	1.58
	4 COMBINED AT						
+		CWI506	2956.	12.92	1407.	786.	278.	12.35
	ROUTED TO						
+		RWI506	2516.	13.00	1401.	786.	278.	12.35
	HYDROGRAPH AT						
		D508	1518.	15.92	1008.	404.	139.	41.34
	ROUTED TO						
+		RD508	1502.	16.17	1006.	404.	139.	41.34
	HYDROGRAPH AT						
+		WI500	745.	12.42	183.	54.	18.	1.05
	4 COMBINED AT						
+		CWI500	28313.	16.25	24184.	10101.	3485.	222.69
	ROUTED TO						
+		SSPILL	3742.	26.42	3719.	3416.	2357.	222.69
	ROUTED TO						
+		RWI500	3741.	27.00	3719.	3415.	2356.	222.69
	HYDROGRAPH AT						
+		PI635	565.	12.50	80.	20.	7.	.61
	2 COMBINED AT						
+		CPI635	3741.	27.00	3719.	3415.	2356.	223.30
	ROUTED TO						
+		RPI635	3740.	27.75	3717.	3414.	2356.	223.30
	HYDROGRAPH AT						
+		DCAP11	433.	15.75	418.	282.	99.	53.75
	ROUTED TO						
+		RDCP11	433.	16.08	418.	282.	99.	53.75
	HYDROGRAPH AT						
		DCAP12	422.	15.75	403.	269.	95.	53.75
	DIVERSION TO						
+		DO618	223.	15.75	214.	142.	50.	53.75

	HYDROGRAPH AT						
		D618	198.	15.75	189.	126.	45.	53.75
	ROUTED TO						
+		RDCP12	198.	16.00	189.	126.	45.	53.75
	HYDROGRAPH AT						
+		PI618	300.	12.17	42.	11.	4.	.29
	3 COMBINED AT						
+		CPI618	656.	15.58	618.	428.	151.	5.48
	ROUTED TO						
+		RPI618	650.	16.25	617.	428.	151.	5.48
	HYDROGRAPH AT						
+		DCAP13	432.	15.75	413.	273.	98.	53.75
	ROUTED TO						
+		RDCP13	431.	16.42	413.	273.	98.	53.75
	HYDROGRAPH AT						
+		PI615	628.	12.33	117.	32.	11.	.84
	HYDROGRAPH AT						
+		D618	223.	15.75	214.	142.	50.	53.75
	ROUTED TO						
+		RD618	223.	16.08	214.	142.	50.	53.75
	3 COMBINED AT						
+		CPI615	798.	12.33	656.	455.	163.	6.21
	ROUTED TO						
+		RPI615	735.	12.75	652.	455.	163.	6.21
	HYDROGRAPH AT						
+		PI612	492.	12.42	133.	41.	14.	.74
	3 COMBINED AT						
+		CPI612	1586.	12.67	1312.	916.	326.	12.43
	DIVERSION TO						
+		DO612	1190.	12.67	984.	687.	244.	12.43
	HYDROGRAPH AT						
+		D612	397.	12.67	328.	229.	81.	12.43
	ROUTED TO						
+		RPI612	384.	12.92	327.	229.	81.	12.43
	HYDROGRAPH AT						
+		DCAP14	372.	15.75	356.	207.	70.	53.75
	ROUTED TO						
+		RDCP14	371.	16.92	355.	207.	70.	53.75
	HYDROGRAPH AT						
+		PI609	1030.	12.50	306.	90.	30.	1.94
	3 COMBINED AT						
+		CPI609	1393.	12.67	881.	525.	183.	8.10
	ROUTED TO						
+		RPI609	1378.	12.83	879.	525.	183.	8.10
	HYDROGRAPH AT						
+		PI600A	817.	12.17	96.	29.	10.	.52
	2 COMBINED AT						
+		C600A	1493.	12.67	935.	550.	192.	8.62
	DIVERSION TO						

+		DO600A	1493.	12.67	935.	550.	192.	8.62
	HYDROGRAPH AT	D600A	0.	.00	0.	0.	0.	8.62
+	HYDROGRAPH AT	PI621	667.	12.42	161.	49.	16.	.90
+	HYDROGRAPH AT	D612	1190.	12.67	984.	687.	244.	12.43
+	ROUTED TO	RD612	1118.	13.33	978.	687.	244.	12.43
+	2 COMBINED AT	CPI621	1397.	13.25	1064.	732.	261.	10.22
+	ROUTED TO	SPI621	1396.	13.25	1064.	732.	258.	10.22
+	ROUTED TO	RPI621	1376.	13.42	1062.	732.	258.	10.22
+	HYDROGRAPH AT	DCAP10	432.	15.75	413.	278.	98.	53.75
+	ROUTED TO	RDCP10	431.	16.17	413.	278.	98.	53.75
+	HYDROGRAPH AT	PI628	655.	12.17	82.	22.	7.	.57
+	2 COMBINED AT	CPI628	763.	12.17	435.	307.	108.	4.11
	ROUTED TO	RPI628	552.	13.00	431.	307.	108.	4.11
+	HYDROGRAPH AT	PI624A	1827.	12.50	490.	150.	50.	2.81
+	2 COMBINED AT	C624A	2199.	12.58	871.	443.	157.	6.92
+	ROUTED TO	R624A	1874.	13.50	857.	443.	157.	6.92
+	HYDROGRAPH AT	PI636	373.	12.33	80.	25.	8.	.43
+	ROUTED TO	RPI636	370.	12.33	80.	25.	8.	.43
+	HYDROGRAPH AT	PI624	879.	12.42	248.	79.	26.	1.23
+	3 COMBINED AT	CPI624	2360.	13.42	1135.	534.	191.	8.57
+	ROUTED TO	SPI624	2342.	13.50	1135.	534.	183.	8.57
+	ROUTED TO	RPI624	2248.	13.75	1130.	533.	183.	8.57
+	HYDROGRAPH AT	PI633	297.	12.33	72.	23.	8.	.34
	5 COMBINED AT	CPI633	4824.	24.75	4744.	4009.	2711.	241.94
+	ROUTED TO	RPI633	4822.	25.25	4742.	4008.	2711.	241.94

+	HYDROGRAPH AT PDEAST	10018.	13.17	2562.	726.	243.	16.44
+	HYDROGRAPH AT DCAP*	4539.	15.75	2187.	549.	183.	53.75
+	2 COMBINED AT CAP2*	10018.	13.17	4560.	1311.	438.	39.36
+	ROUTED TO STOR2	3507.	17.00	3263.	1303.	435.	39.36
+	DIVERSION TO DOCP19	1194.	17.00	1119.	487.	163.	39.36
+	HYDROGRAPH AT DCAP19	2313.	17.00	2144.	817.	272.	39.36
+	DIVERSION TO DOCP18	395.	17.00	369.	146.	49.	39.36
+	HYDROGRAPH AT DCAP18	1918.	17.00	1776.	671.	224.	39.36
+	DIVERSION TO DOCP17	392.	17.00	363.	141.	47.	39.36
+	HYDROGRAPH AT DCAP17	1526.	17.00	1412.	530.	177.	39.36
+	DIVERSION TO DOCP16	1185.	17.00	1100.	420.	140.	39.36
+	HYDROGRAPH AT DCAP16	342.	17.00	312.	110.	37.	39.36
	ROUTED TO RDCP15	341.	17.42	312.	110.	37.	39.36
+	HYDROGRAPH AT PI606A	353.	12.25	66.	18.	6.	.46
+	2 COMBINED AT C606A	375.	17.58	343.	142.	47.	4.08
+	DIVERSION TO DO606A	154.	17.58	141.	58.	19.	4.08
+	HYDROGRAPH AT D606A	221.	17.58	203.	84.	28.	4.08
+	ROUTED TO R606A	221.	18.08	202.	84.	28.	4.08
+	HYDROGRAPH AT PI606	790.	12.42	189.	58.	19.	1.08
+	2 COMBINED AT CPI606	785.	12.42	334.	140.	47.	3.49
+	ROUTED TO RPI606	686.	12.83	329.	140.	47.	3.49
+	HYDROGRAPH AT PI604	329.	12.33	73.	23.	8.	.36
+	HYDROGRAPH AT D606A	154.	17.58	141.	58.	19.	4.08
	ROUTED TO RD606A	154.	17.92	141.	58.	19.	4.08
+	2 COMBINED AT CPI604	382.	12.50	186.	81.	27.	2.03

	ROUTED TO	RPI604	364.	12.83	184.	81.	27.	2.03
+	HYDROGRAPH AT	PD744	508.	12.42	115.	32.	11.	.80
+	HYDROGRAPH AT	D600A	1493.	12.67	935.	550.	192.	8.62
+	ROUTED TO	RD600A	1321.	13.33	915.	550.	192.	8.62
+	HYDROGRAPH AT	PI603	423.	12.33	93.	28.	9.	.52
+	5 COMBINED AT	CPI603	2713.	12.83	1565.	807.	281.	15.46
+	ROUTED TO	SPI603	2537.	13.17	1561.	807.	281.	15.46
+	DIVERSION TO	DO744	0.	.00	0.	0.	0.	15.46
+	HYDROGRAPH AT	D744	2537.	13.17	1561.	807.	281.	15.46
+	ROUTED TO	RPI603	2501.	13.42	1546.	807.	281.	15.46
+	HYDROGRAPH AT	PI600	718.	12.25	104.	31.	10.	.61
+	3 COMBINED AT	CPI600	5436.	24.42	5330.	4558.	2944.	258.01
+	ROUTED TO	RPI600	5432.	24.83	5327.	4551.	2943.	258.01
+	HYDROGRAPH AT	DCAP16	1185.	17.00	1100.	420.	140.	39.36
+	ROUTED TO	RDCP16	1184.	17.42	1099.	420.	140.	39.36
+	HYDROGRAPH AT	DCAP17	392.	17.00	363.	141.	47.	39.36
+	ROUTED TO	RDCP17	391.	17.25	363.	141.	47.	39.36
+	HYDROGRAPH AT	PD740	809.	12.75	176.	48.	16.	1.28
+	3 COMBINED AT	CPD740	1652.	17.50	1540.	645.	215.	18.84
+	ROUTED TO	RPD740	1651.	17.83	1539.	645.	215.	18.84
+	HYDROGRAPH AT	PD726B	654.	12.67	134.	37.	12.	.93
+	2 COMBINED AT	C726B	1654.	17.83	1549.	678.	226.	19.77
+	ROUTED TO	R726B	1653.	18.00	1548.	678.	226.	19.77
+	HYDROGRAPH AT	DCAP18	395.	17.00	369.	146.	49.	39.36
	ROUTED TO							

+		RDCP18	394.	17.42	368.	146.	49.	39.36
	HYDROGRAPH AT	PD736	256.	12.83	109.	31.	10.	.78
	2 COMBINED AT							
+		CPD736	476.	14.17	441.	191.	64.	5.27
	ROUTED TO							
+		RPD736	475.	14.25	441.	191.	64.	5.27
	HYDROGRAPH AT							
+		DCAP19	1194.	17.00	1119.	487.	163.	39.36
	ROUTED TO							
+		RDCP19	1193.	17.17	1118.	486.	163.	39.36
	HYDROGRAPH AT							
+		PD760	1168.	12.17	139.	39.	13.	.87
	ROUTED TO							
+		SCP200	374.	12.67	139.	39.	13.	.87
	ROUTED TO							
+		RPD760	372.	12.83	138.	39.	13.	.87
	HYDROGRAPH AT							
+		PD732	462.	12.50	71.	19.	6.	.48
	3 COMBINED AT							
+		CPD732	1349.	13.67	1226.	573.	192.	15.04
	ROUTED TO							
+		RPD732	1327.	14.33	1225.	572.	192.	15.04
	HYDROGRAPH AT							
		PD726A	431.	12.75	160.	46.	15.	1.10
	3 COMBINED AT							
+		C726A	1971.	14.17	1733.	786.	264.	21.41
	ROUTED TO							
+		R726A	1963.	14.33	1730.	786.	264.	21.41
	2 COMBINED AT							
+		C726*	3389.	14.50	3181.	1381.	463.	41.19
	ROUTED TO							
+		R726*	3317.	15.08	3149.	1380.	463.	41.19
	HYDROGRAPH AT							
+		PD726	797.	12.42	191.	52.	17.	1.35
	HYDROGRAPH AT							
+		PD716	2662.	12.17	286.	79.	26.	1.75
	3 COMBINED AT							
+		CPD726	3378.	15.00	3176.	1486.	499.	44.29
	ROUTED TO							
+		SPD726	3377.	15.00	3176.	1486.	499.	44.29
	DIVERSION TO							
+		DO716	896.	15.00	733.	209.	70.	44.29
	HYDROGRAPH AT							
+		D716	2481.	15.00	2442.	1276.	430.	44.29
	ROUTED TO							
		RPD726	2478.	15.25	2441.	1276.	430.	44.29
	HYDROGRAPH AT							
+		PD720	664.	12.25	100.	29.	10.	.59

+	HYDROGRAPH AT	D744	0.	.00	0.	0.	0.	15.46
+	ROUTED TO	RD744	0.	.00	0.	0.	0.	15.46
+	4 COMBINED AT	CPD720	7431.	14.58	6725.	5602.	3306.	293.30
+	ROUTED TO	RPD720	7426.	14.67	6725.	5602.	3306.	293.30
+	HYDROGRAPH AT	D716	896.	15.00	733.	209.	70.	44.29
+	ROUTED TO	RD716	876.	15.42	731.	209.	70.	44.29
+	2 COMBINED AT	C700*	8059.	14.75	6963.	5720.	3343.	302.88
+	ROUTED TO	R700*	7860.	15.33	6937.	5711.	3342.	302.88
+	HYDROGRAPH AT	PD752	239.	12.17	37.	12.	4.	.19
+	HYDROGRAPH AT	PD748	381.	12.17	57.	18.	6.	.28
+	2 COMBINED AT	CPD748	614.	12.17	93.	29.	10.	.47
+	ROUTED TO	SCP220	464.	12.33	93.	29.	10.	.47
	ROUTED TO	RPD748	450.	12.67	93.	29.	10.	.47
+	HYDROGRAPH AT	PD756	1554.	12.75	593.	189.	63.	3.23
+	ROUTED TO	SCP210	1543.	12.83	593.	189.	63.	3.23
+	ROUTED TO	RPD756	1502.	13.17	592.	189.	63.	3.23
+	2 COMBINED AT	C708*	1750.	13.00	680.	217.	73.	3.70
+	ROUTED TO	R708*	1669.	13.42	679.	216.	73.	3.70
+	HYDROGRAPH AT	PD708	1596.	12.42	391.	112.	37.	2.40
+	HYDROGRAPH AT	PD712A	382.	12.58	127.	37.	12.	.77
+	ROUTED TO	R712A	374.	13.00	126.	37.	12.	.77
+	HYDROGRAPH AT	PD712	742.	12.67	156.	45.	15.	.89
+	4 COMBINED AT	CPD708	3185.	13.08	1323.	403.	136.	7.76
	ROUTED TO	RPD708	3156.	13.17	1323.	403.	136.	7.76
+	HYDROGRAPH AT	PD704	342.	12.25	59.	17.	6.	.36

	HYDROGRAPH AT						
		AF800	730.	12.25	131.	37.	12.	.72
	3 COMBINED AT						
+		CPD704	3449.	13.00	1499.	455.	153.	8.84
	ROUTED TO						
+		SPD704	3394.	13.17	1499.	455.	153.	8.84
	DIVERSION TO						
+		DO800	0.	.00	0.	0.	0.	8.84
	HYDROGRAPH AT						
+		D800	3394.	13.17	1499.	455.	153.	8.84
	ROUTED TO						
+		RPD704	3356.	13.50	1498.	455.	153.	8.84
	HYDROGRAPH AT						
+		PD700	1451.	12.25	215.	58.	19.	1.40
	3 COMBINED AT						
+		CPD700	8983.	15.17	7548.	6018.	3461.	313.12
	HYDROGRAPH AT						
+		D800	0.	.00	0.	0.	0.	8.84
	ROUTED TO						
+		RD800	0.	.00	0.	0.	0.	8.84
	HYDROGRAPH AT						
+		AF802	452.	12.25	83.	26.	9.	.39
	3 COMBINED AT						
+		C802*	8995.	15.17	7560.	6027.	3467.	313.51
	ROUTED TO						
+		R810*	8948.	15.50	7554.	6023.	3465.	313.51
	HYDROGRAPH AT						
+		AF803	1783.	12.50	468.	136.	46.	2.84
	ROUTED TO						
+		RAF803	1715.	12.75	467.	136.	46.	2.84
	HYDROGRAPH AT						
+		AF805	564.	12.33	104.	29.	10.	.63
	ROUTED TO						
+		RAF805	497.	12.75	104.	29.	10.	.63
	HYDROGRAPH AT						
+		AF807	1627.	12.17	208.	61.	21.	1.02
	3 COMBINED AT						
+		CAF807	2600.	12.67	768.	224.	75.	4.49
	ROUTED TO						
+		RAF807	2567.	12.75	768.	224.	75.	4.49
	HYDROGRAPH AT						
+		AF810	1553.	12.50	438.	142.	48.	2.12
	3 COMBINED AT						
+		CAF810	9216.	15.42	7883.	6209.	3544.	320.12
	ROUTED TO						
+		RAF810	9187.	15.67	7879.	6204.	3542.	320.12
	HYDROGRAPH AT						
+		AF820	404.	12.42	102.	29.	10.	.70
	2 COMBINED AT						

```
+                    CAF820    9201.  15.67     7905.    6216.    3548.   320.81

     HYDROGRAPH AT
                      AF830     236.  12.33       52.      15.       5.      .27

     HYDROGRAPH AT
+                     AF854     586.  12.08       72.      23.       8.      .34

     ROUTED TO
+                    RAF854     530.  12.17       72.      23.       8.      .34

     HYDROGRAPH AT
+                     AF852     341.  12.08       38.      12.       4.      .17

     2 COMBINED AT
+                    CAF852     817.  12.17      110.      35.      12.      .51

     ROUTED TO
+                    RAF852     788.  12.17      110.      35.      12.      .51

     HYDROGRAPH AT
+                     AF850     445.  12.08       60.      20.       7.      .22

     2 COMBINED AT
+                    CAF850    1184.  12.17      168.      54.      18.      .72

     HYDROGRAPH AT
+                     AF864      74.  12.25       17.       5.       2.      .09

     ROUTED TO
+                    RAF864      45.  12.83       17.       5.       2.      .09

     HYDROGRAPH AT
+                     AF862     358.  12.00       27.       8.       3.      .18

     2 COMBINED AT
                    CAF862     364.  12.00       43.      13.       4.      .26

     ROUTED TO
+                    RAF862     283.  12.08       42.      13.       4.      .26

     HYDROGRAPH AT
+                     AF866     620.  12.17      107.      34.      11.      .45

     ROUTED TO
+                    RAF866     420.  12.50      106.      34.      11.      .45

     HYDROGRAPH AT
+                     AF860     369.  12.25       88.      30.      10.      .36

     3 COMBINED AT
+                    CAF860     914.  12.25      233.      76.      25.     1.08

     HYDROGRAPH AT
+                     SV258     753.  12.42      158.      49.      16.      .74

     DIVERSION TO
+                    DO258     369.  12.42       78.      24.       8.      .74

     HYDROGRAPH AT
+                      D258     384.  12.42       81.      25.       8.      .74

     ROUTED TO
+                   RSV258     358.  12.58       81.      25.       8.      .74

     HYDROGRAPH AT
+                     SV256      79.  12.17       12.       4.       1.      .06

     2 COMBINED AT
                    CSV256     391.  12.58       93.      29.      10.      .44

*** NORMAL END OF HEC-1 ***
```

D.6.4. 100-yr, 6-hr Future Conditions Model Output

Wittmann ADMSU Addendum
100-year 6-hour Future Conditions

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN   1998               *
*           VERSION 4.1                *
*                                      *
*  RUN DATE   04MAY05  TIME  13:04:58  *
*                                      *
****************************************
```

```
****************************************
*                                      *
*   U.S. ARMY CORPS OF ENGINEERS       *
*   HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET            *
*      DAVIS, CALIFORNIA 95616         *
*          (916) 756-1104              *
*                                      *
****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1
PAGE 1

HEC-1 INPUT

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID  ******************************************************************************
  2           ID  **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
  3           ID  **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
  4           ID  ******************************************************************************
  5           ID  **                                                                          **
  6           ID  **  ADDENDUM TO THE WITTMANN AREA DRAINAGE MASTER STUDY UPDATE HYDROLOGY    **
  7           ID  **                                                                          **
  8           ID  ******************************************************************************
  9           ID  **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
 10           ID  **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
 11           ID  ******************************************************************************
 12           ID  **                                                                          **
 13           ID  ** THE FOLLOWING CHANGES HAVE BEEN MADE TO THE WITTMANN HYDROLOGY MODELS    **
 14           ID  ** DATED OCTOBER 2004:                                                      **
 15           ID  **                                                                          **
 16           ID  **     -Diversion added after CTW480                                        **
 17           ID  **          -Main flow (5%) to CTW478                                       **
 18           ID  **          -Diverted flow (95%) to CWI584                                  **
 19           ID  **          -Added concentration point CWI584 combining RD480 and WI584     **
 20           ID  **          -Hard coding was added to CTW478                                **
 21           ID  **          -Route added after D480 (Diversion Recovery)                    **
 22           ID  **          -Route RWI584 was adjusted                                      **
 23           ID  **          -Storage Route SCP050 was adjusted                              **
 24           ID  **          -Route R508* was adjusted                                       **
 25           ID  **          -Hard coding for CWI510 was adjusted                            **
 26           ID  **                                                                          **
 27           ID  **     -Diversion D618 was moved from after CPI618 to before RDCP12         **
 28           ID  **          -Updated route RD618 information                                **
 29           ID  **          -Hard coding on CPI618 was adjusted                             **
 30           ID  **          -Hard coding on CPI615 was adjusted                             **
 31           ID  **                                                                          **
 32           ID  **     -Route RPI639 changed from following US60 to CPI636 to route         **
 33           ID  **      through US60/RR structures and combine with CWI506                  **
 34           ID  **          -Cards PI639, D524, RD524, CPI639 and RPI639 were changed from  **
 35           ID  **           following R624A to follow RWI524                               **
 36           ID  **          -CPI636 was removed-no longer needed to combine PI636 & RPI639  **
 37           ID  **          -RPI639 information was changed to reflect new route            **
 38           ID  **          -CWI506 changed from combining 3 to combine 4:                  **
 39           ID  **           RWI525, RWI524, RPI639 & WI506                                 **
 40           ID  **          -Hard coding on CWI506 was adjusted                             **
 41           ID  **          -Hard Coding on CWI500 was adjusted                             **
 42           ID  **                                                                          **
 43           ID  ******************************************************************************
 44           ID  **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
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 45   ID   **-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-ADDENDUM-**
 46   ID   ******************************************************************************
 47   ID
 48   ID
 49   ID
 50   ID   ******************************************************************************
 51   ID   ******************************************************************************
 52   ID   **                                                                          **
 53   ID   **    WITTMANN AREA DRAINAGE MASTER STUDY UPDATE-HYDROLOGY MODEL 2004       **
 54   ID   **                                                                          **
 55   ID   ******************************************************************************
1                                   HEC-1 INPUT
PAGE  2

LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 56   ID   ******************************************************************************
 57   ID
 58   ID   PROJECT:                 Wittmann ADMS Update
 59   ID   CLIENT:                  Flood Control District of Maricopa County
 60   ID   PREPARED BY:             Entellus, Inc.
 61   ID   PROJECT No:              FCD 2002C029              Entellus 310.032
 62   ID   FILE NAME: WTFC6-addendum.hc1          CREATED DATE: JUL 01, 2004
 63   ID                                         MODIFIED DATE: MAY 04, 2005
 64   ID
 65   ID   STORM:
 66   ID                        100-year 6-hour Storm
 67   ID
 68   ID   DEVELOPMENT CONDITIONS:
 69   ID                        Future Conditions
 70   ID
 71   ID   MODELING ASSUMPTIONS:
 72   ID                        It was assumed that the US60 did not have adequate
 73   ID                        storage to cause any significant attenuation.
 74   ID
 75   ID                        The assumption was made that the CAP Canal embankment
 76   ID                        would not be breached under a large flood event.
 77   ID
 78   ID                        The assumption was made that the Beardsley Canal would
 79   ID                        not fail under a large storm event (Per District
 80   ID                        Instruction).  In addition, the berm north of the
 81   ID                        Beardsley canal and east of US60 was assumed to fail
 82   ID                        (per district Instruction).
 83   ID
 84   ID                        For both the CAP and Beardsley Canals, once the berm
 85   ID                        elevation was reached weir flow was assumed.  It was
 86   ID                        also assumed that any weir flow over the canal that
 87   ID                        might enter the canal and be diverted out of the study
 88   ID                        area was insignificant, and thus was ignored.  In other
 89   ID                        words all weir flow over the canal embankment reaches
 90   ID                        the downstream concentration point.
 91   ID
 92   ID                        Typical X-sects were developed, and it was assumed
 93   ID                        that a typical x-sect could adequately represent
 94   ID                        various reaches.
 95   ID
 96   ID                        Time-Area Relations were used base on the District's
 97   ID                        Hydrology Manual criteria.  Two Time-Area Relation
 98   ID                        Curves were utilized:
 99   ID                                -Urban
100   ID                                -Natural
101   ID                        The Time-Area Relation Curves were taken directly
102   ID                        from the manual
103   ID
104   ID   MODELING METHODS:
105   ID                        This model utilizes QI cards to input the Padelford
106   ID                        hydrographs from an HEC-1 model developed for 100-yr
107   ID                        6-hr Future conditions based on the 100-yr 24-hr HEC-1
108   ID                        model by A-N West Inc. for the Padelford Wash
109   ID                        Floodplain Delineation Study.  The hydrograph was
110   ID                        altered from its original form (2 minute interval to
1                                   HEC-1 INPUT
PAGE  3
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 111          ID                        5-minute interval) through simple interpolation.
 112          ID
 113          ID                        Clark Unit Hydrographs were used for all subbasins
 114          ID                        except the two subbasins directly upstream of the
 115          ID                        Bonita Dam (PD726B and PD740 use S-graphs).  The UC
 116          ID                        parameters were calculated using the WMS7.0 software.
 117          ID
 118          ID                        For Basins PD726B and PD740 S-Graphs were utilized per
 119          ID                        the request of the FCDMC.  Limited details regarding
 120          ID                        the calculations of the S-graphs can be found in the
 121          ID                        model by the basin KK card.  For full details of the
 122          ID                        S-graph calculations refer to the Appendix.
 123          ID
 124          ID                        Normal Depth routing was used for all routing reaches.
 125          ID
 126          ID                        Hard coding was used to account for the percentage of
 127          ID                        area associated with a diversion.  Because of the use
 128          ID                        of JD cards and aereal reduction, hard coding was
 129          ID                        necessary to properly account for area.  For a given
 130          ID                        diversion a percentage of the flow is routed to two
 131          ID                        different locations.  The same percentage of area
 132          ID                        follows that diverted flow.  In addition the area
 133          ID                        downstream of the main path is reduced or increased and
 134          ID                        is hard coded to account for the loss or gain of area.
 135          ID                        Hard coding was performed based on the 6-hour existing
 136          ID                        conditions model.
 137          ID
 138          ID                        Stage-storage was developed for all the structures
 139          ID                        along the CAP Canal, as well as along the Beardsley
 140          ID                        Canal.  In addition several stage-storage locations
 141          ID                        were developed for areas with significant storage
 142          ID                        along the SR74.  No storage was modeled along the US60
 143          ID                        and railroad, but the culverts were analyzed for
 144          ID                        diversion potential.  Diversions were placed in the
 145          ID                        model where deemed appropriate.  See appendix for
 146          ID                        details.
 147          ID
 148          ID                        FLO-2D was utilized to calculate the split flows at
 149          ID                        concentration points CIW351. CIW357, CIW363 and CWI576.
 150          ID                        See appendix for modeling details.
 151          ID
 152          ID   ******************************************************************************
 153          ID   ******************************************************************************
 154          ID
              *DIAGRAM
 155          IT       5                0    1500
 156          IO       5
 157          IN      15                0
 158          JD    3.40    0.01
              * 6-hour distribution
 159          PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
 160          PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
 161          PC   0.962   0.972   0.983   0.991   1.000
              *
 162          JD   3.378    0.50
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 163          JD   3.314    2.80
 164          PC   0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.067   0.076
 165          PC   0.087   0.100   0.120   0.163   0.252   0.451   0.694   0.837   0.900   0.938
 166          PC   0.950   0.963   0.975   0.988   1.000
              *
 167          JD   3.135   16.00
 168          PC   0.000   0.009   0.020   0.030   0.048   0.063   0.076   0.090   0.105   0.119
 169          PC   0.135   0.152   0.175   0.222   0.304   0.472   0.670   0.796   0.868   0.912
 170          PC   0.946   0.960   0.973   0.987   1.000
              *
 171          JD   2.761   90.00
 172          PC   0.000   0.021   0.035   0.051   0.071   0.087   0.105   0.125   0.143   0.160
```

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173          PC   0.179   0.201   0.232   0.281   0.364   0.500   0.658   0.773   0.841   0.888
174          PC   0.927   0.945   0.964   0.982   1.000
             *
175          JD   1.938  500.00
176          PC   0.000   0.024   0.043   0.059   0.078   0.098   0.119   0.141   0.162   0.186
177          PC   0.212   0.239   0.271   0.321   0.408   0.515   0.627   0.735   0.814   0.864
178          PC   0.907   0.930   0.954   0.977   1.000
             *
             *
             *
             *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * ************************************************************************ *
             * ************ BEGINNING OF WEST PORTION OF DETAILED MODEL ****************** *
             * ************************************************************************ *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
             * WESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWESTWEST *
```

```
                    * Combines TW480, RTW482 and RTW484

2595                KK  CTW480
2596                KO       0       0     0.0       0      22
2597                HC       3
                    *
                    *
                    * Diversion Out
                    * Flow Split Diversion: Main path to TW478, Diversion to WI584
                    * 95% of flow is diverted to WI584

2598                KK    D480
2599                KO       0       0     0.0       0      22
2600                DT   DO480
2601                DI       0   10000
2602                DQ       0    9500
                    *
                    *
                    * ROUTE UPDTAED 4/14/04

2603                KK  RTW480
2604                KO       0       0     0.0       0      22
2605                RS       2    FLOW     0.0     0.0
2606                RC    0.04    0.04    0.04    4817  0.0083
                    * TSR482
2607                RX       0     102     478     535     709     892    1441    1649
2608                RY    1610    1608    1608    1606    1606    1608    1608    1610
                    *
                    *
1                                                HEC-1 INPUT
PAGE 92

LINE                ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


2609                KK   TW478
2610                KO       0       0     0.0       1      22
2611                BA  0.2625
2612                LG   0.298   0.199   6.512   0.153  11.106
2613                UC   0.458   0.351
                    * Urban Time-Area Relation
2614                UA       0       5      16      30      65      77      84      90      94      97
2615                UA     100
                    *
                    *
                    * Combines TW478 and RTW480

2616                KK  CTW478
2617                KO       0       0     0.0       0      22
2618                HC       2    0.85
```

```
                 * Diversion Recovery: Flow split from CTW480

2940             KK    D480
2941             KO       0       0     0.0       0      22
2942             DR   DO480
                 *
                 *
                 * ROUTE UPDATED 05/04/2005

2943             KK   RD480
2944             KO       0       0     0.0       0      22
2945             RS       2    FLOW     0.0     0.0
2946             RC    0.04    0.04    0.04    5985  0.0065
                 * TSR482
2947             RX       0     102     478     535     709     892    1441    1649
2948             RY    1610    1608    1608    1606    1606    1608    1608    1610
                 *
                 *
                 * COMBINES WI584 AND RD480

2949             KK  CWI584
2950             KO       0       0     0.0       0      22
2951             HC       2   12.45
                 *
                 *
                 * ROUTE UPDATED 05/04/2005

2952             KK  RWI584
2953             KO       0       0     0.0       0      22
2954             RS       2    FLOW     0.0     0.0
2955             RC    0.04    0.04    0.04    3933   0.001
                 * WITS70
2956             RX       0     450     700    1284    1435    1499    1745    2500
2957             RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
                 *
                 *
                                          HEC-1 INPUT
PAGE104

LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


2958             KK   WI550
2959             KO       0       0     0.0       1      22
2960             BA  0.1425
2961             LG   0.133    0.25     4.3   0.565    70.0
2962             UC   0.308   0.220
                 * Urban Time-Area Relation
2963             UA       0       5      16      30      65      77      84      90      94      97
2964             UA     100
                 *
                 *
                 * COMBINES WI550, RWI552 AND RWI584

2965             KK  CWI550
2966             KO       0       0     0.0       0      22
2967             HC       3
                 *
                 * *** STAGE DISCHARGE / STORAGE BEHIND STRUCTURE CAP050

2968             KK  SCP050
2969             KO       0       0     0.0       0      22
2970             RS       1    STOR       0
2971             SQ       0     209    1075    2314    3833    4684   12000
2972             SE    1545    1546    1548    1550    1552    1553    1554
2973             SA       0      .1      .7    11.5    35.3    54.1
2974             SE    1545    1546    1548    1550    1552    1553
```

```
                 * Combines CWI518 and CWI512

3664             KK   C508*
3665             KO       0       0     0.0       0      22
3666             HC       2
                 *
                 *
                 * ROUTE UPDATED 05/04/2005

3667             KK   R508*
3668             KO       0       0     0.0       0      22
3669             RS       7    FLOW     0.0     0.0
3670             RC   0.043   0.035   0.043   12366  0.0053
                 * WITS130 modified
3671             RX       0     400     456     575     620     650     660     682
3672             RY    1398    1394  1393.5  1392.5    1392  1392.5    1395    1398
                 *
                 *

3673             KK   WI508
3674             KO       0       0     0.0       1      22
3675             BA  0.6991
3676             LG   0.295    0.25   5.116   0.277  13.185
3677             UC   0.946   0.856
                 * Urban Time-Area Relation
3678             UA       0       5      16      30      65      77      84      90      94      97
3679             UA     100
                 *
                 *
                 * COMBINES WI508 AND R508*

3680             KK  CWI508
3681             KO       0       0     0.0       0      22
3682             HC       2
                 *
                 * Diversion Out: Flow split FS10
                 * Flow Split Diversion: Main path to CWI510, Diversion to CWI500
                 * 19% of flow is diverted to CWI500

3683             KK    D508
3684             KO       0       0     0.0       0      22
3685             DT   DO508     0.0     0.0
3686             DI       0   10000
3687             DQ       0    1900
                 *
                 *

3688             KK  WI510A
3689             KO       0       0     0.0       1      22
3690             BA  1.1293
3691             LG   0.250    0.25   4.622   0.398  34.980
3692             UC   0.783   0.500
                 * Urban Time-Area Relation
3693             UA       0       5      16      30      65      77      84      90      94      97
3694             UA     100
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                          HEC-1 INPUT
PAGE130

LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3695             KK   R510A
3696             KO       0       0     0.0       0      22
3697             RS       8    FLOW     0.0     0.0
3698             RC    0.04    0.04    0.04   17257  0.0051
                 * WITS70
3699             RX       0     450     700    1284    1435    1499    1745    2500
3700             RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
                 *
                 *
```

```
3701    KK   WI510
3702    KO       0       0     0.0       1      22
3703    BA  1.2273
3704    LG   0.258   0.250   5.732   0.237  27.923
3705    UC   1.258   1.228
        * Urban Time-Area Relation
3706    UA       0       5      16      30      65      77      84      90      94      97
3707    UA     100
        *
        *
        * COMBINES CWI508, WI510 AND R510A

3708    KK  CWI510
3709    KO       0       0     0.0       0      22
        * Hard Coded
3710    HC       3   36.72
        *
        *
        * ROUTE UPDATED 4/14/04

3711    KK  RWI510
3712    KO       0       0     0.0       0      22
3713    RS       2    FLOW     0.0     0.0
3714    RC    0.04    0.04    0.04    6492  0.0048
        * WITS70
3715    RX       0     450     700    1284    1435    1499    1745    2500
3716    RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
```

```
                 * Combines RD525 and WI524

3813             KK  CWI524
3814             KO       0       0     0.0       0      22
                 * Hard Coded
3815             HC       2    1.60
                 *
                 *
                 * Railroad Diversion: Main path to CWI506, Diversion to CPI639
                 * From Structure RR650, See Appendix D.5 for analysis

3816             KK    D524
3817             KO       0       0     0.0       0      22
3818             DT   DO524     0.0     0.0
3819             DI       0     595     906    1295    1748
3820             DQ       0       0      38     119     230
                 *
                 *
                 * ROUTE UPDATED 4/14/04

3821             KK  RWI524
3822             KO       0       0     0.0       0      22
3823             RS       2    FLOW     0.0     0.0
3824             RC   0.043   0.035   0.043    4526  0.0062
                 * WITS130
3825             RX       0     400     456     575     620     650     660     682
3826             RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                 *
                 *

3827             KK   PI639
3828             KO       0       0     0.0       1      22
3829             BA  0.3431
3830             LG    0.25    0.25   4.598   0.401   35.27
3831             UC   0.854   1.047
                 * Urban Time-Area Relation
3832             UA       0       5      16      30      65      77      84      90      94      97
3833             UA     100
                 *
                 *
                 * Railroad Diversion Recovery: Outflow from structure RR650

3834             KK    D524
3835             KO       0       0     0.0       0      22
3836             DR   DO524
                 *
                 *
                 * ROUTE UPDATED 4/14/4
1                                                HEC-1 INPUT
PAGE135

LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3837             KK   RD524
3838             KO       0       0     0.0       0      22
3839             RS       1    FLOW     0.0     0.0
3840             RC   0.043   0.035   0.043    2235  0.0027
                 * WITS130
3841             RX       0     400     456     575     620     650     660     682
3842             RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
                 *
                 *
                 * Combines RD524 and PI639

3843             KK  CPI639
3844             KO       0       0     0.0       0      22
                 * Hard Coded
3845             HC       2    0.43
                 *
                 * ROUTE UPDATED 05/04/2005

3846             KK  RPI639
3847             KO       0       0     0.0       0      22
```

```
3848          RS       2    FLOW     0.0     0.0
3849          RC   0.043   0.035   0.043    2635  0.0061
              * WITS130
3850          RX       0     400     456     575     620     650     660     682
3851          RY  1396.5    1394  1393.5    1393    1392    1394    1395  1396.5
              *
              *

3852          KK   WI506
3853          KO       0       0     0.0       1      22
3854          BA  1.5757
3855          LG    0.27   0.253   5.331   0.266  28.348
3856          UC   1.054   0.758
              * Urban Time-Area Relation
3857          UA       0       5      16      30      65      77      84      90      94      97
3858          UA     100
              *
              *
              * COMBINES WI506, RWI525 AND RW524

3859          KK  CWI506
3860          KO       0       0     0.0       0      22
              * Hard Coded
3861          HC       4   13.10
              *
              *
              * ROUTE UPDATED 4/14/04

3862          KK  RWI506
3863          KO       0       0     0.0       0      22
3864          RS       3    FLOW     0.0     0.0
3865          RC    0.04    0.04    0.04    5235  0.0042
              * WITS70
3866          RX       0     450     700    1284    1435    1499    1745    2500
1                                          HEC-1 INPUT
PAGE136

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3867          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *
              * Diversion Recovery: Flow split FS10

3868          KK    D508
3869          KO       0       0     0.0       0      22
3870          DR   DO508
              *
              *
              * ROUTE UPDATED 4/14/4

3871          KK   RD508
3872          KO       0       0     0.0       0      22
3873          RS       2    FLOW     0.0     0.0
3874          RC    0.04    0.04    0.04    5200  0.0065
              * WITS70
3875          RX       0     450     700    1284    1435    1499    1745    2500
3876          RY  1401.5  1399.5    1396  1395.5    1390    1396    1399    1400
              *
              *

3877          KK   WI500
3878          KO       0       0     0.0       1      22
3879          BA  1.0487
3880          LG   0.292     0.3   5.521   0.245   24.91
3881          UC   0.933   0.659
              * Urban Time-Area Relation
3882          UA       0       5      16      30      65      77      84      90      94      97
3883          UA     100
              *
              *
              * COMBINES WI500, RD508, RWI506 AND RWI502

3884          KK  CWI500
```

```
3885          KO        0        0      0.0        0       22
              * Hard Coded
3886          HC        4   224.56
              *
              *
              * STORAGE AT MCMICKEN DAM SPILLWAY
              *
              *

3887          KK   SSPILL
3888          KM    MCMICKEN DAM OUTLET AND SPILLWAY RATING CURVES USED HERE
3889          RS        1     STOR        0        0
3890          SV        0     1370     5505    17501    20816    25623    30850    36661    38754    39849
3891          SQ        0      675      810     4080     4325    21150    47400    81650    93160    99300
3892          SE     1335     1340     1345   1352.5  1353.65  1355.65  1357.65  1359.65  1360.35   1360.7
3893          ST   1360.7    12775     3.05      1.5
              *
              *
              * ROUTE UPDATED 4/14/04
1                                                HEC-1 INPUT
PAGE137

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3894          KK   RWI500
3895          KO        0        0      0.0        0       22
3896          RS        3     FLOW      0.0      0.0
3897          RC    0.045    0.035    0.045     5659    0.001
              * McMicken Dam Channel
3898          RX        0       46      101      121      171      181     1421     3621
3899          RY       25       14        4        0        0        4       14       25
              *
              *

3900          KK    PI635
3901          KO        0        0      0.0        1       22
3902          BA   0.6106
3903          LG    0.346    0.373    5.391    0.229     1.55
3904          UC    0.638    0.430
              * Natural Time-Area Relation
3905          UA        0        3        5        8       12       20       43       75       90       96
3906          UA      100
              *
              *
              * COMBINES PI635 AND RWI500

3907          KK   CPI635
3908          KO        0        0      0.0        0       22
3909          HC        2
              *
              * ROUTE UPDATED 4/14/04

3910          KK   RPI635
3911          KO        0        0      0.0        0       22
3912          RS        6     FLOW      0.0      0.0
3913          RC    0.045    0.035    0.045     7557    0.001
              * McMicken Dam Channel
3914          RX        0       46      101      121      171      181     1421     3621
3915          RY       25       14        4        0        0        4       14       25
              *
              *
              *
              * CAP Diversion Recovery: Outflow from structure CAP110

3916          KK   DCAP11
3917          KO        0        0      0.0        0       22
3918          DR   DOCP11
              *
              *
              * ROUTE UPDATED 4/14/4

3919          KK   RDCP11
3920          KO        0        0      0.0        0       22
```

```
3921          RS        5    FLOW     0.0     0.0
3922          RC    0.043   0.035   0.043    6377  0.0094
              * PITS10_2
3923          RX        0      89     103     136     185     206     261     280
3924          RY     1612  1610.5    1610  1608.5    1610    1611  1611.8    1612
              *
              * CAP Diversion Recovery: Outflow from structure CAP120
1                                          HEC-1 INPUT
PAGE138

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3925          KK  DCAP12
3926          KO        0       0     0.0       0      22
3927          DR  DOCP12
              *
              *
              * Diversion Out: Flow split FS11
              * Flow Split Diversion: Main path to CPI618, Diversion to CPI615
              * 53% of flow is diverted to CPI615

3928          KK    D618
3929          KO        0       0     0.0       0      22
3930          DT   DO618     0.0     0.0
3931          DI        0   10000
3932          DQ        0    5300
              *
              *
              * ROUTE UPDATED 4/14/4

3933          KK  RDCP12
3934          KO        0       0     0.0       0      22
3935          RS        2    FLOW     0.0     0.0
3936          RC    0.043   0.035   0.043    6159  0.0094
              * PITS30
3937          RX        0      49     199     206     222     231     299     375
3938          RY     1532    1532    1530    1528    1528    1530    1532    1532
              *
              *

3939          KK   PI618
3940          KO        0       0     0.0       1      22
3941          BA   0.2886
3942          LG      0.3    0.25   4.623   0.336    10.0
3943          UC    0.463   0.374
              * Urban Time-Area Relation
3944          UA        0       5      16      30      65      77      84      90      94      97
3945          UA      100
              *
              *
              * Combines PI618, RDCP12 and RDCP11

3946          KK  CPI618
3947          KO        0       0     0.0       0      22
              * Hard Coded
3948          HC        3    6.47
              *
              *
              * ROUTE UPDATED 4/14/04

3949          KK  RPI618
3950          KO        0       0     0.0       0      22
3951          RS        5    FLOW     0.0     0.0
3952          RC    0.043   0.035   0.043   10443  0.0075
              * PITS20
3953          RX        0      50      84      87     123     125     156     285
1                                          HEC-1 INPUT
PAGE139

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3954          RY     1454    1453    1452    1450    1450    1452    1452    1454
              *
```

```
                 *
                 * CAP Diversion Recovery: Outflow from structure CAP130

3955             KK  DCAP13
3956             KO       0       0     0.0       0      22
3957             DR  DOCP13
                 *
                 *
                 * ROUTE UPDATED 4/14/4

3958             KK  RDCP13
3959             KO       0       0     0.0       0      22
3960             RS       6    FLOW     0.0     0.0
3961             RC   0.043   0.035   0.043   11034  0.0089
                 * PITS30
3962             RX       0      49     199     206     222     231     299     375
3963             RY    1532    1532    1530    1528    1528    1530    1532    1532
                 *
                 *

3964             KK   PI615
3965             KO       0       0     0.0       1      22
3966             BA  0.8419
3967             LG   0.297    0.25   4.318   0.415  11.355
3968             UC   0.725   0.532
                 * Urban Time-Area Relation
3969             UA       0       5      16      30      65      77      84      90      94      97
3970             UA     100
                 *
                 *
                 * Diversion Recovery: Flow split FS11

3971             KK    D618
3972             KO       0       0     0.0       0      22
3973             DR   DO618
                 *
                 *
                 * ROUTE UPDATED 05/04/2005

3974             KK   RD618
3975             KO       0       0     0.0       0      22
3976             RS       5    FLOW     0.0     0.0
3977             RC   0.043   0.035   0.043    9630  0.0091
                 * PITS20
3978             RX       0      50      84      87     123     125     156     285
3979             RY    1454    1453    1452    1450    1450    1452    1452    1454
                 *
                 *
                 *
                 * Combines RD618, PI615 and RDCP13
1                                                HEC-1 INPUT
PAGE140

LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3980             KK  CPI615
3981             KO       0       0     0.0       0      22
                 * Hard Coded
3982             HC       3    7.20
                 *
                 *
                 * ROUTE UPDATED 4/14/04

3983             KK  RPI615
3984             KO       0       0     0.0       0      22
3985             RS       2    FLOW     0.0     0.0
3986             RC   0.043   0.035   0.043    5109  0.0079
                 * PITS20
3987             RX       0      50      84      87     123     125     156     285
3988             RY    1454    1453    1452    1450    1450    1452    1452    1454
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

 NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW


2574          .           .           .      CTW482............
              .           .           .           .
              .           .           .           .
2579          .           .           .           .-------->   DO482
2577          .           .           .        D482
              .           .           .           V
              .           .           .           V
2582          .           .           .      RTW482
              .           .           .           .
              .           .           .           .
2588          .           .           .           .       TW480
              .           .           .           .           .
              .           .           .           .           .
2595          .           .      CTW480........................
              .           .           .
              .           .           .
2600          .           .           .-------->   DO480
2598          .           .        D480
              .           .           V
              .           .           V
2603          .           .      RTW480
              .           .           .
              .           .           .
2609          .           .           .       TW478
              .           .           .           .
              .           .           .           .
2616          .           .      CTW478............
              .           .           V
              .           .           V
2619          .           .      RTW478
              .           .           .
              .           .           .
2625          .      CTW430............
```

```
2933          .           .       WI584
              .           .           .
              .           .           .
2942          .           .           .           .<-------   DO480
2940          .           .           .        D480
              .           .           .           V
              .           .           .           V
2943          .           .           .       RD480
              .           .           .           .
              .           .           .           .
2949          .           .      CWI584............
              .           .           V
              .           .           V
2952          .           .      RWI584
              .           .           .
              .           .           .
2958          .           .           .       WI550
              .           .           .           .
              .           .           .           .
2965          .      CWI550........................
              .           V
              .           V
2968          .      SCP050
              .           V
              .           V
2975          .      RWI550
              .           .
              .           .
2981          .           .       WI514
              .           .           .
              .           .           .
2988          .      CWI514............
```

```
3797          .           .       WI524
              .           .           .
              .           .           .
3806          .           .           .           .<-------   DO525
3804          .           .           .        D525
              .           .           .           V
              .           .           .           V
3807          .           .           .       RD525
              .           .           .           .
              .           .           .           .
3813          .           .      CWI524............
              .           .           .
              .           .           .
3818          .           .           .------->   DO524
3816          .           .        D524
              .           .           V
              .           .           V
3821          .           .      RWI524
              .           .           .
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3827          .           .           .       PI639
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3836          .           .           .           .           .<-------   DO524
3834          .           .           .           .        D524
              .           .           .           .           V
              .           .           .           .           V
3837          .           .           .           .       RD524
              .           .           .           .           .
              .           .           .           .           .
3843          .           .           .      CPI639............
              .           .           .           V
              .           .           .           V
3846          .           .           .      RPI639
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3852          .           .           .           .       WI506
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3859          .      CWI506.................................
              .           V
              .           V
3862          .      RWI506
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3870          .           .           .<-------   DO508
3868          .           .        D508
              .           .           V
              .           .           V
3871          .           .       RD508
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3877          .           .           .       WI500
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3884     CWI500.................................
              V
              V
3887     SSPILL
              V
              V
3894     RWI500
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3900          .       PI635
              .           .
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3907     CPI635............
              V
              V
3910     RPI635
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3918          .          .<-------  DOCP11
3916          .     DCAP11
              .          V
              .          V
3919          .     RDCP11
              .          .
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3927          .          .          .<-------  DOCP12
3925          .          .     DCAP12
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              .          .          .
3930          .          .          .------->   DO618
3928          .          .       D618
              .          .          V
              .          .          V
3933          .          .     RDCP12
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              .          .          .
3939          .          .          .       PI618
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3946          .     CPI618.......................
              .          V
              .          V
3949          .     RPI618
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              .          .
3957          .          .          .<-------  DOCP13
3955          .          .     DCAP13
              .          .          V
              .          .          V
3958          .          .     RDCP13
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              .          .          .
3964          .          .          .       PI615
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3973          .          .          .           .           .<-------   DO618
3971          .          .          .           .       D618
              .          .          .           .          V
              .          .          .           .          V
3974          .          .          .           .      RD618
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3980          .          .     CPI615.......................
              .          .          V
              .          .          V
3983          .          .     RPI615
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3989          .          .          .       PI612
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3996          .     CPI612.......................
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              .          .
4001          .          .------->   DO612
3999          .       D612
              .          V
              .          V
4004          .     RPI612
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              .          .
4012          .          .          .<-------  DOCP14
4010          .          .     DCAP14
              .          .          V
              .          .          V
4013          .          .     RDCP14
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4019          .          .          .       PI609
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4026          .     CPI609.......................
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4029             .     RPI609
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4035             .          .      PI600A
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4041             .     C600A............
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4044             .          .-------> DO600A
4043             .     D600A
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4047             .          .       PI621
                 .          .           .
                 .          .           .
4056             .          .           .           .<-------   DO612
4054             .          .           .       D612
                 .          .           .          V
                 .          .           .          V
4057             .          .           .      RD612
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4063             .          .      CPI621............
                 .          .           V
                 .          .           V
4066             .          .      SPI621
                 .          .           V
                 .          .           V
4072             .          .      RPI621
                 .          .           .
                 .          .           .
4080             .          .           .           .<-------  DOCP10
4078             .          .           .     DCAP10
                 .          .           .          V
                 .          .           .          V
4081             .          .           .     RDCP10
                 .          .           .           .
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4087             .          .           .           .       PI628
                 .          .           .           .           .
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4094             .          .           .     CPI628............
                 .          .           .          V
                 .          .           .          V
4097             .          .           .     RPI628
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4103             .          .           .           .      PI624A
                 .          .           .           .           .
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4110             .          .           .      C624A............
                 .          .           .          V
                 .          .           .          V
4113             .          .           .      R624A
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4119             .          .           .           .       PI636
                 .          .           .           .           V
                 .          .           .           .           V
4126             .          .           .           .      RPI636
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4132             .          .           .           .           .       PI624
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4139             .          .           .     CPI624........................
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Wittmann ADMSU Addendum
100-year 6-hour Future Conditions

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA
+	HYDROGRAPH AT	WT140	2211.	5.17	705.	182.	61.	3.79
+	ROUTED TO	RWT140	2148.	5.42	704.	182.	61.	3.79
+	HYDROGRAPH AT	WT130	2054.	4.75	487.	123.	41.	2.57
+	2 COMBINED AT	CWT130	3077.	5.25	1101.	285.	95.	6.36
+	ROUTED TO	RWT130	2889.	5.75	1099.	285.	95.	6.36
+	HYDROGRAPH AT	WT160	836.	4.58	175.	44.	15.	.81
+	ROUTED TO	RWT160	550.	6.25	174.	44.	15.	.81
+	HYDROGRAPH AT	WT150A	3021.	5.08	872.	223.	74.	4.75
+	ROUTED TO	R150A	2922.	5.25	871.	223.	74.	4.75
	HYDROGRAPH AT	WT150	1230.	4.50	229.	58.	19.	1.09
+	2 COMBINED AT	CWT150	3269.	5.17	1046.	269.	90.	5.84
+	ROUTED TO	RWT150	3152.	5.58	1044.	269.	90.	5.84
+	HYDROGRAPH AT	WT120	2002.	4.83	500.	126.	42.	2.80
+	4 COMBINED AT	CWT120	6236.	5.58	2450.	636.	212.	15.81
+	ROUTED TO	RWT120	6038.	6.17	2448.	636.	212.	15.81
+	HYDROGRAPH AT	WT110	2494.	4.67	527.	133.	44.	2.90
+	2 COMBINED AT	CWT110	6086.	6.08	2774.	724.	241.	18.71
+	ROUTED TO	RWT110	5779.	6.83	2766.	724.	241.	18.71
+	HYDROGRAPH AT	WT100	3019.	4.75	741.	188.	63.	3.85
+	2 COMBINED AT	CWT100	5796.	6.75	3218.	855.	285.	22.55
	ROUTED TO	RWT100	5471.	7.08	3198.	855.	285.	22.55
+	HYDROGRAPH AT	TW406	525.	4.08	37.	9.	3.	.16

+	ROUTED TO	RTW406	41.	8.33	31.	9.	3.	.16
+	HYDROGRAPH AT	TW408	604.	4.83	190.	49.	16.	.91
+	ROUTED TO	RTW408	327.	7.58	165.	49.	16.	.91
+	HYDROGRAPH AT	TW404	2543.	4.25	449.	113.	38.	2.09
+	4 COMBINED AT	CTW404	5469.	7.17	3503.	970.	323.	25.72
+	ROUTED TO	RTW404	5371.	7.42	3472.	965.	322.	25.72
+	HYDROGRAPH AT	IW371	96.	4.08	10.	2.	1.	.05
+	DIVERSION TO	DO371	70.	4.08	5.	1.	0.	.05
+	HYDROGRAPH AT	D371	25.	4.08	4.	1.	0.	.05
+	ROUTED TO	RIW371	13.	6.58	4.	1.	0.	.05
+	HYDROGRAPH AT	IW366	992.	4.33	194.	49.	16.	1.06
+	2 COMBINED AT	CIW366	989.	4.33	196.	50.	17.	1.07
	ROUTED TO	RIW366	869.	4.83	196.	50.	17.	1.07
+	HYDROGRAPH AT	IW377	153.	4.17	23.	6.	2.	.11
+	ROUTED TO	SSR010	122.	4.42	23.	6.	2.	.11
+	ROUTED TO	RIW377	100.	5.17	23.	6.	2.	.11
+	HYDROGRAPH AT	IW374	738.	4.17	96.	24.	8.	.39
+	HYDROGRAPH AT	D371	70.	4.08	5.	1.	0.	.05
+	ROUTED TO	RD371	36.	4.33	5.	1.	0.	.05
+	3 COMBINED AT	CIW374	757.	4.17	122.	31.	10.	.54
+	ROUTED TO	RIW374	395.	5.83	119.	31.	10.	.54
+	HYDROGRAPH AT	IW386	389.	4.58	88.	22.	7.	.37
+	ROUTED TO	RIW386	294.	5.42	87.	22.	7.	.37
	HYDROGRAPH AT	IW382	762.	4.33	137.	34.	11.	.62
+	2 COMBINED AT	CIW382	708.	4.33	215.	55.	18.	.99

	DIVERSION TO	DO382B	180.	3.92	113.	29.	10.	.99
	HYDROGRAPH AT							
+		D382B	528.	4.33	103.	26.	9.	.99
	DIVERSION TO							
+		DO382A	247.	4.33	22.	6.	2.	.99
	HYDROGRAPH AT							
+		D382A	281.	4.33	80.	20.	7.	.99
	ROUTED TO							
+		RIW382	258.	4.83	80.	20.	7.	.99
	HYDROGRAPH AT							
+		IW384	180.	4.08	21.	5.	2.	.08
	HYDROGRAPH AT							
+		D382A	247.	4.33	22.	6.	2.	.99
	ROUTED TO							
+		RD382A	217.	4.42	22.	6.	2.	.99
	2 COMBINED AT							
+		CIW384	394.	4.33	50.	13.	4.	.41
	ROUTED TO							
+		RIW384	323.	4.67	50.	13.	4.	.41
	HYDROGRAPH AT							
+		IW381	433.	4.33	98.	25.	8.	.38
	HYDROGRAPH AT							
+		D382B	180.	3.92	113.	29.	10.	.99
	2 COMBINED AT							
+		CIW381	599.	4.33	208.	54.	18.	.64
	ROUTED TO							
+		RIW381	563.	4.67	207.	54.	18.	.64
	3 COMBINED AT							
+		C359*	1004.	4.75	325.	83.	28.	1.45
	ROUTED TO							
+		R359*	951.	5.08	322.	83.	28.	1.45
	HYDROGRAPH AT							
+		IW359	2318.	4.50	524.	132.	44.	2.91
	4 COMBINED AT							
+		CIW359	3009.	4.83	1023.	266.	89.	5.97
	ROUTED TO							
+		RIW359	2865.	5.17	1011.	266.	89.	5.97
	HYDROGRAPH AT							
+		IW389	158.	4.33	34.	8.	3.	.13
	ROUTED TO							
+		SSR190	158.	4.33	34.	8.	3.	.13
	ROUTED TO							
+		RIW389	99.	5.67	33.	8.	3.	.13
	HYDROGRAPH AT							
+		IW394	2805.	5.08	819.	209.	70.	4.17
	ROUTED TO							
+		RIW394	2722.	5.25	818.	209.	70.	4.17
	HYDROGRAPH AT							

+	IW390A	753.	4.75	192.	49.	16.	.90
2 COMBINED AT	C390A	3115.	5.25	969.	248.	83.	5.07
ROUTED TO +	R390A	3013.	5.42	968.	248.	83.	5.07
HYDROGRAPH AT +	IW390	197.	4.50	58.	15.	5.	.31
HYDROGRAPH AT +	IW392	1811.	4.17	241.	60.	20.	1.11
3 COMBINED AT +	CIW390	3091.	5.42	1196.	307.	102.	6.50
ROUTED TO +	SSR160	3068.	5.50	1196.	307.	102.	6.50
ROUTED TO +	RIW390	2958.	5.75	1187.	307.	102.	6.50
HYDROGRAPH AT +	IW388	1052.	4.58	305.	77.	26.	1.23
3 COMBINED AT +	CIW388	3396.	5.75	1464.	380.	127.	7.85
ROUTED TO +	RIW388	3305.	6.00	1457.	380.	127.	7.85
HYDROGRAPH AT +	IW357	843.	4.33	185.	46.	15.	.75
2 COMBINED AT	CIW357	3404.	5.92	1595.	418.	139.	8.60
DIVERSION TO +	DO357	857.	5.92	415.	108.	36.	8.60
HYDROGRAPH AT +	D357	2547.	5.92	1180.	310.	103.	8.60
ROUTED TO +	RIW357	2465.	6.50	1167.	310.	103.	8.60
HYDROGRAPH AT +	IW358	144.	4.33	33.	8.	3.	.16
HYDROGRAPH AT +	IW353	2507.	4.58	665.	168.	56.	2.80
4 COMBINED AT +	CIW353	5051.	5.33	2560.	691.	230.	15.28
ROUTED TO +	RIW353	4906.	5.58	2538.	691.	230.	15.28
HYDROGRAPH AT +	IW350	1438.	4.75	512.	132.	44.	2.17
2 COMBINED AT +	CIW350	5645.	5.50	2902.	793.	264.	17.45
HYDROGRAPH AT +	IW312	470.	4.58	149.	38.	13.	.57
DIVERSION TO	DO312	212.	4.58	31.	8.	3.	.57
HYDROGRAPH AT +	D312	258.	4.58	118.	30.	10.	.57

+	ROUTED TO RIW312	239.	5.58	116.	30.	10.	.57
+	HYDROGRAPH AT IW363	1073.	4.25	163.	41.	14.	.63
+	HYDROGRAPH AT IW365	376.	4.58	126.	32.	11.	.47
+	HYDROGRAPH AT D312	212.	4.58	31.	8.	3.	.57
+	ROUTED TO RD312	206.	4.67	31.	8.	3.	.57
+	2 COMBINED AT CIW365	557.	4.67	155.	39.	13.	.74
+	DIVERSION TO DO365	257.	4.67	33.	8.	3.	.74
+	HYDROGRAPH AT D365	300.	4.67	122.	31.	10.	.74
+	ROUTED TO RIW365	297.	5.17	121.	31.	10.	.74
+	HYDROGRAPH AT IW367	107.	4.17	14.	4.	1.	.05
+	HYDROGRAPH AT D365	257.	4.67	33.	8.	3.	.74
+	ROUTED TO RD365	245.	4.83	33.	8.	3.	.74
+	2 COMBINED AT CIW367	301.	4.75	50.	12.	4.	.43
+	HYDROGRAPH AT IW369	565.	4.67	204.	52.	17.	.79
+	DIVERSION TO DO369	350.	4.67	78.	20.	7.	.79
+	HYDROGRAPH AT D369	216.	4.67	126.	33.	11.	.79
+	2 COMBINED AT C363*	490.	4.75	172.	45.	15.	.72
+	ROUTED TO RIW369	458.	5.17	171.	45.	15.	.72
+	HYDROGRAPH AT D357	857.	5.92	415.	108.	36.	8.60
+	ROUTED TO RD357	849.	6.08	414.	108.	36.	8.60
+	5 COMBINED AT CIW363	1805.	5.08	979.	256.	85.	4.26
+	DIVERSION TO DO363	572.	5.08	291.	76.	25.	4.26
+	HYDROGRAPH AT D363	1234.	5.08	687.	180.	60.	4.26
+	ROUTED TO RIW363	1211.	5.67	680.	180.	60.	4.26
+	HYDROGRAPH AT IW368	263.	4.33	53.	13.	4.	.29

	HYDROGRAPH AT	D369	350.	4.67	78.	20.	7.	.79
+	ROUTED TO	RD369	331.	4.92	78.	20.	7.	.79
+	2 COMBINED AT	CIW368	498.	4.75	129.	32.	11.	.79
+	ROUTED TO	RIW368	456.	5.33	129.	32.	11.	.79
+	HYDROGRAPH AT	IW360	900.	4.25	146.	37.	12.	.83
+	2 COMBINED AT	CIW360	775.	4.33	252.	64.	21.	1.62
+	ROUTED TO	RIW360	755.	4.42	252.	64.	21.	1.62
+	HYDROGRAPH AT	IW397	4160.	4.92	1193.	305.	102.	4.81
+	ROUTED TO	RIW397	3910.	5.42	1183.	305.	102.	4.81
+	HYDROGRAPH AT	IW395	6231.	5.00	1664.	422.	141.	7.86
+	2 COMBINED AT	CIW395	8463.	5.17	2670.	693.	231.	12.68
	ROUTED TO	RIW395	8270.	5.42	2664.	693.	231.	12.68
+	HYDROGRAPH AT	IW387	1312.	4.67	254.	64.	21.	1.35
+	ROUTED TO	RIW387	1312.	4.67	254.	64.	21.	1.35
+	HYDROGRAPH AT	IW396	389.	4.75	108.	27.	9.	.59
+	3 COMBINED AT	CIW396	8699.	5.42	2895.	752.	251.	14.61
+	ROUTED TO	RIW396	8607.	5.50	2891.	752.	251.	14.61
+	HYDROGRAPH AT	IW380	643.	4.25	109.	27.	9.	.50
+	2 COMBINED AT	CIW380	8664.	5.50	2965.	771.	257.	15.11
+	ROUTED TO	SSR310	8651.	5.58	2965.	771.	257.	15.11
+	DIVERSION TO	DO380	2563.	5.58	389.	97.	32.	15.11
+	HYDROGRAPH AT	D380	6088.	5.58	2576.	674.	225.	15.11
+	ROUTED TO	RIW380	5792.	6.58	2574.	674.	225.	15.11
+	HYDROGRAPH AT	IW370	565.	4.50	164.	42.	14.	.88
	2 COMBINED AT							

+	CIW370	5961.	6.58	2714.	711.	237.	12.02
ROUTED TO	RIW370	5721.	7.08	2711.	711.	237.	12.02
HYDROGRAPH AT +	IW349	243.	4.33	51.	13.	4.	.25
2 COMBINED AT +	CIW349	5721.	7.08	2736.	720.	240.	12.27
DIVERSION TO +	DO349	3547.	7.08	1697.	446.	149.	12.27
HYDROGRAPH AT +	D349	2174.	7.08	1040.	273.	91.	12.27
ROUTED TO +	RIW349	2168.	7.17	1039.	273.	91.	12.27
HYDROGRAPH AT +	IW352	148.	4.17	19.	5.	2.	.10
3 COMBINED AT +	CIW352	2355.	7.17	1282.	339.	113.	6.39
HYDROGRAPH AT +	IW356	391.	4.25	70.	18.	6.	.29
HYDROGRAPH AT +	D349	3547.	7.08	1697.	446.	149.	12.27
ROUTED TO +	RD349	3450.	7.33	1694.	446.	149.	12.27
3 COMBINED AT	CIW356	5643.	7.25	2937.	780.	260.	14.28
ROUTED TO +	RIW356	5595.	7.42	2932.	780.	260.	14.28
HYDROGRAPH AT +	IW354	579.	4.25	91.	23.	8.	.36
2 COMBINED AT +	CIW354	5595.	7.42	2989.	799.	266.	14.64
ROUTED TO +	RIW354	5506.	7.67	2978.	798.	266.	14.64
HYDROGRAPH AT +	IW362	260.	4.25	44.	11.	4.	.18
2 COMBINED AT +	CIW362	5506.	7.67	3001.	807.	269.	14.82
HYDROGRAPH AT +	IW372	504.	4.17	65.	16.	5.	.32
DIVERSION TO +	DO372	291.	4.17	25.	6.	2.	.32
HYDROGRAPH AT +	D372	214.	4.17	40.	10.	3.	.32
ROUTED TO +	RIW372	154.	5.33	40.	10.	3.	.32
HYDROGRAPH AT	IW375	368.	4.75	151.	40.	13.	.66
HYDROGRAPH AT +	D372	291.	4.17	25.	6.	2.	.32

	ROUTED TO						
+	RD372	201.	4.42	25.	6.	2.	.32
	2 COMBINED AT						
+	CIW375	493.	4.58	172.	45.	15.	.85
	ROUTED TO						
+	RIW375	442.	5.33	170.	45.	15.	.85
	HYDROGRAPH AT						
+	IW364	1576.	4.33	301.	75.	25.	1.15
	3 COMBINED AT						
+	CIW364	1433.	4.33	485.	127.	42.	2.13
	2 COMBINED AT						
+	C364*	5578.	7.67	3345.	909.	303.	16.95
	ROUTED TO						
+	RIW364	5475.	8.25	3330.	909.	303.	16.95
	HYDROGRAPH AT						
+	IW342	273.	4.42	69.	18.	6.	.35
	2 COMBINED AT						
+	CIW342	5474.	8.25	3359.	919.	307.	17.30
	HYDROGRAPH AT						
+	IW351	342.	4.25	61.	15.	5.	.32
	HYDROGRAPH AT						
+	D363	572.	5.08	291.	76.	25.	4.26
	ROUTED TO						
+	RD363	565.	5.25	289.	76.	25.	4.26
	2 COMBINED AT						
	CIW351	711.	4.92	357.	94.	31.	1.67
	DIVERSION TO						
+	DO351	612.	4.92	304.	79.	26.	1.67
	HYDROGRAPH AT						
+	D351	100.	4.92	54.	14.	5.	1.67
	ROUTED TO						
+	RIW351	79.	8.08	48.	14.	5.	1.67
	HYDROGRAPH AT						
+	IW346	2016.	4.75	587.	149.	50.	3.44
	3 COMBINED AT						
+	CIW346	5470.	8.25	3709.	1029.	343.	20.98
	ROUTED TO						
+	RIW346	5427.	8.50	3700.	1028.	343.	20.98
	HYDROGRAPH AT						
+	IW338	511.	4.25	74.	18.	6.	.34
	2 COMBINED AT						
+	CIW338	5425.	8.50	3727.	1041.	347.	21.32
	ROUTED TO						
+	RIW338	5353.	8.92	3702.	1039.	347.	21.32
	HYDROGRAPH AT						
+	IW326	473.	4.25	70.	18.	6.	.33
	ROUTED TO						
	RIW326	361.	4.83	70.	18.	6.	.33
	HYDROGRAPH AT						
+	IW334	1579.	4.33	357.	90.	30.	1.26

3 COMBINED AT	CIW334	5351.	8.92	3863.	1127.	376.	22.91
ROUTED TO	SCP030	5311.	9.00	3830.	1119.	373.	22.91
ROUTED TO	RIW334	5220.	9.83	3757.	1118.	373.	22.91
HYDROGRAPH AT	IW302	904.	4.75	354.	94.	31.	1.33
2 COMBINED AT	CIW302	5220.	9.83	3849.	1191.	398.	24.24
DIVERSION TO	DO302	5212.	9.83	3841.	1189.	397.	24.24
HYDROGRAPH AT	D302	0.	.00	0.	0.	0.	24.24
HYDROGRAPH AT	IW361	326.	4.42	77.	20.	7.	.35
HYDROGRAPH AT	D351	612.	4.92	304.	79.	26.	1.67
ROUTED TO	RD351	605.	5.25	301.	79.	26.	1.67
4 COMBINED AT	CIW361	1854.	5.42	1013.	269.	90.	4.76
ROUTED TO	RIW361	1833.	6.17	999.	269.	90.	4.76
2 COMBINED AT	C350*	6672.	5.75	3622.	1001.	334.	22.22
ROUTED TO	R350*	6570.	6.00	3601.	1001.	334.	22.22
HYDROGRAPH AT	IW330	781.	4.58	210.	53.	18.	1.04
2 COMBINED AT	CIW330	6677.	6.00	3686.	1033.	344.	23.25
ROUTED TO	RIW330	6589.	6.17	3670.	1033.	344.	23.25
HYDROGRAPH AT	IW322	1149.	4.83	464.	121.	40.	1.89
2 COMBINED AT	CIW322	7020.	6.17	3960.	1123.	374.	25.14
ROUTED TO	RIW322	6874.	6.83	3917.	1122.	374.	25.14
HYDROGRAPH AT	IW318	561.	4.50	148.	37.	12.	.58
ROUTED TO	RIW318	421.	6.17	144.	37.	12.	.58
HYDROGRAPH AT	IW310	921.	4.67	302.	78.	26.	1.17
2 COMBINED AT	CIW310	891.	4.67	427.	113.	38.	1.75
ROUTED TO							

+	RIW310	887.	4.75	427.	113.	38.	1.75
HYDROGRAPH AT	IW314	1532.	4.75	565.	148.	49.	2.18
3 COMBINED AT +	CIW314	7448.	6.75	4360.	1315.	439.	29.07
ROUTED TO +	SCP020	7279.	7.00	3977.	1309.	437.	29.07
ROUTED TO +	RIW314	6831.	8.17	3967.	1308.	437.	29.07
HYDROGRAPH AT +	IW300	1000.	4.75	336.	87.	29.	1.48
2 COMBINED AT +	CIW300	6819.	8.17	3965.	1363.	457.	30.55
ROUTED TO +	RIW300	6703.	8.42	3956.	1361.	456.	30.55
HYDROGRAPH AT +	D302	5212.	9.83	3841.	1189.	397.	24.24
2 COMBINED AT +	C302*	9876.	9.17	6824.	2315.	775.	54.72
ROUTED TO +	RIW302	9849.	9.50	6817.	2315.	775.	54.72
HYDROGRAPH AT +	SV264A	2107.	4.83	753.	196.	65.	2.90
ROUTED TO	R264A	1855.	5.25	743.	196.	65.	2.90
HYDROGRAPH AT +	SV264	1603.	4.67	472.	120.	40.	1.92
2 COMBINED AT +	CSV264	3000.	5.00	1164.	305.	102.	4.82
ROUTED TO +	RSV264	2648.	5.42	1146.	305.	102.	4.82
HYDROGRAPH AT +	SV298	667.	4.75	267.	70.	23.	1.08
ROUTED TO +	RSV298	613.	5.92	261.	70.	23.	1.08
HYDROGRAPH AT +	SV286	1504.	4.50	419.	107.	36.	1.54
ROUTED TO +	RSV286	1412.	4.75	417.	107.	36.	1.54
HYDROGRAPH AT +	SV284	495.	4.25	82.	21.	7.	.28
2 COMBINED AT +	CSV284	1635.	4.67	492.	126.	42.	1.82
ROUTED TO +	RSV284	1422.	5.33	488.	126.	42.	1.82
HYDROGRAPH AT	SV290	914.	4.42	206.	52.	17.	.81
ROUTED TO +	RSV290	637.	5.42	203.	52.	17.	.81

+	HYDROGRAPH AT	SV272	1193.	4.42	271.	68.	23.	1.20
+	3 COMBINED AT	CSV272	2342.	5.25	908.	235.	78.	3.84
+	ROUTED TO	RSV272	2326.	5.33	908.	235.	78.	3.84
+	HYDROGRAPH AT	SV294	2178.	4.67	716.	184.	61.	2.65
+	ROUTED TO	RSV294	1952.	5.42	711.	184.	61.	2.65
+	HYDROGRAPH AT	SV276	874.	4.50	221.	56.	19.	.92
+	3 COMBINED AT	CSV276	4303.	5.42	1729.	450.	150.	7.41
+	ROUTED TO	RSV276	4299.	5.42	1729.	450.	150.	7.41
+	HYDROGRAPH AT	SV280	890.	4.58	260.	66.	22.	1.06
+	3 COMBINED AT	CSV280	4905.	5.50	2148.	566.	189.	9.54
+	ROUTED TO	RSV280	4807.	5.75	2145.	566.	189.	9.54
+	HYDROGRAPH AT	SV268	1618.	4.42	372.	94.	31.	1.38
	ROUTED TO	RSV268	1386.	4.75	371.	94.	31.	1.38
+	HYDROGRAPH AT	SV260	1354.	4.42	272.	68.	23.	1.26
+	4 COMBINED AT	CSV260	7564.	5.58	3611.	962.	321.	16.99
+	ROUTED TO	SCP010	4946.	6.67	3470.	959.	320.	16.99
+	ROUTED TO	RSV260	4937.	6.92	3460.	959.	320.	16.99
+	HYDROGRAPH AT	SV220	1101.	4.17	155.	39.	13.	.60
+	HYDROGRAPH AT	SV252	162.	4.25	30.	8.	3.	.15
+	ROUTED TO	RSV252	106.	5.17	30.	8.	3.	.15
+	HYDROGRAPH AT	SV254	171.	4.17	24.	6.	2.	.10
+	ROUTED TO	RSV254	96.	5.08	24.	6.	2.	.10
+	HYDROGRAPH AT	SV219	1179.	4.33	230.	58.	19.	.90
	3 COMBINED AT	CSV219	1150.	4.33	273.	70.	23.	1.14
+	ROUTED TO	RSV219	975.	4.83	273.	70.	23.	1.14

	HYDROGRAPH AT	SV251	308.	4.25	49.	12.	4.	.27
+	ROUTED TO	RSV251	205.	5.25	49.	12.	4.	.27
+	HYDROGRAPH AT	SV250	157.	4.17	24.	6.	2.	.12
+	ROUTED TO	RSV250	98.	5.25	24.	6.	2.	.12
+	HYDROGRAPH AT	SV218	1225.	4.42	255.	64.	21.	1.29
+	4 COMBINED AT	CSV218	1834.	4.75	558.	143.	48.	2.82
+	ROUTED TO	RSV218	1726.	5.08	557.	143.	48.	2.82
+	HYDROGRAPH AT	SV248	1058.	4.67	277.	71.	24.	1.27
+	DIVERSION TO	DO248	497.	4.67	130.	33.	11.	1.27
+	HYDROGRAPH AT	D248	561.	4.67	147.	37.	12.	1.27
+	ROUTED TO	RSV248	489.	5.17	146.	37.	12.	1.27
+	HYDROGRAPH AT	SV244	640.	4.92	210.	54.	18.	.95
+	2 COMBINED AT	CSV244	1053.	5.08	348.	89.	30.	1.62
+	HYDROGRAPH AT	SV246	285.	4.17	39.	10.	3.	.16
+	HYDROGRAPH AT	D248	497.	4.67	130.	33.	11.	1.27
+	ROUTED TO	RD248	460.	5.00	130.	33.	11.	1.27
+	2 COMBINED AT	CSV246	555.	4.92	172.	44.	15.	.76
+	2 COMBINED AT	C216*	1480.	5.00	500.	129.	43.	2.38
+	ROUTED TO	RSV244	1374.	5.75	498.	129.	43.	2.38
+	HYDROGRAPH AT	SV216	1781.	4.33	332.	83.	28.	1.63
+	3 COMBINED AT	CSV216	2753.	5.33	1240.	323.	108.	6.82
+	ROUTED TO	RSV216	2722.	5.75	1237.	323.	108.	6.82
+	HYDROGRAPH AT	SV236	760.	4.25	107.	27.	9.	.59
+	ROUTED TO	RSV236	414.	5.50	107.	27.	9.	.59
	HYDROGRAPH AT							

+	SV240	3008.	4.75	686.	173.	58.	3.67
HYDROGRAPH AT	SV242	94.	4.25	17.	4.	1.	.09
2 COMBINED AT +	C242*	3039.	4.75	697.	176.	59.	3.76
ROUTED TO +	R242*	2794.	5.33	696.	176.	59.	3.76
HYDROGRAPH AT +	SV214	2185.	4.33	438.	110.	37.	1.87
6 COMBINED AT +	CSV220	7777.	5.83	5053.	1425.	475.	30.63
ROUTED TO +	RSV220	7745.	6.25	5031.	1425.	475.	30.63
HYDROGRAPH AT +	SV230	1580.	4.17	193.	48.	16.	.85
HYDROGRAPH AT +	SV232	2915.	4.58	603.	152.	51.	3.06
2 COMBINED AT +	C230*	3427.	4.50	764.	192.	64.	3.91
ROUTED TO +	R230*	3271.	4.92	760.	192.	64.	3.91
HYDROGRAPH AT +	SV212	3358.	4.50	821.	208.	69.	4.14
3 COMBINED AT	CSV212	8643.	5.83	5829.	1680.	560.	38.68
ROUTED TO +	RSV212	8505.	6.42	5763.	1680.	560.	38.68
HYDROGRAPH AT +	SV202	1314.	4.58	356.	90.	30.	1.44
ROUTED TO +	RSV202	1253.	4.92	355.	90.	30.	1.44
HYDROGRAPH AT +	SV210	1606.	4.08	189.	47.	16.	.72
ROUTED TO +	RSV210	1000.	5.00	188.	47.	16.	.72
3 COMBINED AT +	C210*	8907.	6.33	6034.	1770.	590.	40.83
HYDROGRAPH AT +	SV208	889.	4.67	221.	56.	19.	1.07
HYDROGRAPH AT +	SV205	1095.	4.17	109.	27.	9.	.50
2 COMBINED AT +	C205*	1162.	4.50	314.	80.	27.	1.57
ROUTED TO +	R205*	798.	5.00	311.	80.	27.	1.57
HYDROGRAPH AT	SV203	170.	4.08	11.	3.	1.	.08
ROUTED TO +	RSV203	97.	4.67	11.	3.	1.	.08

	3 COMBINED AT						
+		C200*	9128.	6.25	6165.	1814.	605.	42.48
	HYDROGRAPH AT						
+		SV200	2363.	4.42	564.	143.	48.	2.29
	3 COMBINED AT						
+		CSV200	12735.	9.17	10756.	3730.	1249.	99.49
	ROUTED TO						
+		RSV200	12703.	9.42	10746.	3730.	1249.	99.49
	HYDROGRAPH AT						
+		TW416	677.	4.42	186.	48.	16.	.59
	ROUTED TO						
+		RTW416	583.	5.58	185.	48.	16.	.59
	HYDROGRAPH AT						
+		TW420	923.	4.42	243.	62.	21.	.81
	ROUTED TO						
+		RTW420	830.	5.17	242.	62.	21.	.81
	HYDROGRAPH AT						
+		TW412	1762.	4.67	588.	153.	51.	2.06
	2 COMBINED AT						
+		CTW412	2214.	5.00	812.	212.	71.	2.87
	HYDROGRAPH AT						
+		TW414	2227.	4.08	235.	59.	20.	1.17
	ROUTED TO						
+		RTW414	1109.	5.08	231.	59.	20.	1.17
	HYDROGRAPH AT						
		TW410	290.	4.42	78.	20.	7.	.31
	2 COMBINED AT						
+		CTW410	1235.	5.08	296.	77.	26.	1.48
	4 COMBINED AT						
+		C410*	12703.	9.42	11148.	3941.	1320.	104.42
	ROUTED TO						
+		RTW410	12502.	10.00	11021.	3909.	1309.	104.42
	HYDROGRAPH AT						
+		TW402	3774.	4.75	1221.	315.	105.	4.91
	3 COMBINED AT						
+		CTW402	14148.	7.58	12195.	4463.	1496.	135.06
	ROUTED TO						
+		RTW402	14080.	7.75	12175.	4462.	1496.	135.06
	HYDROGRAPH AT						
+		TW448	281.	4.58	93.	24.	8.	.35
	DIVERSION TO						
+		DO448	124.	4.58	18.	4.	1.	.35
	HYDROGRAPH AT						
+		D448	157.	4.58	75.	19.	6.	.35
	ROUTED TO						
+		RTW448	155.	5.58	74.	19.	6.	.35
	HYDROGRAPH AT						
		TW446A	309.	4.50	90.	23.	8.	.34
	HYDROGRAPH AT						
+		D448	124.	4.58	18.	4.	1.	.35

	ROUTED TO						
	RD448	113.	4.75	18.	4.	1.	.35
	2 COMBINED AT						
+	C446A	408.	4.58	108.	28.	9.	.50
	DIVERSION TO						
+	DO446A	12.	4.58	0.	0.	0.	.50
	HYDROGRAPH AT						
+	D446A	397.	4.58	108.	27.	9.	.50
	ROUTED TO						
+	R446A	359.	5.17	107.	27.	9.	.50
	HYDROGRAPH AT						
+	TW446	503.	4.25	95.	24.	8.	.35
	3 COMBINED AT						
+	CTW446	664.	5.00	270.	70.	23.	1.01
	ROUTED TO						
+	RTW446	634.	5.50	267.	70.	23.	1.01
	HYDROGRAPH AT						
+	TW432	778.	4.42	169.	43.	14.	.86
	2 COMBINED AT						
+	CTW432	996.	4.75	418.	109.	36.	1.87
	ROUTED TO						
+	RTW432	957.	5.42	415.	109.	36.	1.87
	HYDROGRAPH AT						
	TW431	922.	4.42	211.	53.	18.	.87
	2 COMBINED AT						
+	CTW431	1443.	4.92	603.	158.	53.	2.75
	HYDROGRAPH AT						
+	TW459	472.	4.83	188.	49.	16.	1.04
	ROUTED TO						
+	SSR350	471.	4.83	188.	49.	16.	1.04
	ROUTED TO						
+	RTW459	466.	5.08	187.	49.	16.	1.04
	HYDROGRAPH AT						
+	TW462	179.	4.08	20.	5.	2.	.08
	HYDROGRAPH AT						
+	D380	2563.	5.58	389.	97.	32.	15.11
	ROUTED TO						
+	RD380	2432.	5.67	389.	97.	32.	15.11
	2 COMBINED AT						
+	CTW462	3373.	5.67	601.	150.	50.	4.05
	ROUTED TO						
+	SSR330	3372.	5.58	601.	150.	50.	4.05
	ROUTED TO						
+	RTW462	2987.	6.00	601.	150.	50.	4.05
	HYDROGRAPH AT						
+	TW450A	927.	4.67	207.	52.	17.	.88
	ROUTED TO						
+	SSR410	868.	4.83	207.	52.	17.	.88
	ROUTED TO						

+		R450A	786.	5.08	206.	52.	17.	.88
	HYDROGRAPH AT	TW450B	626.	4.25	105.	26.	9.	.40
	4 COMBINED AT							
+		C450B	3447.	5.92	963.	244.	81.	6.38
	ROUTED TO							
+		R450B	3206.	6.58	957.	244.	81.	6.38
	HYDROGRAPH AT							
+		TW450	825.	4.83	315.	81.	27.	1.25
	HYDROGRAPH AT							
+		D446A	12.	4.58	0.	0.	0.	.50
	ROUTED TO							
+		RD446A	3.	4.75	0.	0.	0.	.50
	3 COMBINED AT							
+		CTW450	3391.	6.50	1204.	311.	104.	7.62
	DIVERSION TO							
+		DO450	269.	6.50	39.	10.	3.	7.62
	HYDROGRAPH AT							
+		D450	3122.	6.50	1165.	301.	100.	7.62
	ROUTED TO							
+		RTW450	3040.	6.83	1160.	301.	100.	7.62
	HYDROGRAPH AT							
+		TW444	514.	4.25	79.	20.	7.	.35
	2 COMBINED AT							
		CTW444	3064.	6.83	1219.	320.	107.	7.29
	ROUTED TO							
+		RTW444	3011.	7.00	1216.	320.	107.	7.29
	HYDROGRAPH AT							
+		TW440	193.	4.17	24.	6.	2.	.11
	2 COMBINED AT							
+		CTW440	3006.	7.00	1228.	324.	108.	7.40
	HYDROGRAPH AT							
+		TW460	1362.	5.00	419.	107.	36.	2.32
	ROUTED TO							
+		SSR540	1213.	4.83	378.	96.	32.	2.32
	ROUTED TO							
+		RTW460	1176.	5.25	378.	96.	32.	2.32
	HYDROGRAPH AT							
+		TW458	991.	4.50	170.	43.	14.	.67
	2 COMBINED AT							
+		CTW458	1658.	5.08	568.	145.	48.	2.99
	ROUTED TO							
+		RTW458	1641.	5.25	568.	145.	48.	2.99
	HYDROGRAPH AT							
+		TW456	167.	4.33	38.	10.	3.	.18
	2 COMBINED AT							
		CTW456	1698.	5.25	598.	153.	51.	3.16
	ROUTED TO							
+		RTW456	1660.	5.42	597.	153.	51.	3.16

+	HYDROGRAPH AT	TW454	188.	4.67	72.	19.	6.	.36
+	2 COMBINED AT	CTW454	1758.	5.42	651.	167.	56.	3.52
+	DIVERSION TO	DO454	1125.	5.42	416.	107.	36.	3.52
+	HYDROGRAPH AT	D454	633.	5.42	234.	60.	20.	3.52
+	ROUTED TO	RTW454	589.	6.17	232.	60.	20.	3.52
+	HYDROGRAPH AT	TW452A	1073.	4.67	256.	64.	21.	1.08
+	ROUTED TO	SSR450	1056.	4.75	256.	64.	21.	1.08
+	ROUTED TO	R452A	918.	5.58	255.	64.	21.	1.08
+	HYDROGRAPH AT	TW452B	784.	4.67	248.	63.	21.	1.03
+	3 COMBINED AT	C452B	1579.	5.92	702.	182.	61.	3.38
+	ROUTED TO	R452B	1513.	6.33	696.	182.	61.	3.38
+	HYDROGRAPH AT	TW452	447.	4.50	124.	31.	10.	.46
+	HYDROGRAPH AT	D450	269.	6.50	39.	10.	3.	7.62
+	ROUTED TO	RD450	243.	6.75	39.	10.	3.	7.62
+	3 COMBINED AT	CTW452	1787.	6.50	837.	220.	73.	4.52
+	ROUTED TO	RTW452	1743.	6.92	833.	220.	73.	4.52
+	HYDROGRAPH AT	TW442	567.	4.25	92.	23.	8.	.38
+	2 COMBINED AT	CTW442	1738.	6.92	885.	241.	80.	4.90
+	2 COMBINED AT	C442*	4221.	7.00	1929.	518.	173.	12.29
+	ROUTED TO	R442*	4032.	7.50	1919.	518.	173.	12.29
+	HYDROGRAPH AT	TW434	642.	4.33	122.	31.	10.	.57
+	3 COMBINED AT	CTW434	4176.	7.50	2392.	662.	221.	15.61
+	ROUTED TO	RTW434	4056.	8.00	2383.	662.	221.	15.61
+	HYDROGRAPH AT	TW436	1007.	4.25	162.	41.	14.	.67
+	ROUTED TO	RTW436	779.	5.17	162.	41.	14.	.67

	HYDROGRAPH AT	TW430	2852.	4.33	559.	140.	47.	2.49
+	HYDROGRAPH AT	TW429	749.	4.33	149.	38.	13.	.56
+	ROUTED TO	RTW429	476.	5.00	146.	38.	13.	.56
+	4 COMBINED AT	C430*	4054.	8.00	2947.	840.	280.	19.33
+	HYDROGRAPH AT	TW485	1789.	4.58	484.	123.	41.	2.37
+	HYDROGRAPH AT	D454	1125.	5.42	416.	107.	36.	3.52
+	ROUTED TO	RD454	1104.	5.50	416.	107.	36.	3.52
+	HYDROGRAPH AT	WI576A	770.	4.83	227.	58.	19.	1.22
+	ROUTED TO	R576A	716.	5.33	226.	58.	19.	1.22
+	HYDROGRAPH AT	WI576B	504.	4.33	99.	25.	8.	.46
+	2 COMBINED AT	C576B	837.	5.25	307.	79.	26.	1.69
+	DIVERSION TO	DO576B	335.	5.25	123.	32.	11.	1.69
+	HYDROGRAPH AT	D576B	502.	5.25	184.	47.	16.	1.69
+	ROUTED TO	R576B	388.	7.08	181.	47.	16.	1.69
+	3 COMBINED AT	CTW485	2060.	4.92	986.	258.	86.	5.64
+	ROUTED TO	RTW485	2038.	5.17	985.	258.	86.	5.64
+	HYDROGRAPH AT	TW484	395.	4.33	92.	24.	8.	.35
+	2 COMBINED AT	CTW484	2213.	5.00	1055.	278.	93.	5.99
+	ROUTED TO	RTW484	2164.	5.67	1047.	278.	93.	5.99
+	HYDROGRAPH AT	WI580A	1942.	4.58	505.	127.	42.	2.79
+	HYDROGRAPH AT	WI580B	647.	4.33	129.	33.	11.	.63
+	DIVERSION TO	DO580B	298.	4.33	60.	15.	5.	.63
+	HYDROGRAPH AT	D580B	349.	4.33	70.	18.	6.	.63
+	ROUTED TO	R580B	314.	4.75	70.	18.	6.	.63
	2 COMBINED AT							

+	C580A	2129.	4.67	560.	141.	47.	3.13
ROUTED TO	SSR630	2127.	4.67	560.	141.	47.	3.13
ROUTED TO +	R580A	1880.	5.67	558.	141.	47.	3.13
HYDROGRAPH AT +	WI580	1552.	4.25	255.	64.	21.	1.32
HYDROGRAPH AT +	D580B	298.	4.33	60.	15.	5.	.63
ROUTED TO +	RD580B	266.	4.75	59.	15.	5.	.63
HYDROGRAPH AT +	WI578	454.	4.42	98.	25.	8.	.48
2 COMBINED AT +	CWI578	616.	4.67	153.	39.	13.	.77
ROUTED TO +	SSR700	558.	4.83	153.	39.	13.	.77
ROUTED TO +	RWI578	525.	5.42	152.	39.	13.	.77
3 COMBINED AT +	CWI580	2253.	5.67	864.	222.	74.	5.22
ROUTED TO +	RWI580	2156.	6.08	861.	222.	74.	5.22
HYDROGRAPH AT	D576B	335.	5.25	123.	32.	11.	1.69
ROUTED TO +	RD576B	283.	6.42	121.	32.	11.	1.69
HYDROGRAPH AT +	WI576	910.	4.50	215.	54.	18.	1.18
3 COMBINED AT +	CWI576	2439.	6.08	1099.	286.	95.	7.07
DIVERSION TO +	DO576	960.	6.08	434.	113.	38.	7.07
HYDROGRAPH AT +	D576	1479.	6.08	666.	173.	58.	7.07
ROUTED TO +	RWI576	1421.	6.50	662.	173.	58.	7.07
HYDROGRAPH AT +	TW482	1039.	4.33	220.	56.	19.	.76
2 COMBINED AT +	CTW482	1553.	6.42	851.	232.	77.	5.04
DIVERSION TO +	DO482	0.	.00	0.	0.	0.	5.04
HYDROGRAPH AT +	D482	1553.	6.42	851.	232.	77.	5.04
ROUTED TO	RTW482	1504.	6.83	845.	232.	77.	5.04
HYDROGRAPH AT +	TW480	1006.	4.33	182.	46.	15.	.75

+	3 COMBINED AT	CTW480	3279.	5.58	1863.	511.	170.	11.78
+	DIVERSION TO	DO480	3115.	5.58	1769.	486.	162.	11.78
+	HYDROGRAPH AT	D480	164.	5.58	93.	26.	9.	11.78
+	ROUTED TO	RTW480	151.	6.25	91.	26.	9.	11.78
+	HYDROGRAPH AT	TW478	470.	4.17	61.	15.	5.	.26
+	2 COMBINED AT	CTW478	429.	4.17	160.	45.	15.	.85
+	ROUTED TO	RTW478	190.	6.83	146.	45.	15.	.85
+	2 COMBINED AT	CTW430	4049.	7.92	2974.	855.	285.	20.18
+	ROUTED TO	SCP040	3095.	8.75	2423.	829.	277.	20.18
+	ROUTED TO	RTW430	2838.	9.50	2395.	828.	277.	20.18
+	HYDROGRAPH AT	TW418	1835.	4.33	413.	104.	35.	1.37
+	2 COMBINED AT	CTW418	2831.	9.50	2413.	915.	307.	21.55
	ROUTED TO	RTW418	2659.	9.83	2379.	906.	304.	21.55
+	HYDROGRAPH AT	TW424	2372.	4.25	390.	98.	33.	1.50
+	ROUTED TO	RTW424	2163.	4.50	388.	98.	33.	1.50
+	HYDROGRAPH AT	TW422	791.	4.42	202.	52.	17.	.70
+	3 COMBINED AT	CTW422	2958.	4.58	2373.	1015.	341.	23.75
+	ROUTED TO	RTW422	2518.	11.83	2314.	1013.	341.	23.75
+	HYDROGRAPH AT	TW400	3162.	4.83	1171.	307.	102.	4.27
+	3 COMBINED AT	CTW400	14523.	7.67	13063.	5028.	1689.	163.08
+	ROUTED TO	RTW400	14463.	7.92	13029.	5026.	1689.	163.08
+	HYDROGRAPH AT	WI504	1612.	4.33	298.	75.	25.	1.35
+	2 COMBINED AT	CWI504	14452.	7.92	13031.	5059.	1701.	164.43
	ROUTED TO	RWI504	14400.	8.00	12988.	5048.	1697.	164.43
+	HYDROGRAPH AT	D576	960.	6.08	434.	113.	38.	7.07

	ROUTED TO	RD576	935.	6.33	432.	113.	38.	7.07
+	HYDROGRAPH AT	WI574	311.	4.17	45.	11.	4.	.22
+	ROUTED TO	RWI574	188.	5.25	45.	11.	4.	.22
+	HYDROGRAPH AT	WI572	1905.	4.42	434.	110.	37.	2.06
+	ROUTED TO	RWI572	1639.	5.17	431.	110.	37.	2.06
+	HYDROGRAPH AT	WI570	1732.	4.58	497.	127.	42.	2.24
+	DIVERSION TO	DO570	364.	4.58	104.	27.	9.	2.24
+	HYDROGRAPH AT	D570	1368.	4.58	393.	100.	33.	2.24
+	ROUTED TO	RWI570	1302.	5.00	391.	100.	33.	2.24
+	HYDROGRAPH AT	WI566	152.	4.25	22.	6.	2.	.11
+	HYDROGRAPH AT	D570	364.	4.58	104.	27.	9.	2.24
+	2 COMBINED AT	CWI566	541.	4.42	133.	34.	11.	.58
+	ROUTED TO	SSR830	531.	4.50	133.	34.	11.	.58
+	ROUTED TO	RWI566	498.	5.00	133.	34.	11.	.58
+	HYDROGRAPH AT	WI564	977.	5.25	358.	93.	31.	1.81
+	ROUTED TO	SSR880	976.	5.25	358.	93.	31.	1.81
+	ROUTED TO	RWI564	941.	5.58	356.	93.	31.	1.81
+	HYDROGRAPH AT	WI562	713.	4.50	196.	49.	16.	.87
+	3 COMBINED AT	CWI562	1537.	5.42	637.	166.	55.	3.26
+	2 COMBINED AT	C562*	2507.	5.25	981.	255.	85.	5.03
+	ROUTED TO	R562*	2423.	5.92	973.	255.	85.	5.03
+	HYDROGRAPH AT	WI560A	986.	4.83	372.	96.	32.	2.04
+	ROUTED TO	R560A	909.	5.67	368.	96.	32.	2.04
+	HYDROGRAPH AT	WI560	3069.	4.58	844.	215.	72.	3.56
	6 COMBINED AT							

+		CWI560	5204.	5.58	2601.	704.	235.	15.70
	ROUTED TO	RWI560	5096.	6.25	2590.	704.	235.	15.70
	HYDROGRAPH AT							
+		WI582	605.	4.25	110.	28.	9.	.38
	HYDROGRAPH AT							
+		D482	0.	.00	0.	0.	0.	5.04
	ROUTED TO							
+		RD482	0.	.00	0.	0.	0.	5.04
	2 COMBINED AT							
+		CWI582	605.	4.25	110.	28.	9.	.38
	ROUTED TO							
+		RWI582	428.	4.67	109.	28.	9.	.38
	HYDROGRAPH AT							
+		WI556	237.	4.00	25.	6.	2.	.08
	ROUTED TO							
+		RWI556	63.	5.25	24.	6.	2.	.08
	HYDROGRAPH AT							
+		WI554	1217.	4.33	271.	69.	23.	1.04
	4 COMBINED AT							
+		CWI554	5258.	6.17	2826.	782.	261.	17.20
	ROUTED TO							
+		RWI554	5247.	6.25	2824.	782.	261.	17.20
	HYDROGRAPH AT							
		WI552	503.	4.25	96.	24.	8.	.41
	2 COMBINED AT							
+		CWI552	5256.	6.25	2872.	798.	266.	17.61
	ROUTED TO							
+		RWI552	5249.	6.33	2871.	798.	266.	17.61
	HYDROGRAPH AT							
+		WI584	1115.	4.50	267.	68.	23.	1.26
	HYDROGRAPH AT							
+		D480	3115.	5.58	1769.	486.	162.	11.78
	ROUTED TO							
+		RD480	2928.	6.17	1756.	486.	162.	11.78
	2 COMBINED AT							
+		CWI584	3072.	6.00	1923.	538.	179.	12.45
	ROUTED TO							
+		RWI584	2995.	6.50	1904.	538.	179.	12.45
	HYDROGRAPH AT							
+		WI550	350.	4.08	43.	11.	4.	.14
	3 COMBINED AT							
+		CWI550	7246.	6.42	4268.	1215.	405.	30.20
	ROUTED TO							
+		SCP050	7150.	6.58	4265.	1215.	405.	30.20
	ROUTED TO							
		RWI550	6959.	6.92	4255.	1215.	405.	30.20
	HYDROGRAPH AT							
+		WI514	660.	4.17	87.	22.	7.	.35

+	2 COMBINED AT	CWI514	6941.	6.92	4267.	1228.	410.	30.56
+	HYDROGRAPH AT	WI548	471.	4.25	74.	19.	6.	.31
+	ROUTED TO	RWI548	331.	5.08	74.	19.	6.	.31
+	HYDROGRAPH AT	WI546	710.	4.33	175.	45.	15.	.61
+	2 COMBINED AT	CWI546	731.	4.83	242.	62.	21.	.91
+	ROUTED TO	RWI546	718.	5.00	242.	62.	21.	.91
+	HYDROGRAPH AT	WI544	1716.	4.50	466.	119.	40.	1.79
+	2 COMBINED AT	CWI544	2147.	4.58	687.	177.	59.	2.71
+	DIVERSION TO	DO544	1438.	4.58	460.	119.	40.	2.71
+	HYDROGRAPH AT	D544	708.	4.58	227.	58.	19.	2.71
+	ROUTED TO	RWI544	638.	5.25	225.	58.	19.	2.71
+	HYDROGRAPH AT	WI542	903.	4.50	268.	69.	23.	1.17
	2 COMBINED AT	CWI542	1271.	5.00	482.	126.	42.	2.06
+	HYDROGRAPH AT	WI540	1075.	4.75	293.	75.	25.	1.25
+	ROUTED TO	SSR940	1075.	4.83	293.	75.	25.	1.25
+	ROUTED TO	RWI540	1025.	4.92	293.	75.	25.	1.25
+	HYDROGRAPH AT	WI538A	764.	4.67	190.	48.	16.	.78
+	2 COMBINED AT	C538A	1598.	4.92	470.	120.	40.	2.02
+	ROUTED TO	R538A	1467.	5.58	468.	120.	40.	2.02
+	HYDROGRAPH AT	WI538	948.	4.83	385.	102.	34.	1.43
+	2 COMBINED AT	CWI538	2102.	5.50	822.	216.	72.	3.45
+	ROUTED TO	RWI538	2009.	6.08	817.	216.	72.	3.45
+	HYDROGRAPH AT	WI536	928.	4.83	406.	110.	37.	1.37
	HYDROGRAPH AT	WI534	616.	4.33	144.	37.	12.	.43
+	ROUTED TO	RWI534	577.	4.58	144.	37.	12.	.43

	HYDROGRAPH AT						
		WI532	580.	4.17	104.	26.	9.	.32
	2 COMBINED AT						
+		CWI532	972.	4.42	245.	63.	21.	.76
	2 COMBINED AT						
+		C530*	1662.	4.58	634.	171.	57.	2.13
	ROUTED TO						
+		R530*	1600.	5.25	632.	171.	57.	2.13
	HYDROGRAPH AT						
+		WI530	1709.	4.50	417.	106.	35.	2.38
	HYDROGRAPH AT						
+		D544	1438.	4.58	460.	119.	40.	2.71
	ROUTED TO						
+		RD544	1354.	5.17	458.	119.	40.	2.71
	4 COMBINED AT						
+		CWI530	3977.	5.25	2082.	563.	188.	9.78
	2 COMBINED AT						
+		CAP1*	4886.	5.25	2465.	668.	223.	11.84
	HYDROGRAPH AT						
+		PI663	468.	4.83	150.	38.	13.	.60
	ROUTED TO						
+		RPI663	428.	5.50	148.	38.	13.	.60
	HYDROGRAPH AT						
+		PI657	583.	4.75	223.	58.	19.	.87
	HYDROGRAPH AT						
+		PI660	432.	4.92	199.	54.	18.	.84
	3 COMBINED AT						
+		CPI660	1172.	5.33	547.	145.	48.	2.31
	ROUTED TO						
+		RPI660	1157.	5.50	545.	145.	48.	2.31
	HYDROGRAPH AT						
+		PI654	2599.	4.92	965.	246.	82.	4.03
	2 COMBINED AT						
+		CPI654	3352.	5.08	1447.	378.	126.	6.34
	DIVERSION TO						
+		DO654	670.	5.08	289.	76.	25.	6.34
	HYDROGRAPH AT						
+		D654	2682.	5.08	1157.	302.	101.	6.34
	ROUTED TO						
+		RPI654	2660.	5.33	1154.	302.	101.	6.34
	HYDROGRAPH AT						
+		PI648	1246.	4.75	425.	109.	36.	1.73
	HYDROGRAPH AT						
+		PI651	436.	4.42	108.	27.	9.	.46
	3 COMBINED AT						
+		CPI651	3811.	5.17	1621.	424.	141.	7.26
	ROUTED TO						
+		RPI651	3757.	5.42	1618.	424.	141.	7.26
	HYDROGRAPH AT						

+	PI645A	1175.	4.75	434.	113.	38.	1.63
ROUTED TO	R645A	1151.	5.08	433.	113.	38.	1.63
HYDROGRAPH AT +	PI645	1316.	4.42	258.	65.	22.	1.56
HYDROGRAPH AT +	D654	670.	5.08	289.	76.	25.	6.34
ROUTED TO +	RD654	656.	5.58	287.	76.	25.	6.34
4 COMBINED AT +	CPI645	5404.	5.33	2410.	637.	212.	11.72
2 COMBINED AT +	CAP1*	9326.	5.33	4518.	1219.	406.	23.56
HYDROGRAPH AT +	PI689	5150.	5.08	1584.	407.	136.	6.78
HYDROGRAPH AT +	PI688	2857.	4.83	742.	189.	63.	3.20
2 COMBINED AT +	CPI689	7228.	5.00	2219.	570.	190.	9.98
ROUTED TO +	RPI689	6946.	5.33	2208.	570.	190.	9.98
HYDROGRAPH AT +	PI687	4438.	5.17	1401.	362.	121.	7.01
2 COMBINED AT	CPI687	10250.	5.33	3393.	881.	294.	16.99
ROUTED TO +	RPI687	10057.	5.50	3386.	881.	294.	16.99
HYDROGRAPH AT +	PI684	871.	4.58	178.	45.	15.	.74
2 COMBINED AT +	CPI684	10270.	5.50	3512.	913.	304.	17.73
ROUTED TO +	SSR103	10047.	5.58	3512.	913.	304.	17.73
ROUTED TO +	RPI684	9778.	5.92	3506.	913.	304.	17.73
HYDROGRAPH AT +	PI681	798.	4.67	268.	69.	23.	.99
2 COMBINED AT +	CPI681	10009.	5.92	3702.	967.	322.	18.72
ROUTED TO +	RPI681	9568.	6.50	3691.	967.	322.	18.72
HYDROGRAPH AT +	PI678	708.	4.50	230.	60.	20.	.83
2 COMBINED AT +	CPI678	9652.	6.50	3814.	1013.	338.	19.55
DIVERSION TO	DO678	2702.	6.50	1068.	284.	95.	19.55
HYDROGRAPH AT +	D678	6949.	6.50	2746.	729.	243.	19.55

+	HYDROGRAPH AT	PI690	478.	4.50	134.	34.	11.	.63
+	2 COMBINED AT	CPI690	7346.	6.42	2924.	779.	260.	14.71
+	ROUTED TO	RPI690	7158.	6.58	2912.	779.	260.	14.71
+	HYDROGRAPH AT	PI675	106.	4.17	13.	3.	1.	.06
+	2 COMBINED AT	CPI675	7156.	6.58	2915.	781.	260.	14.77
+	2 COMBINED AT	CAP1*	12086.	6.42	6733.	1836.	612.	38.33
+	HYDROGRAPH AT	PI672	1306.	4.42	260.	65.	22.	1.51
+	HYDROGRAPH AT	D678	2702.	6.50	1068.	284.	95.	19.55
+	ROUTED TO	RD678	2378.	6.92	1058.	284.	95.	19.55
+	2 COMBINED AT	CPI672	2753.	6.83	1329.	364.	121.	6.98
+	2 COMBINED AT	CAP1*	13388.	6.50	7612.	2086.	695.	45.31
+	HYDROGRAPH AT	PI693	980.	4.25	157.	39.	13.	.84
	2 COMBINED AT	CAP1*	13363.	6.50	7672.	2103.	701.	46.15
+	HYDROGRAPH AT	PI669	223.	4.42	57.	14.	5.	.29
+	2 COMBINED AT	CAP1*	13356.	6.50	7688.	2108.	703.	46.43
+	HYDROGRAPH AT	PI642	278.	4.25	44.	11.	4.	.24
+	2 COMBINED AT	CAP1*	13347.	6.50	7700.	2112.	704.	46.67
+	HYDROGRAPH AT	PDWEST	4407.	5.17	1467.	381.	127.	7.08
+	2 COMBINED AT	CAP1*	14655.	6.42	8944.	2450.	817.	53.75
+	ROUTED TO	STOR1	7606.	7.50	5280.	2442.	817.	53.75
+	DIVERSION TO	DOCAP*	3714.	7.83	1718.	430.	143.	53.75
+	HYDROGRAPH AT	DCAP*	4040.	7.42	3563.	2013.	673.	53.75
+	DIVERSION TO	DOCP14	407.	7.42	352.	177.	59.	53.75
	HYDROGRAPH AT	DCAP14	3633.	7.42	3211.	1836.	614.	53.75
+	DIVERSION TO	DOCP13	462.	7.42	409.	237.	81.	53.75

	HYDROGRAPH AT						
		DCAP13	3170.	7.42	2802.	1598.	533.	53.75
	DIVERSION TO						
+		DOCP12	432.	7.42	398.	232.	78.	53.75
	HYDROGRAPH AT						
+		DCAP12	2738.	7.42	2404.	1366.	456.	53.75
	DIVERSION TO						
+		DOCP11	444.	7.42	414.	244.	81.	53.75
	HYDROGRAPH AT						
+		DCAP11	2294.	7.42	1989.	1123.	374.	53.75
	DIVERSION TO						
+		DOCP10	476.	7.42	410.	240.	80.	53.75
	HYDROGRAPH AT						
+		DCAP10	1818.	7.42	1579.	883.	294.	53.75
	DIVERSION TO						
+		DOCP09	487.	7.42	401.	231.	77.	53.75
	HYDROGRAPH AT						
+		DCAP09	1330.	7.42	1178.	651.	217.	53.75
	DIVERSION TO						
+		DOCP08	419.	7.50	395.	220.	73.	53.75
	HYDROGRAPH AT						
+		DCAP08	912.	7.42	784.	431.	144.	53.75
	DIVERSION TO						
+		DOCP07	445.	7.42	396.	219.	73.	53.75
	HYDROGRAPH AT						
+		DCAP07	466.	7.42	388.	212.	71.	53.75
	DIVERSION TO						
+		DOCPOT	35.	7.42	2.	0.	0.	53.75
	HYDROGRAPH AT						
+		DCAPOT	431.	7.42	387.	212.	71.	53.75
	ROUTED TO						
+		RWI542	421.	7.58	386.	212.	71.	53.75
	HYDROGRAPH AT						
+		WI529	338.	4.17	52.	13.	4.	.17
	2 COMBINED AT						
+		CWI529	834.	7.08	453.	246.	82.	4.13
	DIVERSION TO						
+		DO529	216.	7.08	23.	6.	2.	4.13
	HYDROGRAPH AT						
+		D529	618.	7.08	429.	240.	80.	4.13
	ROUTED TO						
+		RWI529	600.	7.33	429.	240.	80.	4.13
	HYDROGRAPH AT						
+		WI516	223.	4.17	36.	9.	3.	.14
	3 COMBINED AT						
+		CWI516	7122.	7.00	4548.	1433.	478.	34.83
	ROUTED TO						
+		RWI516	6899.	7.58	4390.	1432.	478.	34.83
	HYDROGRAPH AT						

+	WI512	1480.	4.42	372.	95.	32.	1.36
2 COMBINED AT	CWI512	6857.	7.58	4437.	1499.	501.	36.18
HYDROGRAPH AT +	DCAP07	445.	7.42	396.	219.	73.	53.75
ROUTED TO +	RDCP07	424.	7.83	395.	219.	73.	53.75
HYDROGRAPH AT +	WI528	544.	4.25	109.	27.	9.	.36
HYDROGRAPH AT +	D529	216.	7.08	23.	6.	2.	4.13
ROUTED TO +	RD529	115.	7.50	23.	6.	2.	4.13
3 COMBINED AT +	CWI528	985.	7.33	510.	276.	92.	3.41
ROUTED TO +	RWI528	884.	7.75	507.	276.	92.	3.41
HYDROGRAPH AT +	DCAPOT	35.	7.42	2.	0.	0.	53.75
ROUTED TO +	RDCPOT	5.	8.08	2.	0.	0.	53.75
HYDROGRAPH AT +	WI527	998.	4.33	202.	51.	17.	.71
2 COMBINED AT	CWI527	998.	4.33	315.	83.	28.	.71
DIVERSION TO +	DO527	181.	4.33	18.	5.	2.	.71
HYDROGRAPH AT +	D527	817.	4.33	296.	79.	26.	.71
ROUTED TO +	RWI527	749.	4.67	295.	79.	26.	.71
HYDROGRAPH AT +	WI518	803.	4.25	154.	39.	13.	.53
3 COMBINED AT +	CWI518	1402.	4.67	769.	360.	121.	5.54
2 COMBINED AT +	C508*	7058.	7.67	4828.	1778.	595.	41.72
ROUTED TO +	R508*	6932.	8.17	4820.	1776.	595.	41.72
HYDROGRAPH AT +	WI508	563.	4.50	142.	36.	12.	.70
2 COMBINED AT +	CWI508	6914.	8.17	4833.	1794.	601.	42.42
DIVERSION TO +	DO508	1314.	8.17	918.	341.	114.	42.42
HYDROGRAPH AT	D508	5600.	8.17	3915.	1453.	486.	42.42
HYDROGRAPH AT +	WI510A	1254.	4.33	254.	64.	21.	1.13

	ROUTED TO						
+		R510A	910.	5.42	251.	64.	21.	1.13
	HYDROGRAPH AT						
+		WI510	760.	4.75	270.	70.	23.	1.23
	3 COMBINED AT						
+		CWI510	5913.	8.08	4274.	1577.	528.	36.72
	ROUTED TO						
+		RWI510	5779.	8.42	4161.	1576.	528.	36.72
	HYDROGRAPH AT						
+		WI502	900.	4.67	278.	72.	24.	1.21
	3 COMBINED AT						
+		CWI502	16474.	8.33	14651.	5790.	1947.	202.35
	ROUTED TO						
+		RWI502	16462.	8.42	14646.	5790.	1947.	202.35
	HYDROGRAPH AT						
+		DCAP08	419.	7.50	395.	220.	73.	53.75
	ROUTED TO						
+		RDCP08	415.	7.67	394.	220.	73.	53.75
	HYDROGRAPH AT						
+		WI526	54.	4.25	12.	3.	1.	.05
	2 COMBINED AT						
+		CWI526	506.	7.17	420.	235.	78.	4.10
	ROUTED TO						
+		RWI526	486.	8.00	419.	235.	78.	4.10
	HYDROGRAPH AT						
		WI525	1895.	4.42	443.	112.	37.	1.94
	HYDROGRAPH AT						
+		DCAP09	487.	7.42	401.	231.	77.	53.75
	ROUTED TO						
+		RDCP09	439.	8.25	400.	231.	77.	53.75
	HYDROGRAPH AT						
+		D527	181.	4.33	18.	5.	2.	.71
	ROUTED TO						
+		RD527	58.	5.00	18.	5.	2.	.71
	4 COMBINED AT						
+		CWI525	1778.	7.67	1115.	610.	205.	10.23
	DIVERSION TO						
+		DO525	92.	4.50	49.	22.	7.	10.23
	HYDROGRAPH AT						
+		D525	1420.	4.50	934.	555.	187.	10.23
	ROUTED TO						
+		RWI525	1279.	5.17	922.	554.	187.	10.23
	HYDROGRAPH AT						
+		WI524	987.	4.42	220.	56.	19.	.95
	HYDROGRAPH AT						
+		D525	92.	4.50	49.	22.	7.	10.23
	ROUTED TO						
		RD525	72.	5.50	48.	22.	7.	10.23
	2 COMBINED AT						
+		CWI524	978.	4.42	274.	84.	28.	1.60

	DIVERSION TO						
		DO524	44.	4.42	4.	1.	0.	1.60
	HYDROGRAPH AT						
+		D524	868.	4.42	260.	80.	27.	1.60
	ROUTED TO						
+		RWI524	802.	4.75	257.	80.	27.	1.60
	HYDROGRAPH AT						
+		PI639	273.	4.50	80.	21.	7.	.34
	HYDROGRAPH AT						
+		D524	44.	4.42	4.	1.	0.	1.60
	ROUTED TO						
+		RD524	25.	4.75	4.	1.	0.	1.60
	2 COMBINED AT						
+		CPI639	310.	4.50	87.	22.	7.	.43
	ROUTED TO						
+		RPI639	292.	4.83	86.	22.	7.	.43
	HYDROGRAPH AT						
+		WI506	1284.	4.58	345.	88.	29.	1.58
	4 COMBINED AT						
+		CWI506	2759.	5.00	1356.	700.	237.	13.10
	ROUTED TO						
+		RWI506	2602.	5.25	1349.	699.	237.	13.10
	HYDROGRAPH AT						
+		D508	1314.	8.17	918.	341.	114.	42.42
	ROUTED TO						
+		RD508	1296.	8.42	917.	341.	114.	42.42
	HYDROGRAPH AT						
+		WI500	972.	4.42	227.	57.	19.	1.05
	4 COMBINED AT						
+		CWI500	17232.	8.42	15376.	6318.	2126.	224.56
	ROUTED TO						
+		SSPILL	2123.	18.33	2106.	1910.	1368.	224.56
	ROUTED TO						
+		RWI500	2123.	18.83	2106.	1909.	1368.	224.56
	HYDROGRAPH AT						
+		PI635	807.	4.42	110.	27.	9.	.61
	2 COMBINED AT						
+		CPI635	2123.	18.83	2106.	1909.	1368.	225.17
	ROUTED TO						
+		RPI635	2120.	19.58	2103.	1907.	1367.	225.17
	HYDROGRAPH AT						
+		DCAP11	444.	7.42	414.	244.	81.	53.75
	ROUTED TO						
+		RDCP11	438.	7.75	414.	243.	81.	53.75
	HYDROGRAPH AT						
+		DCAP12	432.	7.42	398.	232.	78.	53.75
	DIVERSION TO						
+		DO618	229.	7.42	211.	123.	41.	53.75
	HYDROGRAPH AT						

+	D618	203.	7.42	187.	109.	37.	53.75
ROUTED TO	RDCP12	200.	7.67	187.	109.	37.	53.75
HYDROGRAPH AT +	PI618	448.	4.17	58.	14.	5.	.29
3 COMBINED AT +	CPI618	866.	7.25	647.	383.	128.	6.47
ROUTED TO +	RPI618	819.	7.92	647.	382.	128.	6.47
HYDROGRAPH AT +	DCAP13	462.	7.42	409.	237.	81.	53.75
ROUTED TO +	RDCP13	439.	8.08	409.	237.	81.	53.75
HYDROGRAPH AT +	PI615	855.	4.33	154.	39.	13.	.84
HYDROGRAPH AT +	D618	229.	7.42	211.	123.	41.	53.75
ROUTED TO +	RD618	225.	7.83	211.	123.	41.	53.75
3 COMBINED AT +	CPI615	982.	7.58	696.	415.	141.	7.20
ROUTED TO +	RPI615	954.	7.83	694.	415.	141.	7.20
HYDROGRAPH AT	PI612	701.	4.42	165.	42.	14.	.74
3 COMBINED AT +	CPI612	1425.	8.17	1287.	804.	272.	14.40
DIVERSION TO +	DO612	1069.	8.17	966.	603.	204.	14.40
HYDROGRAPH AT +	D612	356.	8.17	322.	201.	68.	14.40
ROUTED TO +	RPI612	356.	8.42	322.	201.	68.	14.40
HYDROGRAPH AT +	DCAP14	407.	7.42	352.	177.	59.	53.75
ROUTED TO +	RDCP14	378.	8.67	351.	177.	59.	53.75
HYDROGRAPH AT +	PI609	1233.	4.67	363.	93.	31.	1.94
3 COMBINED AT +	CPI609	1300.	4.75	899.	475.	160.	9.15
ROUTED TO +	RPI609	1284.	4.92	897.	475.	160.	9.15
HYDROGRAPH AT +	PI600A	1179.	4.08	124.	31.	10.	.52
2 COMBINED AT	C600A	1410.	4.75	939.	497.	168.	9.67
DIVERSION TO +	DO600A	1410.	4.75	939.	497.	168.	9.67

+	HYDROGRAPH AT	D600A	0.	.00	0.	0.	0.	9.67
+	HYDROGRAPH AT	PI621	907.	4.42	201.	51.	17.	.90
+	HYDROGRAPH AT	D612	1069.	8.17	966.	603.	204.	14.40
+	ROUTED TO	RD612	1056.	8.75	963.	603.	204.	14.40
+	2 COMBINED AT	CPI621	1287.	5.17	1048.	646.	220.	11.70
+	ROUTED TO	SPI621	1286.	5.25	1048.	641.	216.	11.70
+	ROUTED TO	RPI621	1268.	5.42	1045.	641.	216.	11.70
+	HYDROGRAPH AT	DCAP10	476.	7.42	410.	240.	80.	53.75
+	ROUTED TO	RDCP10	451.	7.83	410.	240.	80.	53.75
+	HYDROGRAPH AT	PI628	953.	4.17	111.	28.	9.	.57
+	2 COMBINED AT	CPI628	1057.	7.25	511.	291.	97.	4.75
+	ROUTED TO	RPI628	869.	8.17	506.	290.	97.	4.75
	HYDROGRAPH AT	PI624A	1953.	4.67	560.	143.	48.	2.81
+	2 COMBINED AT	C624A	2115.	4.75	906.	408.	138.	7.56
+	ROUTED TO	R624A	1824.	5.58	893.	408.	138.	7.56
+	HYDROGRAPH AT	PI636	566.	4.25	102.	26.	9.	.43
+	ROUTED TO	RPI636	563.	4.33	102.	26.	9.	.43
+	HYDROGRAPH AT	PI624	1157.	4.50	298.	76.	25.	1.23
+	3 COMBINED AT	CPI624	2243.	5.50	1135.	486.	165.	9.21
+	ROUTED TO	SPI624	2233.	5.50	1126.	470.	158.	9.21
+	ROUTED TO	RPI624	2161.	5.83	1111.	469.	158.	9.21
+	HYDROGRAPH AT	PI633	411.	4.33	89.	23.	8.	.34
+	5 COMBINED AT	CPI633	2865.	15.50	2775.	2306.	1555.	246.48
	ROUTED TO	RPI633	2862.	16.08	2774.	2305.	1554.	246.48
+	HYDROGRAPH AT	PDEAST	8797.	5.25	2511.	640.	213.	16.44

	HYDROGRAPH AT						
		DCAP*	3714.	7.83	1718.	430.	143.	53.75
	2 COMBINED AT						
+		CAP2*	8797.	5.25	4364.	1181.	394.	33.74
	ROUTED TO						
+		STOR2	3384.	8.75	3134.	1171.	390.	33.74
	DIVERSION TO						
+		DOCP19	1156.	8.75	1078.	425.	142.	33.74
	HYDROGRAPH AT						
+		DCAP19	2228.	8.75	2056.	746.	249.	33.74
	DIVERSION TO						
+		DOCP18	383.	8.83	355.	133.	44.	33.74
	HYDROGRAPH AT						
+		DCAP18	1845.	8.75	1701.	613.	204.	33.74
	DIVERSION TO						
+		DOCP17	379.	8.83	350.	129.	43.	33.74
	HYDROGRAPH AT						
+		DCAP17	1467.	8.75	1351.	484.	161.	33.74
	DIVERSION TO						
+		DOCP16	1139.	8.75	1054.	384.	128.	33.74
	HYDROGRAPH AT						
+		DCAP16	327.	8.75	297.	100.	33.	33.74
	ROUTED TO						
+		RDCP15	327.	9.17	297.	100.	33.	33.74
	HYDROGRAPH AT						
+		PI606A	546.	4.25	90.	23.	8.	.46
	2 COMBINED AT						
+		C606A	396.	9.50	361.	149.	50.	3.55
	DIVERSION TO						
+		DO606A	162.	9.50	148.	61.	20.	3.55
	HYDROGRAPH AT						
+		D606A	234.	9.50	213.	88.	29.	3.55
	ROUTED TO						
+		R606A	233.	10.00	213.	88.	29.	3.55
	HYDROGRAPH AT						
+		PI606	1033.	4.42	231.	58.	19.	1.08
	2 COMBINED AT						
+		CPI606	881.	4.58	359.	142.	47.	3.17
	ROUTED TO						
+		RPI606	830.	4.83	354.	142.	47.	3.17
	HYDROGRAPH AT						
+		PI604	494.	4.25	92.	23.	8.	.36
	HYDROGRAPH AT						
+		D606A	162.	9.50	148.	61.	20.	3.55
	ROUTED TO						
+		RD606A	162.	9.83	148.	61.	20.	3.55
	2 COMBINED AT						
+		CPI604	496.	4.50	204.	85.	28.	1.82
	ROUTED TO						

+	RPI604	462.	4.83	201.	85.	28.	1.82
HYDROGRAPH AT	PD744	709.	4.42	151.	38.	13.	.80
HYDROGRAPH AT +	D600A	1410.	4.75	939.	497.	168.	9.67
ROUTED TO +	RD600A	1238.	5.33	921.	497.	168.	9.67
HYDROGRAPH AT +	PI603	633.	4.33	120.	30.	10.	.52
5 COMBINED AT +	CPI603	2506.	4.92	1477.	725.	245.	15.98
ROUTED TO +	SPI603	2386.	5.17	1474.	725.	245.	15.98
DIVERSION TO +	DO744	0.	.00	0.	0.	0.	15.98
HYDROGRAPH AT +	D744	2386.	5.17	1474.	725.	245.	15.98
ROUTED TO +	RPI603	2341.	5.42	1460.	725.	245.	15.98
HYDROGRAPH AT +	PI600	1007.	4.17	136.	34.	11.	.61
3 COMBINED AT +	CPI600	3266.	15.08	3180.	2639.	1656.	263.07
ROUTED TO	RPI600	3261.	15.50	3180.	2636.	1655.	263.07
HYDROGRAPH AT +	DCAP16	1139.	8.75	1054.	384.	128.	33.74
ROUTED TO +	RDCP16	1138.	9.25	1052.	384.	128.	33.74
HYDROGRAPH AT +	DCAP17	379.	8.83	350.	129.	43.	33.74
ROUTED TO +	RDCP17	379.	9.08	349.	129.	43.	33.74
HYDROGRAPH AT +	PD740	1005.	4.75	221.	56.	19.	1.28
3 COMBINED AT +	CPD740	1698.	9.42	1560.	631.	210.	16.31
ROUTED TO +	RPD740	1697.	9.75	1559.	631.	210.	16.31
HYDROGRAPH AT +	PD726B	849.	4.67	173.	43.	14.	.93
2 COMBINED AT +	C726B	1695.	9.75	1563.	660.	220.	17.24
ROUTED TO +	R726B	1682.	9.92	1554.	655.	218.	17.24
HYDROGRAPH AT	DCAP18	383.	8.83	355.	133.	44.	33.74
ROUTED TO +	RDCP18	383.	9.25	355.	133.	44.	33.74

+	HYDROGRAPH AT	PD736	358.	4.83	144.	37.	12.	.78
+	2 COMBINED AT	CPD736	489.	6.08	458.	194.	65.	4.64
+	ROUTED TO	RPD736	488.	6.17	458.	194.	65.	4.64
+	HYDROGRAPH AT	DCAP19	1156.	8.75	1078.	425.	142.	33.74
+	ROUTED TO	RDCP19	1156.	9.00	1077.	425.	142.	33.74
+	HYDROGRAPH AT	PD760	1464.	4.17	179.	45.	15.	.87
+	ROUTED TO	SCP200	410.	4.75	178.	45.	15.	.87
+	ROUTED TO	RPD760	408.	4.92	177.	45.	15.	.87
+	HYDROGRAPH AT	PD732	687.	4.42	98.	24.	8.	.48
+	3 COMBINED AT	CPD732	1319.	5.67	1235.	541.	180.	13.11
+	ROUTED TO	RPD732	1298.	6.33	1234.	541.	180.	13.11
+	HYDROGRAPH AT	PD726A	579.	4.75	203.	52.	17.	1.10
	3 COMBINED AT	C726A	1909.	6.17	1704.	730.	244.	18.85
+	ROUTED TO	R726A	1902.	6.33	1702.	730.	244.	18.85
+	2 COMBINED AT	C726*	3211.	6.58	3005.	1212.	404.	36.10
+	ROUTED TO	R726*	3130.	7.25	2973.	1211.	404.	36.10
+	HYDROGRAPH AT	PD726	1051.	4.42	240.	60.	20.	1.35
+	HYDROGRAPH AT	PD716	2642.	4.17	356.	89.	30.	1.75
+	3 COMBINED AT	CPD726	3146.	7.17	2971.	1298.	434.	39.20
+	ROUTED TO	SPD726	3136.	7.25	2944.	1287.	430.	39.20
+	DIVERSION TO	DO716	701.	7.25	549.	156.	52.	39.20
+	HYDROGRAPH AT	D716	2435.	7.25	2396.	1131.	378.	39.20
+	ROUTED TO	RPD726	2432.	7.58	2394.	1131.	378.	39.20
	HYDROGRAPH AT	PD720	944.	4.25	130.	33.	11.	.59
+	HYDROGRAPH AT	D744	0.	.00	0.	0.	0.	15.98

	ROUTED TO						
	RD744	0.	.00	0.	0.	0.	15.98
	4 COMBINED AT						
+	CPD720	5174.	8.67	4846.	3210.	1818.	296.13
	ROUTED TO						
+	RPD720	5174.	8.67	4846.	3210.	1818.	296.13
	HYDROGRAPH AT						
+	D716	701.	7.25	549.	156.	52.	39.20
	ROUTED TO						
+	RD716	699.	7.50	547.	156.	52.	39.20
	2 COMBINED AT						
+	C700*	5534.	8.25	4976.	3226.	1818.	302.88
	ROUTED TO						
+	R700*	5461.	9.00	4946.	3216.	1813.	302.88
	HYDROGRAPH AT						
+	PD752	356.	4.17	47.	12.	4.	.19
	HYDROGRAPH AT						
+	PD748	559.	4.17	72.	18.	6.	.28
	2 COMBINED AT						
+	CPD748	914.	4.17	119.	30.	10.	.47
	ROUTED TO						
+	SCP220	533.	4.42	119.	30.	10.	.47
	ROUTED TO						
+	RPD748	525.	4.75	118.	30.	10.	.47
	HYDROGRAPH AT						
+	PD756	1791.	4.83	663.	174.	58.	3.23
	ROUTED TO						
+	SCP210	1778.	4.92	663.	174.	58.	3.23
	ROUTED TO						
+	RPD756	1746.	5.25	663.	174.	58.	3.23
	2 COMBINED AT						
+	C708*	2010.	5.00	755.	198.	66.	3.70
	ROUTED TO						
+	R708*	1956.	5.42	754.	198.	66.	3.70
	HYDROGRAPH AT						
+	PD708	1829.	4.58	466.	118.	39.	2.40
	HYDROGRAPH AT						
+	PD712A	546.	4.58	162.	41.	14.	.77
	ROUTED TO						
+	R712A	535.	4.92	162.	41.	14.	.77
	HYDROGRAPH AT						
+	PD712	987.	4.67	198.	50.	17.	.89
	4 COMBINED AT						
+	CPD708	3529.	5.08	1401.	368.	123.	7.76
	ROUTED TO						
+	RPD708	3489.	5.17	1400.	368.	123.	7.76
	HYDROGRAPH AT						
+	PD704	491.	4.25	77.	19.	6.	.36
	HYDROGRAPH AT						

+	AF800	952.	4.25	168.	42.	14.	.72
3 COMBINED AT	CPD704	3804.	5.08	1574.	414.	138.	8.84
ROUTED TO							
+	SPD704	3708.	5.25	1574.	414.	138.	8.84
DIVERSION TO							
+	DO800	0.	.00	0.	0.	0.	8.84
HYDROGRAPH AT							
+	D800	3708.	5.25	1574.	414.	138.	8.84
ROUTED TO							
+	RPD704	3676.	5.50	1573.	414.	138.	8.84
HYDROGRAPH AT							
+	PD700	1683.	4.33	274.	69.	23.	1.40
3 COMBINED AT							
+	CPD700	5638.	8.83	5086.	3316.	1846.	313.12
HYDROGRAPH AT							
+	D800	0.	.00	0.	0.	0.	8.84
ROUTED TO							
+	RD800	0.	.00	0.	0.	0.	8.84
HYDROGRAPH AT							
+	AF802	671.	4.25	105.	26.	9.	.39
3 COMBINED AT							
+	C802*	5638.	8.83	5085.	3319.	1847.	313.51
ROUTED TO							
	R810*	5622.	9.25	5079.	3317.	1846.	313.51
HYDROGRAPH AT							
+	AF803	2004.	4.67	547.	139.	46.	2.84
ROUTED TO							
+	RAF803	1935.	4.83	545.	139.	46.	2.84
HYDROGRAPH AT							
+	AF805	805.	4.33	137.	34.	11.	.63
ROUTED TO							
+	RAF805	639.	5.08	137.	34.	11.	.63
HYDROGRAPH AT							
+	AF807	1935.	4.17	261.	65.	22.	1.02
3 COMBINED AT							
+	CAF807	2905.	4.67	873.	224.	75.	4.49
ROUTED TO							
+	RAF807	2887.	4.67	873.	224.	75.	4.49
HYDROGRAPH AT							
+	AF810	1820.	4.58	508.	130.	43.	2.12
3 COMBINED AT							
+	CAF810	5631.	9.25	5082.	3368.	1867.	320.12
ROUTED TO							
+	RAF810	5616.	9.50	5076.	3366.	1866.	320.12
HYDROGRAPH AT							
	AF820	584.	4.42	132.	33.	11.	.70
2 COMBINED AT							
+	CAF820	5615.	9.50	5074.	3366.	1867.	320.81

```
                HYDROGRAPH AT
+                       AF830      349.   4.25        66.       17.        6.       .27

                HYDROGRAPH AT
+                       AF854      866.   4.08        90.       23.        8.       .34

                ROUTED TO
+                      RAF854      796.   4.17        90.       23.        8.       .34

                HYDROGRAPH AT
+                       AF852      481.   4.08        47.       12.        4.       .17

                2 COMBINED AT
+                      CAF852     1179.   4.08       137.       34.       11.       .51

                ROUTED TO
+                      RAF852     1172.   4.17       137.       34.       11.       .51

                HYDROGRAPH AT
+                       AF850      633.   4.08        71.       18.        6.       .22

                2 COMBINED AT
+                      CAF850     1596.   4.17       205.       52.       17.       .72

                HYDROGRAPH AT
+                       AF864      108.   4.25        22.        5.        2.       .09

                ROUTED TO
+                      RAF864       67.   4.67        21.        5.        2.       .09

                HYDROGRAPH AT
+                       AF862      533.   4.00        35.        9.        3.       .18

                2 COMBINED AT
+                      CAF862      543.   4.00        55.       14.        5.       .26

                ROUTED TO
+                      RAF862      441.   4.08        55.       14.        5.       .26

                HYDROGRAPH AT
+                       AF866      912.   4.17       132.       33.       11.       .45

                ROUTED TO
+                      RAF866      634.   4.42       129.       33.       11.       .45

                HYDROGRAPH AT
+                       AF860      543.   4.25       106.       27.        9.       .36

                3 COMBINED AT
+                      CAF860     1226.   4.25       278.       72.       24.      1.08

                HYDROGRAPH AT
+                       SV258     1018.   4.42       197.       50.       17.       .74

                DIVERSION TO
+                      DO258      499.   4.42        96.       24.        8.       .74

                HYDROGRAPH AT
+                        D258      519.   4.42       100.       25.        8.       .74

                ROUTED TO
+                     RSV258      487.   4.58       100.       25.        8.       .74

                HYDROGRAPH AT
+                       SV256      121.   4.08        15.        4.        1.       .06

                2 COMBINED AT
+                     CSV256      564.   4.50       116.       29.       10.       .44

*** NORMAL END OF HEC-1 ***
```

APPENDIX H. PLATES

Plate HY-1A-1D	HEC-1 Schematic
Plate HY-2	Hydrology Map

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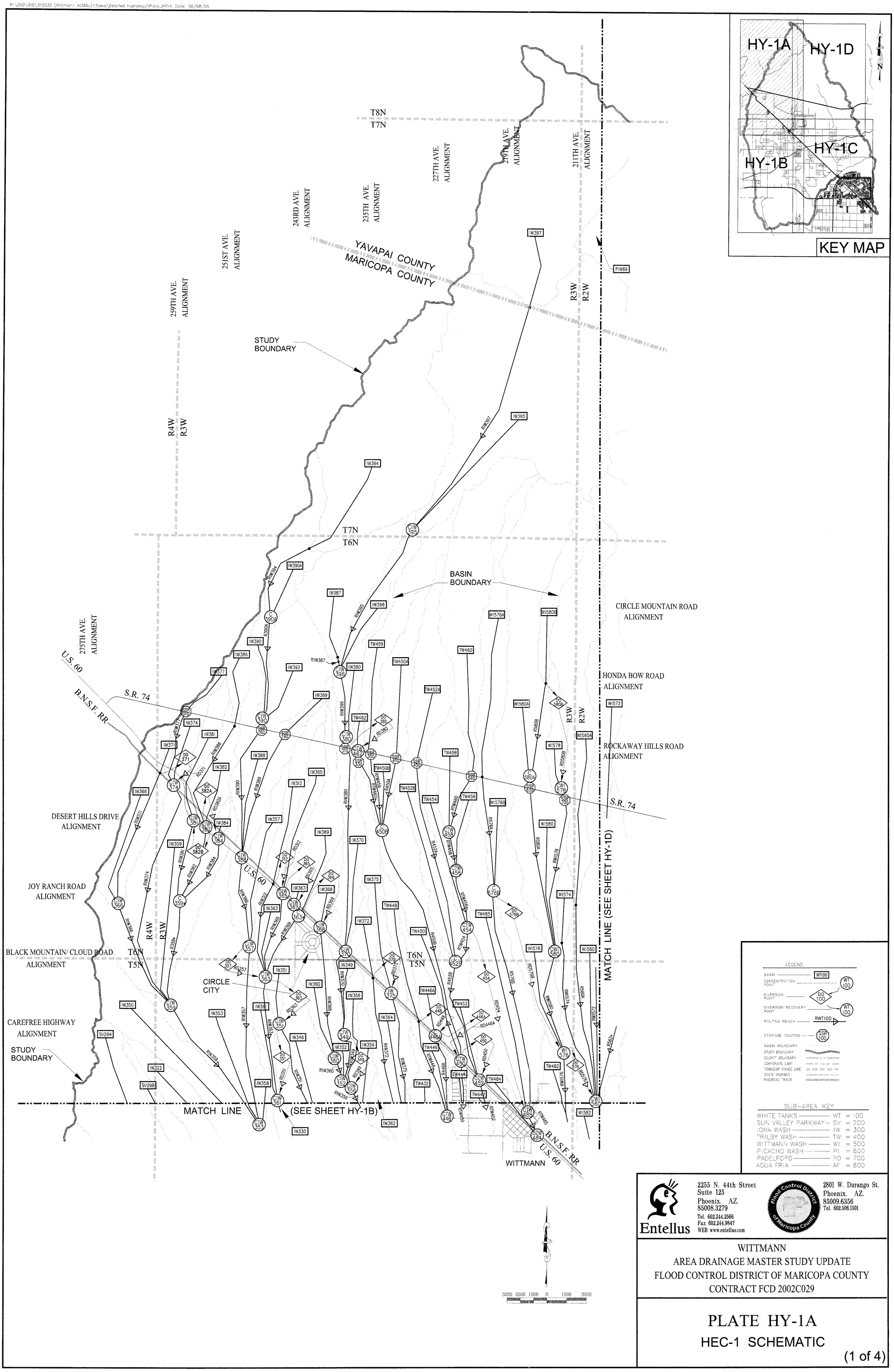

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PLATE HY-1A

HEC-1 SCHEMATIC

(1 of 4)

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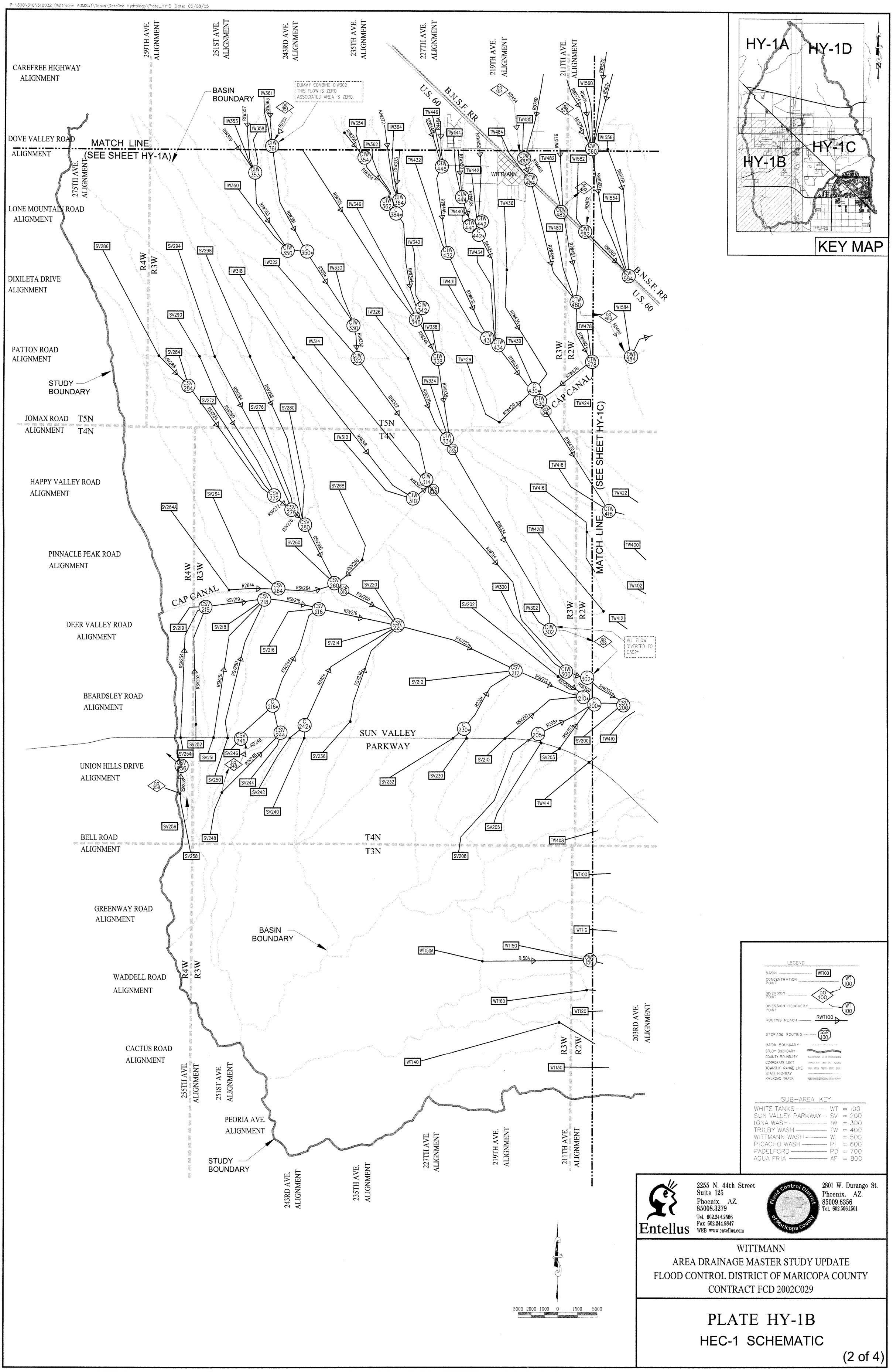

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PLATE HY-1B

HEC-1 SCHEMATIC

(2 of 4)

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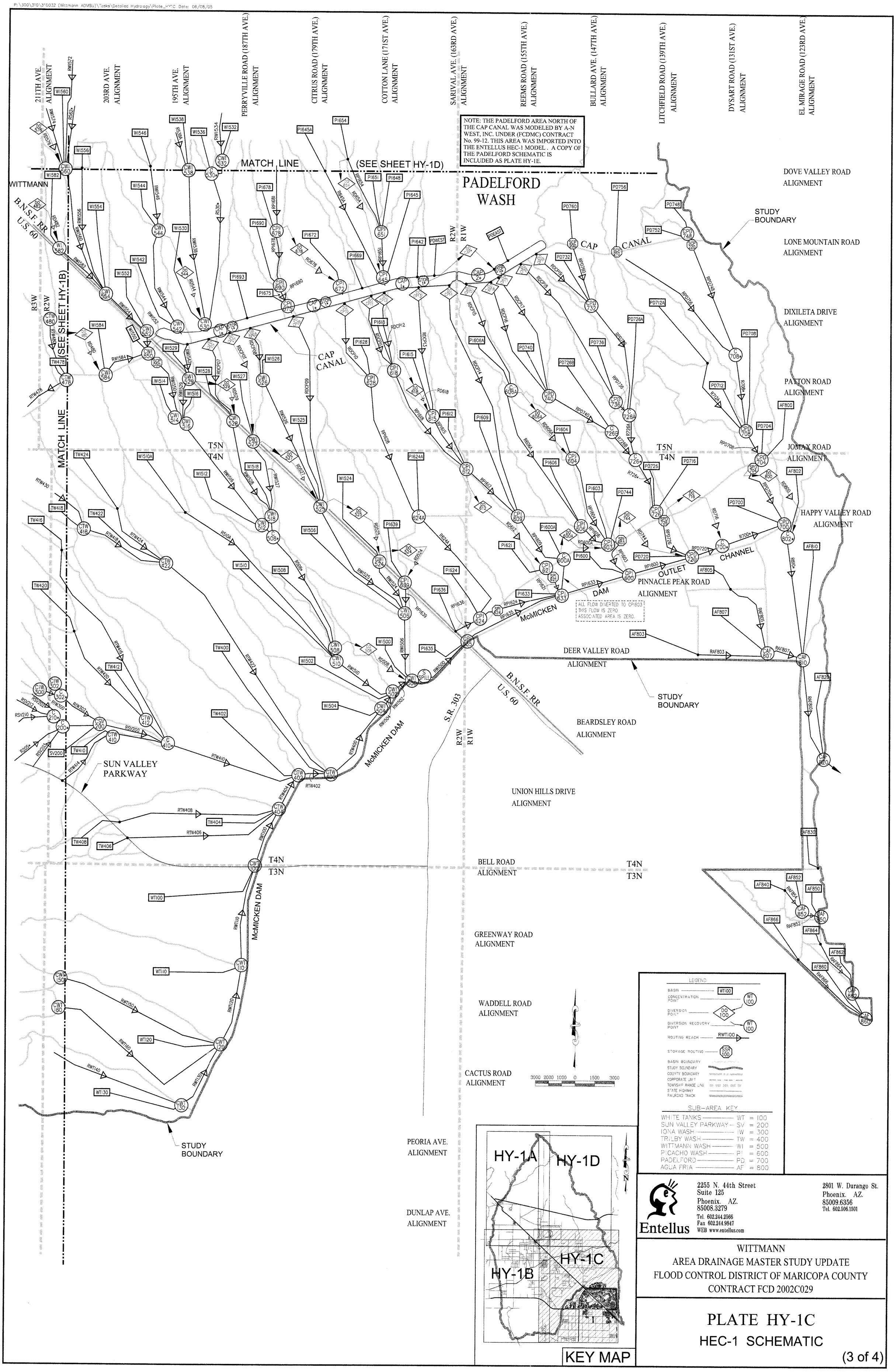

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PLATE HY-1C

HEC-1 SCHEMATIC

(3 of 4)

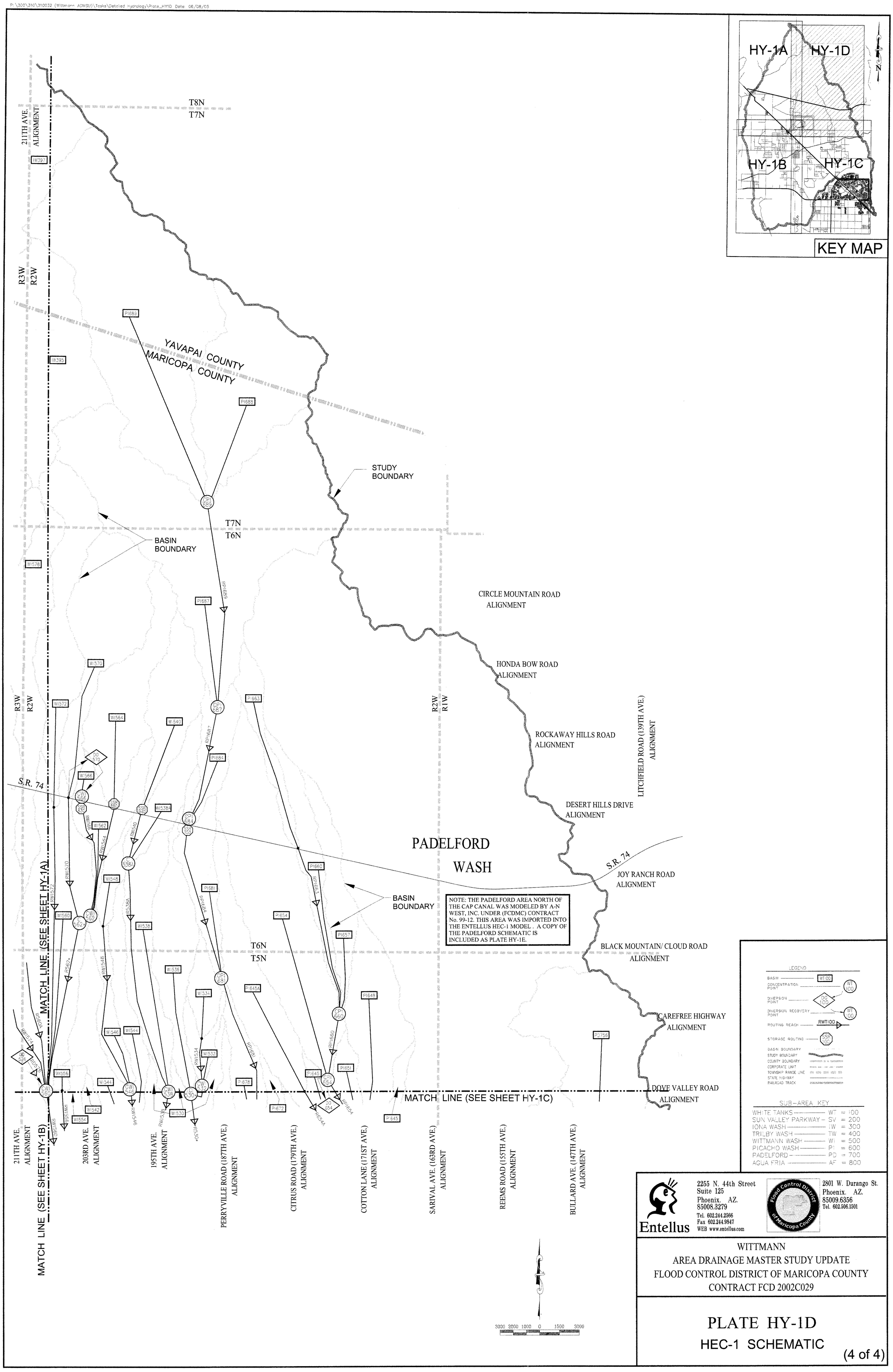

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PLATE HY-1D

HEC-1 SCHEMATIC

JUN 2 0 2005

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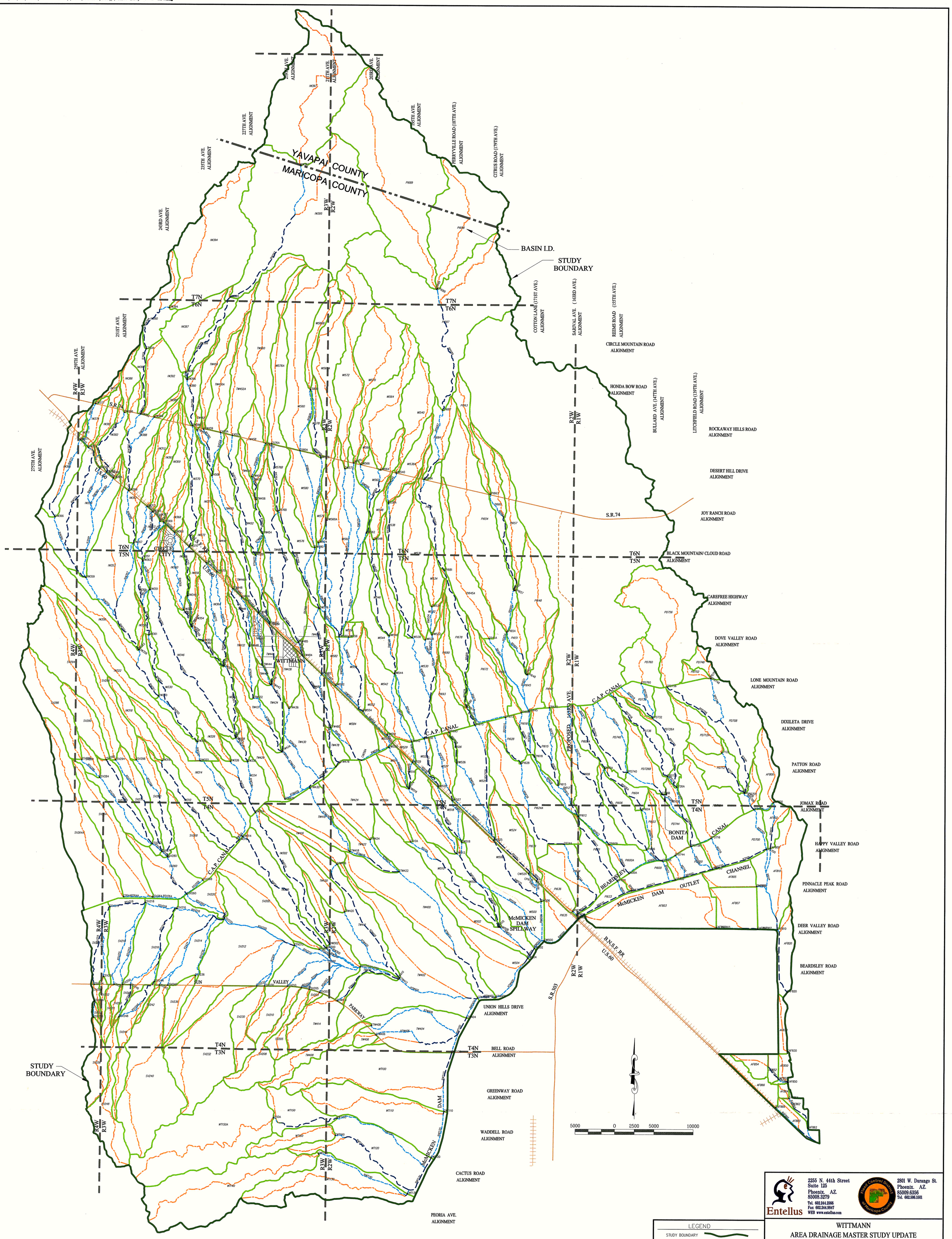

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LEGEND

- STUDY BOUNDARY
- BASIN BOUNDARY
- BASIN I.D. W1500
- TOC
- ROUTE RTW446
- ROUTE-TOC
- COUNTY BOUNDARY
- TOWNSHIP RANGE LINE
- STATE ROADS
- RAILROAD TRACK

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PLATE HY-2
HYDROLOGY MAP