UPPER SAND CREEK BASIN
DETENTION EVALUATION REPORT

December, 2008

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Prepared For:

City of Colorado Springs

Prepared By:

Wilson & Company

5255 Mark Dabling Blvd., Suite 220

Colorado Springs, Colorado 80919

UPPER SAND CREEK BASIN

DETENTION EVALUATION REPORT

ENGINEER'S STATEMENT:

The attached report was prepared under my direction and supervision and is correct to the best of my knowledge and belief. I accept responsibility for any liability caused by any negligent acts, errors, or omissions on my part in preparing this report.

Vancel Fossinger 6-26-2009

Vancel Fossinger, Colorado PE # 31972 Date

For and On Behalf of Wilson & Company

COLORADO REGISTERED VANCEL S FOSSINGER 31972 PROFESSIONAL ENGINEER

CITY OF COLORADO SPRINGS:

Filed in accordance with Section 7-7-906 of the Code of the City of Colorado Springs, 2001 as amended.

By: David R. Fuller Date: 9/28/09

For The City Engineer

Conditions:

WILSON &COMPANY

UPPER SAND CREEK BASIN

DETENTION EVALUATION REPORT

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INTRODUCTION

This report documents the results of a detention evaluation for the portion of Sand Creek Basin located north of Woodmen Road. This study was performed by Wilson and Company for the City of Colorado Springs Subdivision Engineering Review Team. The primary purpose of the study was to evaluate the potential impact of proposed developments within the basin which plan to deviate from the effective Drainage Basin Planning Study, and to identify potential alternative detention schemes for the watershed. A diversion of runoff from approximately 627 acres to Upper Sand Creek from a watershed located to the east as proposed in the draft Master Drainage Development Plan for Sterling Ranch was the most significant deviation evaluated in this study.

The existing comprehensive hydrologic models for the watershed were out of date and models for individual proposed development projects did not extend downstream beyond the boundaries of the individual developments. This study utilized data developed in existing studies to prepare a HEC-1 hydrologic model for all of the Upper Sand Creek Basin above Woodmen Road. The model was set up to export hydrographs at Woodmen Road that can be imported into a truncated, existing model that was prepared for the design of Sand Creek Detention Basin No. 2, by Kiowa Engineering, for the portion of the watershed located between Woodmen Road and Sand Creek Regional Pond No. 1. The new model and the truncated model were utilized in series to evaluate the potential effects of the proposed development and detention alternatives.

STUDY AREA LOCATION

The area evaluated in this study is the portion of Upper Sand Creek Basin located north of Woodmen Road, in El Paso County, Colorado. More specifically, the area lies between Shoup Road on the north and Woodmen Road on the south and bounds Vollmer Road. The lower portion of the area has been annexed into the City of Colorado Springs while the upper portion of the area remains in un-incorporated El Paso County.

HYDROLOGIC ANALYSIS

Using the HEC-1 model prepared for the "Design Analysis Report for Sand Creek Detention Basin No. 2", by Kiowa Engineering, (pond 2 model) as a base, a separate and revised HEC-1 model was developed for the portion of the Upper Sand Creek watershed located north of Woodmen Road. Generally, developed condition impervious percentages and restricted peak discharge rates as defined by approved or current draft studies, where applicable, were utilized in developing model input data. Spreadsheets used in the development of sub-basin input data are contained in Appendix 'B' of this report.

The Sterling Ranch detention pond stage/storage data presented in the draft MDDP for Sterling Ranch was input into the model. Stage/discharge data for the proposed Sterling Ranch ponds was revised slightly and was also input into the new model. The stage/storage and discharge data associated with Sand Creek Regional Pond 6 was copied from a Haestad Pond Pack model prepared and provided by M&S Civil Consultants. The stage/storage and discharge data for Sand Creek Regional Pond 3 is based on the grading and outlet concept contained in Appendix 'D' of

this report. Supporting data for the stage/storage and discharge data is contained in Appendix 'B' of this report.

It was found that several relatively short times of concentration and routing segments were present in the portion of the model above Woodmen Road making a 4 minute time step computation interval desireable. In order to preserve the integrity of the portion of the pond 2 model downstream of Woodmen Road, which used a 5 minute time step, the model was bisected at Woodmen Road. The lower portion of the model was revised to import hydrographs generated and punched by the upstream model at the three drainage crossings of Woodmen Road.

Kiowa Engineering has made some minor revisions to the pond 2 model subsequent to the preparation of the Design Analysis Report for Sand Creek Detention Basin No. 2. These revisions include correction of a typo in the 24 hour storm distribution and a revision of the Pond 2 stage/discharge curve to match the as-constructed condition. These revisions are reflected in the model prepared in the scope of the current study as well as the peak flow rates presented in the "Analysis Point Comparison Summary" contained in Appendix 'A' of this report.

The current model utilizes the SCS Type IIa 24 hour storm distribution consistent with the pond 2 model and the Sand Creek DBPS. Rainfall depths of 2.1", 3.0", and 4.4" were utilized for simulation of the 2, 10 and 100 year storms respectively.

100 year Peak flow rates calculated by the model have been summarized for comparison with values from previous studies in the "Analysis Point Comparison Summary" contained in Appendix 'A' of this report. Model input and output is contained in Appendix 'C' of this report. A map of the modeled watershed is contained in Appendix 'E' of this report.

BASINS MODELED WITH DEVELOPED DISCHARGE RESTRICTIONS

Where discharge restrictions for drainage areas have been approved with previous studies, the restrictions were assumed in the current model. Basins SC6-1, SC6-3, and SC6-4 are assumed to require detention if they are developed under the current proposed land uses. The allowable developed condition peak 100 year discharge from Basin SC3-3 was recalculated in the current study at the direction of the City to reflect the existing development condition from the majority of the basin plus the future developed condition of the 22 acre multi-family site included in the Woodmen Heights Master Plan. The restricted 100 year discharge rates from the above mentioned basins as modeled are: Basin SC6-1, 84cfs; Basin SC6-3, 96cfs; Basin SC6-4, 53cfs; and Basin SC2-3, 280cfs.

DETENTION ALTERNATIVES

1. Configure Sand Creek Regional Detention Pond 3 to provide peak rate mitigation and extended detention of the difference between the 2 year developed and undeveloped condition runoff volumes from the watershed. The extended detention volume would be released over a period of approximately 72 hours. The HEC-1 model indicates that this alternative will generally maintain planned peak flow rates downstream of Woodmen Road in large storm events in addition to controlling frequent runoff to better mimic historical runoff than

conventional detention would. The model assumes that the three detention ponds proposed in the Sterling Ranch MDDP will also be constructed with slightly more restricted outlets than proposed in the MDDP. The presence of shallow bedrock in the bottom of Pond 3 will limit infiltration which is a normal benefit of this type of pond. However, controlling discharge from frequent events to a very small rate should still help to mitigate potential degradation of the downstream channel. This is the alternative that has been included in the HEC-1 model prepared in the scope of this study. A sketch showing the modeled pond concept is contained in Appendix 'D' of this report.

2. Implement off-line full spectrum detention for individual development projects in Pond 3 watershed and eliminate on-line ponds including Pond 3. Multiple conventional detention ponds constructed to serve small development projects are generally less efficient and effective at controlling downstream peak flow rates that regional ponds. However, research done by Urban Drainage and Flood Control District has indicated that the cumulative effect of multiple ponds is greatly enhanced when they are designed as full spectrum detention ponds providing extended detention of the difference between the undeveloped and developed condition runoff volumes from the watershed as well as 100 year peak flow rate mitigation.

In the case of the Pond 3 watershed, the peak 100 year flow rate at Woodmen Road as defined by the effective DBPS is less than the historic rate. Modeling performed for the current study found that due to changes in the hydrograph timing and volume, the peak 100 rate at Woodmen Road should be restricted even more to mitigate increases to peak rates downstream. It is very possible that on-site full spectrum ponds that control 100 year peak rates to pre-development rates would be adequate due to the significant lagging and narrowing of the hydrograph that would occur with implementation of such ponds. However additional modeling of this concept would be recommended prior to implementation.

Potential upsides to this concept could include reduction of costs to build and maintain storm runoff conveyance facilities, ability to maintain Sand Creek in a more naturalistic condition, groundwater recharge, and reduction of overall runoff volumes with an associated benefit of improvement of downstream water quality.

Potential downsides could include deterioration of effectiveness over time if the multiple facilities are not maintained by property owners, districts, or owners associations. Implementing such a concept would also likely require recalculation of the basin drainage and detention fees. Overall, providing onsite detention generally requires more land and is more expensive to construct on a treated area basis than regional detention. This concept would need to be applied throughout the watershed to be effective.

3. Impliment Alternative 2 with the addition of low impact development (LID) practices and facilities to supplement or take the place of the extended detention portion of the on-site ponds. The primary goal of LID is maintain natural hydrologic function on development sites. The presence of type A and B soils throughout the watershed make it favorable for construction of bioretention cells, infiltration swales, and pervious pavements to infiltrate excess

runoff volumes in frequent runoff events. Decreasing and disconnecting impervious areas could also reduce peak runoff rates and volumes.

Potential upsides to this concept include the benefits noted under Alternative 2 with the added benefit of less overall runoff volume contributed to the downstream channel system.

Potential downsides to this concept include the negative issues mentioned under Alternative 2 with potential concerns about water rights issues. Care would need to be taken in the implementation of LID to mimic the predevelopment runoff condition and not infiltrate historic runoff volumes.

4. Move Sand Creek Regional Detention Pond 3 to the south boundary of the proposed Sterling Ranch Development. This alternative seemed to have merit in initial modeling. The alternative showed promise of being able to match previously defined peak flow rates in flows crossing Woodmen Road with less overall detention storage volume and associated required land. However, it was found that the alternative had negative affects in the control of peak flow rates downstream of Woodmen Road. In addition, much of the excavation for the original Pond 3 was completed in the summer of 2007 to provide embankment for an expansion of Woodmen Road and thus the original site became less viable for future commercial development. These two issues make this alternative less viable.

SUMMARY

This report was prepared to provide the results of the hydrologic modeling prepared in the scope of the study and to provide ideas for drainage treatment alternatives in the Pond 3 watershed. Due to the very limited scope of the current study, all of the concepts presented including the revised design concept for Sand Creek Regional Pond 3 (Pond 3) should be considered very preliminary in nature and require more study and development prior to implementation.

In general, the study determined that with some minor changes to the proposed outlets of the detention ponds in the proposed Sterling Ranch Development, that downstream peak flow rate increases and at least a portion of impacts from increased runoff volume due to the drainage diversion proposed with the development can be mitigated by reconfiguring Pond 3 to provide a significant amount of extended detention.

The largest complication in the study area appears to be funding the construction of Pond 3. Pond 3 is a regional facility identified by the Sand Creek DBPS to be funded through the collection of Drainage and Detention Fees. It is our understanding that the portion of the watershed that extends into un-incorporated El Paso County was included in the distribution of fees per acre. El-Paso County currently utilizes a separate drainage fee structure to fund regional drainage improvements as land development occurs. Currently, there does not appear to be a process for transfer of drainage fees collected by El Paso County to the City of Colorado Springs to fund downstream improvements, such as Pond 3, that are at least partially required due to development in the un-incorporated areas of the County. In order for construction of Pond 3 to occur at the time that it is needed, a solution to the funding issue will need to be found.

REFERENCES

1. City of Colorado Springs/County of El Paso Drainage Criteria Manual, dated November 1991.

2. Draft Master Development Drainage Plan for Sterling Ranch, October 2007, By M&S Civil Consultants.

3. Master Development Drainage Plan Update for Woodmen Heights ande Final Drainage Report for Forrest Meadows Filings No. 1 and No. 4, February 2006, By ESI Engineering and Surveying Inc.

4. Master Development Drainage Plan for Woodmen Heights Master Plan, June 2004, By Classic Consulting Engineers and Surveyors.

5. Design Analysis Report , sand Creek Detention Basin No. 2, May 22, 2006, By Kiowa Engineering Corporation.

6. Sand Creek Drainage Basin Planning Study, By Kiowa Engineering Corporation.

APPENDIX

A. Peak Flow Rate and Volume Summaries

B. HEC -1 Input Data Calculations & Summaries

C. HEC-1 Model Output

D: Sand Creek Regional Pond No. 3 Concept Plan

E. Watershed Map

APPENDIX A.

PEAK FLOW RATE AND VOLUME SUMMARIES

Analysis Point Comparison Summary

6/26/2009

Design Point			Peak 100 Year Flow Rates			
			Developed Condition			Existing Condition
WCI **	Pond 2 *	DBPS ***	WCI	Pond 2	DBPS	DBPS
Pond 1 (in) 4	Pond 1 (in) 4	Pond 1 (in) 4	5537	5499	5929	5420
Pond 1 (out)	Pond 1 (out)	97	3815	3935	3194	
Pond 2 (in) 20	Pond 2 (in) 20	Pond 2 (in) 20	7484	7331	8429	4033
Pond 2 (out)	Pond 2 (out)	98	4063	4083	4849	
21	21		6586	6412		
28	28		6184	6011		
29	29		5840	5668		
35	35		5718	5542		
36	36		3857	3663		
37	37	37	3344	3153	3087	3230
85	85		2885	2976		
42	42		2247	2789		
48	48	48	2222	2714	2403	2750
49	49	51	1836	2264	2396	2766
51	51	58	104	443	655	340
Pond 6 (in) 54	Pond 6 (in) 54	54	1382	1428	2285	376
Pond 6 (out) 54	Pond 6 (out) 54	92	286	85	94	
Pond 3 (in) 53	Pond 3 (in) 53	60	2967	4376	3225	2629
Pond 3 (out) 53	Pond 3 (out) 53	94	1819	2152	2157	
60	60	60	2618	4266	3225	2629
61			2506			
63	63	63	2292	3340	2514	2508
68			2242			
87	87	87	1569	3194	2510	2545
69			2372			
70	70	70	2078	2770	2081	2251
71	71	71	1922	2580	1946	2164

* Pond 2 refers to the HEC-1 Analysis done for the design of Sand Creek Pond 2 By Kiowa Engineering (Sediment Pools Empty) as updated by Kiowa on 12/17/2008

** WCI refers to the revised HEC-1 analyisis done by Wilson & Co to update the Kiowa Pond 2 model per current development plans and change the concept design of Pond -3 to include extended detention of the difference of the 2 year undeveloped and developed condition runoff volumes.

***DBPS refers to the TR-20 modeling done for the Sand Creek Drainage Basin Planning Study, prepared by Kiowa Engineering

Runoff Volume From Proposed Sterling Ranch Diversion To Upper Sand Creek

P_{10} (in) = 3

P_{100} (in)= 4.4

Watershed Area	Area (ac)	CN	S	Ia	Q10 (in)	V10 (ac-ft)	Q100 (in)	V100 (ac-ft)
To DB-SRMN*	69.6	76	3.16	0.63	1.02	5.89	2.05	11.89
To DB-SRMS**	99.7	85	1.76	0.35	1.59	13.20	2.82	23.41
To Sand Creek***	458.1	77	2.99	0.60	1.07	40.89	2.13	81.30
Total	627.4					60.0		116.6

* Proposed Sterling Ranch 'Middle' North Detention Basin

** Proposed Sterling Ranch ' Middle South' Detention Basin

***Proposed direct discharge to Upper Sand Creek near the southern Sterling Ranch boundary

Note: Diversion is as shown on the draft Master Development Drainage Plan (MDDP) for Sterling Ranch, dated October 2007, prepared by M&S Civil Consultants, Inc. Runoff volumes were calculated per SCS Runoff Curve Number Method. CN values were selected to be consistent with impervious area percentages presented in the above noted MDDP.

APPENDIX B

HEC -1 INPUT DATA CALCULATIONS & SUMMARIES

BASIN DATA

Sand Creek Alternatives Analysis

Composite Percent Impervious Computations

6/26/2008

Basin	Basin Area SF	Basin Area (ac)	Basin Area (sm)	Sub-Area 1 Area (ac)	Sub-Area 1 % Imp	Sub-Area 2 Area (ac)	Sub-Area 2 % Imp	Sub-Area 3 Area (ac)	Sub-Area 3 % Imp	Sub-Area 4 Area (ac)	Sub-Area 4 % Imp	Sub-Area 5 Area (ac)	Sub-Area 5 % Imp	Sub-Area 6 Area (ac)	Sub-Area 6 % Imp	Sub-area Total Area (ac)	Sub-Area Wt % Imp.	Sub-Area CN
SC3-1	4739789	109	0.170	23	60	7	5	16	80	24	85	13	5	26	5	109	45	78
SC3-2	2268235	52	0.081	52	65											52	65	85
SC3-3	6564791	151	0.235	22	80	129	60									151	63	84
SC3-4	2257593	52	0.081	52	75											52	75	89
SC3-5	4321647	99	0.155	57	75	29	65	14	5							100	62	84
SC3-6	5740100	132	0.206	41	85	82	65	9	5							132	67	86
SC3-7	4321767	99	0.155	54	72	45	65									99	69	86
SC3-8	6304207	145	0.226	90	20	55	65									145	37	75
SC3-9	13918099	320	0.499	10	95	310	25									320	27	71
SC3-10	1783280	41	0.064	41	20											41	20	68
SC3-11	7948613	182	0.285	160	65	22	85									182	67	86
SC3-12	5760024	132	0.207	7	10	126	65									133	62	84
SC3-13	9384035	215	0.337	215	20											215	20	68
SC3-14	9516999	218	0.341	19	85	170	65	29	78							218	68	86
SC3-15	5841499	134	0.210	114	65	9	90	11	42							134	65	85
SC3-16	8348443	192	0.299	192	65											192	65	85
SC3-17	4965928	114	0.178	98	65	6	10	10	5							114	57	82
SC3-18	7450132	171	0.267	171	41											171	41	76
SC3-19	8378314	192	0.301	192	41											192	41	76
SC3-20	8533821	196	0.306	196	20											196	20	68
SC6-1	2998486	69	0.108	69	70											69	70	87
SC6-2	6677001	153	0.240	138	55	9	50	6	5							153	53	81
SC6-3	4844183	111	0.174	111	60											111	60	83
SC6-4	2778021	64	0.100	64	90											64	90	94
SC6-5	7823208	180	0.281	102	50	5	80	19	80	38	90	16	5			180	58	83
SC6-6	1637856	38	0.059	38	84											38	84	92
SC2-29	924654	21	0.033	21	90											21	90	94
61	3379177	78	0.121	78	20											78	20	68
73		90	0.141	90	15											90	15	67
74		120	0.188	120	15											120	15	67
75		79	0.123	79	15											79	15	67
76		86	0.134	86	15											86	15	67
77	7494857	172	0.269	172	20											172	20	68
78		156	0.244	156	15											156	15	67
79		189	0.295	189	15											189	15	67
80		148	0.231	148	15											148	15	67
81		263	0.411	263	15											263	15	67
82		118	0.184	118	15											118	15	67
88	3805480	87	0.137	87	20											87	20	68

Sand Creek Basin Above Woodmen
Lag Time Calculation

06/26/2009

BASIN	OVERLAND				SHALLOW GUTTER FLOW				STORM SEWER FLOW				CHANNEL FLOW				GRASS LINED SWALE				Tc	Tc	Lag
	C(10)	Length (ft)	Slope (%)	Tt (min)	Length (ft)	Slope (%)	Vel (fps)	Tt (min)	Length (ft)	Slope (%)	Vel (fps)	Tt (min)	Length (ft)	Slope (%)	Vel (fps)	Tt (min)	Length (ft)	Slope (%)	Vel (fps)	Tt (min)	TOTAL (min)	TOTAL (hours)	(hours)
SC3-1	0.25	50	2.00	8.9	1100	2.0%	5.0	3.7	600	2.0%	12.0	0.8									13.4	0.224	0.134
SC3-2	0.25	100	2.00	12.6	900	2.5%	5.5	2.7	1200	1.1%	11.0	1.8									17.2	0.287	0.172
SC3-3	0.25	100	2.00	12.6	1400	2.0%	5.0	4.7	1000	2.0%	12.0	1.4									18.7	0.312	0.187
SC3-4	0.25	50	2.00	8.9	900	2.7%	5.6	2.7	800	1.5%	11.0	1.2									12.8	0.214	0.128
SC3-5	0.25	50	2.00	8.9	1200	2.0%	5.0	4.0	500	2.0%	12.0	0.7									13.6	0.227	0.136
SC3-6	0.25	70	2.00	10.6	1200	2.5%	5.5	3.6	1300	2.5%	13.0	1.7									15.9	0.265	0.159
SC3-7	0.25	80	2.00	11.3	1600	2.8%	5.6	4.8	1600	2.0%	12.0	2.2									18.3	0.305	0.183
SC3-8	0.25	300	2.50	20.3					2400	2.5%	13.0	3.1					2000	1.3%	2.0	16.7	40.1	0.668	0.401
SC3-9	0.25	300	4.00	17.4													5200	2.6%	3.3	26.3	43.7	0.728	0.437
SC3-10	0.25	300	3.00	19.2													900	3.0%	3.5	4.3	23.4	0.391	0.234
SC3-11	0.25	100	2.00	12.6	1300	2.0%	5.0	4.3	800	2.0%	12.0	1.1	3100	0.5%	5.0	10.3					28.4	0.474	0.284
SC3-12	0.25	100	2.00	12.6	1700	2.5%	5.5	5.2	2600	2.5%	13.0	3.3									21.1	0.352	0.211
SC3-13	0.25	300	5.00	16.2					4300	3.0%	14.0	5.1					1200	7.0%	5.2	3.8	25.2	0.419	0.252
SC3-14	0.25	80	2.00	11.3	1200	2.5%	5.5	3.6	1300	1.3%	11.0	2.0	1800	1.4%	5.0	6.0					22.9	0.382	0.229
SC3-15	0.25	100	2.00	12.6	1900	2.5%	5.5	5.8	2400	2.0%	12.0	3.3									21.7	0.362	0.217
SC3-16	0.25	100	2.00	12.6	1500	2.5%	5.5	4.5	1500	1.0%	10.0	2.5	1500	0.5%	5.0	5.0					24.7	0.412	0.247
SC3-17	0.25	100	2.00	12.6	1500	2.0%	5.0	5.0	1100	3.0%	14.0	1.3									19.0	0.316	0.190
SC3-18	0.25	100	2.00	12.6	1600	4.5%	7.0	3.8	5400	2.5%	13.0	6.9									23.4	0.390	0.234
SC3-19	0.25	100	2.00	12.6	1700	3.5%	6.5	4.4	2300	3.5%	14.0	2.7									19.7	0.329	0.197
SC3-20	0.25	300	4.00	17.4													2400	4.0%	4.0	10.0	27.4	0.457	0.274
77.00	0.25	300	5.00	16.2													3700	3.5%	3.5	17.6	33.8	0.563	0.338
88.00	0.25	300	4.00	17.4													2700	3.0%	3.3	13.6	31.1	0.518	0.311
SC3-61	0.25	300	2.60	20.1													3100	2.5%	3.0	17.2	37.3	0.622	0.373
SC6-1	0.25	100	2.00	12.6	600 1300	2.7% 1.0%	3.4 2.2	2.9 9.8													25.4	0.424	0.254
SC6-2	0.25	100	2.00	12.6	900	2.2%	3.0	5.0	2000	1.0%	9.0	3.7									21.3	0.356	0.213
SC6-3	0.25	50	2.00	8.9	1000	1.8%	2.6	6.4	800	2.5%	3.3	4.0									19.4	0.323	0.194
SC6-4	0.25	50	2.00	8.9	1200	5.0%	4.6	4.3	1200	1.0%	9.0	2.2									15.5	0.259	0.155
SC6-5	0.25	100	2.00	12.6	1000	2.8%	3.5	4.8	1100	1.5%	12.0	1.5									18.9	0.316	0.189
SC6-6	0.25	50	2.00	8.9	1400	2.0%	5.0	4.7	1200	2.0%	12.0	1.7									15.3	0.255	0.153
SC2-29	0.25	50	2.00	8.9	1200	2.7%	3.4	5.9													14.8	0.247	0.148

Sand Creek Basin Above Woodmen
Lag Time Calculation

BASIN	OVERLAND				SHALLOW GUTTER FLOW				STORM SEWER FLOW				CHANNEL FLOW				GRASS LINED SWALE				Tc	Tc	Lag
	C(10)	Length	Slope	Tt	Length	Slope	Vel	Tt	Length	Slope	Vel	Tt	Length	Slope	Vel	Tt	Length	Slope	Vel	Tt	TOTAL	TOTAL	
		(ft)	(%)	(min)	(ft)	(%)	(fps)	(min)	(ft)	(%)	(fps)	(min)	(ft)	(%)	(fps)	(min)	(ft)	(%)	(fps)	(min)	(min)	(hours)	(hours)
73.00	0.25	300	4.40	16.9													2320	3.5%	3.0	12.9	29.8	0.496	0.298
74.00	0.25	300	4.40	16.9													2690	3.3%	3.0	14.9	31.8	0.530	0.318
75.00	0.25	300	4.00	17.4									2330	3.4%	3.8	10.2	1260	2.9%	2.5	8.4	36.0	0.601	0.360
76.00	0.25	300	3.60	18.0									2670	3.0%	3.4	13.1	960	3.2%	2.8	5.7	36.8	0.614	0.368
78.00	0.25	300	4.00	17.4									1850	4.9%	4.4	7.0	1400	5.1%	3.5	6.7	31.1	0.518	0.311
79.00	0.25	300	6.50	14.8													2780	3.6%	3.0	15.4	30.3	0.505	0.303
80.00	0.25	300	5.00	16.2													3900	3.6%	3.0	21.7	37.9	0.631	0.379
81.00	0.25	300	5.00	16.2									2060	3.0%	3.4	10.1	2900	3.7%	3.0	16.1	42.4	0.707	0.424
82.00	0.25	300	6.60	14.8													2420	3.7%	3.0	13.4	28.2	0.470	0.282

POND DISCHARGE AND VOLUME CALCULATIONS

Culvert Calculator Report
Double 8'r x 8' s CBC
DBSMN OUTLET
Sterling Ranch North Pond

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	7,114.00	ft	Headwater Depth/Height	2.50	
Computed Headwater Elev	7,114.00	ft	Discharge	2,374.05	cfs
Inlet Control HW Elev.	7,114.00	ft	Tailwater Elevation	7,094.00	ft
Outlet Control HW Elev.	7,110.02	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	7,094.00	ft	Downstream Invert	7,090.00	ft
Length	100.00	ft	Constructed Slope	0.040000	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	5.75	ft
Slope Type	Steep		Normal Depth	4.07	ft
Flow Regime	Supercritical		Critical Depth	8.00	ft
Velocity Downstream	25.80	ft/s	Critical Slope	0.010449	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	8.00	ft
Section Size	8 x 8 ft		Rise	8.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	7,110.02	ft	Upstream Velocity Head	5.35	ft
Ke	0.50		Entrance Loss	2.67	ft

Inlet Control Properties					
Inlet Control HW Elev.	7,114.00	ft	Flow Control	Submerged	
Inlet Type	90 and 15° wingwall flares		Area Full	128.0	ft²
K	0.06100		HDS 5 Chart	8	
M	0.75000		HDS 5 Scale	2	
C	0.04000		Equation Form	1	
Y	0.80000				

Rating Table Report
Double 8'r x 8' s CBC

Range Data:			
	Minimum	Maximum	Increment
Allowable HW E	7,094.00	7,114.00	2.00 ft

HW Elev. (ft)	Discharge (cfs)
7,094.00	0.00
7,096.00	110.88
7,098.00	313.62
7,100.00	576.16
7,102.00	887.05
7,104.00	1,239.70
7,106.00	1,536.00
7,108.00	1,782.83
7,110.00	1,999.42
7,112.00	2,194.74
7,114.00	2,374.05

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
7094.00	-----	1.4200	.0000	.000	.000
7096.00	-----	3.0980	6.6154	4.410	4.410
7098.00	-----	4.8600	11.8382	7.892	12.302
7100.00	-----	6.3700	16.7940	11.196	23.498
7102.00	-----	6.7000	19.6029	13.069	36.567
7104.00	-----	7.0400	20.6079	13.739	50.306
7106.00	-----	7.3800	21.6280	14.419	64.724
7108.00	-----	7.7290	22.6615	15.108	79.832
7110.00	-----	8.0860	23.7205	15.814	95.646
7112.00	-----	8.4470	24.7975	16.532	112.177
7114.00	-----	9.1020	26.3174	17.545	129.722

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

SR
North POND

Copied from Sterling Ranch MDDP
Dated Oct 2007

Culvert Calculator Report
8'r x 8's CBC DBPSMS

Solve For: Discharge

Sterling Ranch South Pond

Culvert Summary					
Allowable HW Elevation	7,024.00	ft	Headwater Depth/Height	2.50	
Computed Headwater Elev	7,024.00	ft	Discharge	2,380.94	cfs
Inlet Control HW Elev.	7,024.00	ft	Tailwater Elevation	7,002.00	ft
Outlet Control HW Elev.	7,020.07	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	7,004.00	ft	Downstream Invert	6,998.00	ft
Length	100.00	ft	Constructed Slope	0.060000	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	5.21	ft
Slope Type	Steep		Normal Depth	3.50	ft
Flow Regime	Supercritical		Critical Depth	8.00	ft
Velocity Downstream	28.54	ft/s	Critical Slope	0.010510	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	8.00	ft
Section Size	8 x 8 ft		Rise	8.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	7,020.07	ft	Upstream Velocity Head	5.38	ft
Ke	0.50		Entrance Loss	2.69	ft

Inlet Control Properties					
Inlet Control HW Elev.	7,024.00	ft	Flow Control	Submerged	
Inlet Type	90 and 15° wingwall flares		Area Full	128.0	ft²
K	0.06100		HDS 5 Chart	8	
M	0.75000		HDS 5 Scale	2	
C	0.04000		Equation Form	1	
Y	0.80000				

Rating Table Report
8'r x 8's CBC DBPSMS

Range Data:			
	Minimum	Maximum	Increment
Allowable HW E	7,004.00	7,018.00	2.00 ft

HW Elev. (ft)	Discharge (cfs)
7,004.00	0.00
7,006.00	110.88
7,008.00	313.62
7,010.00	576.16
7,012.00	887.05
7,014.00	1,239.70
7,016.00	1,546.63
7,018.00	1,792.00

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
7004.00	-----	.9240	.0000	.000	.000
7006.00	-----	1.8250	4.0476	2.698	2.698
7008.00	-----	3.1990	7.4402	4.960	7.659
7010.00	-----	5.0460	12.2627	8.175	15.834
7012.00	-----	7.4670	18.6513	12.434	28.268
7014.00	-----	9.7820	25.7955	17.197	45.465
7016.00	-----	10.6060	30.5737	20.382	65.847
7018.00	-----	11.3700	32.9574	21.972	87.819
7020.00	-----	12.1880	35.3299	23.553	111.372
7022.00	-----	13.0990	37.9223	25.282	136.654
7024.00	-----	13.7190	40.2234	26.816	163.469

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

SR - South POND

Copied from Sterling Ranch MDDP
Dated Oct 2007

Culvert Calculator Report
West Pond

Solve For: Discharge

Sterling Ranch West Pond

Culvert Summary					
Allowable HW Elevation	6,984.00	ft	Headwater Depth/Height	4.00	
Computed Headwater Elev	6,984.00	ft	Discharge	230.24	cfs
Inlet Control HW Elev.	6,984.00	ft	Tailwater Elevation	6,968.00	ft
Outlet Control HW Elev.	6,980.35	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	6,968.00	ft	Downstream Invert	6,966.00	ft
Length	100.00	ft	Constructed Slope	0.020000	ft/ft

Hydraulic Profile					
Profile	CompositeM2PressureProfile		Depth, Downstream	3.91	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	3.91	ft
Velocity Downstream	18.43	ft/s	Critical Slope	0.022898	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	4.00	ft
Section Size	48 inch		Rise	4.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	6,980.35	ft	Upstream Velocity Head	5.22	ft
Ke	0.50		Entrance Loss	2.61	ft

Inlet Control Properties					
Inlet Control HW Elev.	6,984.00	ft	Flow Control	Submerged	
Inlet Type	Square edge w/headwall		Area Full	12.6	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Rating Table Report
West Pond

Range Data:			
	Minimum	Maximum	Increment
Allowable HW E	6,968.00	6,984.00	0.50 ft

HW Elev. (ft)	Discharge (cfs)
6,968.00	0.00
6,968.50	1.33
6,969.00	5.18
6,969.50	11.28
6,970.00	19.37
6,970.50	29.17
6,971.00	40.39
6,971.50	52.70
6,972.00	65.77
6,972.50	79.27
6,973.00	92.87
6,973.50	106.26
6,974.00	115.46
6,974.50	123.75
6,975.00	131.53
6,975.50	138.86
6,976.00	145.83
6,976.50	152.48
6,977.00	158.85
6,977.50	164.98
6,978.00	170.89
6,978.50	176.60
6,979.00	182.13
6,979.50	187.49
6,980.00	192.71
6,980.50	197.79
6,981.00	202.74
6,981.50	207.58
6,982.00	212.30
6,982.50	216.93
6,983.00	221.45
6,983.50	225.89
6,984.00	230.24

OUTLET STRUCTURE INPUT DATA

Structure ID	= C1		
Structure Type	= Culvert-Circular		
No. Barrels	=	1	
Barrel Diameter	=	4.0000	ft
Upstream Invert	=	6968.00	ft
Dnstream Invert	=	6966.00	ft
Horiz. Length	=	100.00	ft
Barrel Length	=	100.02	ft
Barrel Slope	=	.02000	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.0100	(forward entrance loss)
Kb	=	.004925	(per ft of full flow)
Kr	=	.0100	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0098
Inlet Control M	=	2.0000
Inlet Control c	=	.03980
Inlet Control Y	=	.6700
T1 ratio (HW/D)	=	.000
T2 ratio (HW/D)	=	1.297
Slope Factor	=	-.500
Calc inlet only	= Yes	

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...
At T1 Elev = 6968.00 ft ---> Flow = 87.96 cfs
At T2 Elev = 6973.19 ft ---> Flow = 100.53 cfs

SR West POND

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Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
6968.00	-----	.0900	.0000	.000	.000
6970.00	-----	1.9440	2.4523	1.635	1.635
6972.00	-----	4.1320	8.9102	5.940	7.575
6974.00	-----	4.3800	12.7662	8.511	16.086
6976.00	-----	4.6400	13.5281	9.019	25.105
6978.00	-----	4.9050	14.3157	9.544	34.648
6980.00	-----	5.1770	15.1212	10.081	44.729
6982.00	-----	5.4540	15.9447	10.630	55.359
6984.00	-----	5.7400	16.7892	11.193	66.552

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

SR-West POND

Pond 3

Regional Pond SC3

Stage	Length (ft)	Width (ft)	Area (sf)	Incremental Volume (cf)	Cumulative Volume (cf)	Cumulative Volume (ac*ft)	93% Cumulative Volume (ac*ft)
77			0	0	0	0.00	0.00
78			62087	31043.5	31043.5	0.71	0.66
79			243916	153001.5	184045	4.23	3.93
80			486121	365018.5	549063.5	12.60	11.72
81			714713	600417	1149480.5	26.39	24.54
82			750407	732560	1882040.5	43.21	40.18
84			774555	1524962	3407002.5	78.21	72.74
85			788301	781428	4188430.5	96.15	89.42
86			802155	795228	4983658.5	114.41	106.40
88			830155	1632310	6615968.5	151.88	141.25
90			859511	1689666	8305634.5	190.67	177.32
92			888368	1747879	10053513.5	230.80	214.64

Pond 3

Worksheet for Broad Crested Weir - 1

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	86.00	ft
Crest Elevation	85.00	ft
Tailwater Elevation	78.00	ft
Crest Surface Type	Paved	
Crest Breadth	80.00	ft
Crest Length	35.00	ft

Results

Discharge	106.29	ft^3/s
Headwater Height Above Crest	1.00	ft
Tailwater Height Above Crest	-7.00	ft
Weir Coefficient	3.04	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	3.04	US
Flow Area	35.00	ft^2
Velocity	3.04	ft/s
Wetted Perimeter	37.00	ft
Top Width	35.00	ft

Pond 3

Rating Table for Broad Crested Weir - 1

Project Description

Solve For	Discharge	

Input Data

Headwater Elevation	90.00	ft
Crest Elevation	85.00	ft
Tailwater Elevation	78.00	ft
Crest Surface Type	Paved	
Crest Breadth	80.00	ft
Crest Length	35.00	ft

Headwater Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)
85.00		
86.00	106.29	3.04
87.00	300.94	4.30
88.00	552.87	5.27
89.00	851.20	6.08
90.00	1189.59	6.80
91.00	1563.75	7.45
92.00	1970.56	8.04

Culvert Calculator Report
Pond 3 - 18" Outlet Pipe

Pond 3

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	90.00	ft	Headwater Depth/Height	8.67	
Computed Headwater Elev	90.00	ft	Discharge	26.27	cfs
Inlet Control HW Elev.	84.55	ft	Tailwater Elevation	76.00	ft
Outlet Control HW Elev.	90.00	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	77.00	ft	Downstream Invert	75.00	ft
Length	150.00	ft	Constructed Slope	0.013333	ft/ft

Hydraulic Profile					
Profile	CompositeM2PressureProfile		Depth, Downstream	1.49	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	1.49	ft
Velocity Downstream	14.88	ft/s	Critical Slope	0.058237	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	1.50	ft
Section Size	18 inch		Rise	1.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	90.00	ft	Upstream Velocity Head	3.43	ft
Ke	0.20		Entrance Loss	0.69	ft

Inlet Control Properties					
Inlet Control HW Elev.	84.55	ft	Flow Control	Submerged	
Inlet Type	Groove end w/headwall		Area Full	1.8	ft²
K	0.00180		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	2	
C	0.02920		Equation Form	1	
Y	0.74000				

Pond 3

Rating Table Report
Pond 3 - 18" Outlet Pipe

Range Data:			
	Minimum	Maximum	Increment
Allowable HW E	77.00	92.00	1.00 ft

HW Elev. (ft)	Discharge (cfs)
77.00	0.00
78.00	3.23
79.00	9.81
80.00	13.56
81.00	15.23
82.00	16.80
83.00	18.25
84.00	19.59
85.00	20.85
86.00	22.04
87.00	23.17
88.00	24.25
89.00	25.28
90.00	26.27
91.00	27.22
92.00	28.15

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Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
6860.00	-----	.0010	.0000	.000	.000
6862.00	-----	.0680	.0772	.051	.051
6864.00	-----	.3370	.5564	.371	.422
6866.00	-----	.8610	1.7367	1.158	1.580
6868.00	-----	1.5390	3.5511	2.367	3.948
6870.00	-----	2.9650	6.6402	4.427	8.374
6872.00	-----	4.0100	10.4231	6.949	15.323
6874.00	-----	5.2070	13.7865	9.191	24.514
6876.00	-----	6.4580	17.4639	11.643	36.157
6878.00	-----	8.0150	21.6675	14.445	50.602
6880.00	-----	10.0320	27.0140	18.009	68.611

POND VOLUME EQUATIONS

* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2-EL1) * (Area1 + Area2 + sq.rt.(Area1*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2

Title... Project Date: 6/6/2007
Project Engineer: Benjamin E. Sheets
Project Title: SAND CREEK DETENTION POND NO. 6
Project Comments:
ULTIMATE DEVELOPMENT FLOWS
ULTIMATE POND CONSTRUCTION

***** COMPOSITE OUTFLOW SUMMARY ****

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
6860.00	.00	Free Outfall		(no Q: 02,03,04,Ib,01,Cv)
6860.20	.02	Free Outfall		01,Cv (no Q: 02,03,04,Ib)
6860.40	.32	Free Outfall		01,Cv (no Q: 02,03,04,Ib)
6860.60	.55	Free Outfall		01,Cv (no Q: 02,03,04,Ib)
6860.80	1.53	Free Outfall		01,Cv (no Q: 02,03,04,Ib)
6861.00	2.24	Free Outfall		01,Cv (no Q: 02,03,04,Ib)
6861.20	3.15	Free Outfall		01,Cv (no Q: 02,03,04,Ib)
6861.40	5.15	Free Outfall		01,Cv (no Q: 02,03,04,Ib)
6861.60	6.10	Free Outfall		01,Cv (no Q: 02,03,04,Ib)
6861.80	7.76	Free Outfall		01,Cv (no Q: 02,03,04,Ib)
6862.00	7.82	Free Outfall		01,Cv (no Q: 02,03,04,Ib)
6862.20	8.50	Free Outfall		02,01,Cv (no Q: 03,04,Ib)
6862.40	9.24	Free Outfall		02,01,Cv (no Q: 03,04,Ib)
6862.60	10.90	Free Outfall		02,01,Cv (no Q: 03,04,Ib)
6862.80	12.56	Free Outfall		02,01,Cv (no Q: 03,04,Ib)
6863.00	14.31	Free Outfall		02,01,Cv (no Q: 03,04,Ib)
6863.20	16.18	Free Outfall		02,01,Cv (no Q: 03,04,Ib)
6863.40	17.98	Free Outfall		02,01,Cv (no Q: 03,04,Ib)
6863.60	20.05	Free Outfall		02,01,Cv (no Q: 03,04,Ib)
6863.80	22.42	Free Outfall		02,01,Cv (no Q: 03,04,Ib)
6864.00	21.43	Free Outfall		02,01,Cv (no Q: 03,04,Ib)
6864.20	22.82	Free Outfall		02,03,01,Cv (no Q: 04,Ib)
6864.40	24.55	Free Outfall		02,03,01,Cv (no Q: 04,Ib)
6864.60	25.82	Free Outfall		02,03,01,Cv (no Q: 04,Ib)
6864.80	27.86	Free Outfall		02,03,01,Cv (no Q: 04,Ib)
6865.00	29.90	Free Outfall		02,03,01,Cv (no Q: 04,Ib)
6865.20	31.94	Free Outfall		02,03,01,Cv (no Q: 04,Ib)
6865.40	34.31	Free Outfall		02,03,01,Cv (no Q: 04,Ib)
6865.60	36.05	Free Outfall		02,03,01,Cv (no Q: 04,Ib)
6865.80	37.38	Free Outfall		02,03,01,Cv (no Q: 04,Ib)
6866.00	38.72	Free Outfall		02,03,01,Cv (no Q: 04,Ib)
6866.20	40.05	Free Outfall		02,03,04,01,Cv (no Q: Ib)

Title... Project Date: 6/6/2007
Project Engineer: Benjamin E. Sheets
Project Title: SAND CREEK DETENTION POND NO. 6
Project Comments:
ULTIMATE DEVELOPMENT FLOWS
ULTIMATE POND CONSTRUCTION

***** COMPOSITE OUTFLOW SUMMARY ****

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
6866.40	42.13	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6866.60	43.78	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6866.80	46.21	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6867.00	48.07	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6867.20	50.07	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6867.40	52.74	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6867.60	55.41	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6867.80	57.25	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6868.00	58.75	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6868.20	60.62	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6868.40	61.96	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6868.60	63.42	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6868.80	64.75	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6869.00	66.09	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6869.20	67.42	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6869.40	68.76	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6869.60	70.67	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6869.80	71.39	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6870.00	72.10	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6870.20	73.42	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6870.40	74.74	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6870.60	75.44	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6870.80	76.10	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6871.00	77.46	Free Outfall		02,03,04,01,Cv (no Q: Ib)
6871.20	82.17	Free Outfall		02,03,04,Ib,01,Cv
6871.40	91.05	Free Outfall		02,03,04,Ib,01,Cv
6871.60	107.62	Free Outfall		02,03,04,Ib,01,Cv
6871.80	119.27	Free Outfall		02,03,04,Ib,01,Cv
6872.00	132.06	Free Outfall		02,03,04,Ib,01,Cv
6872.20	146.29	Free Outfall		02,03,04,Ib,01,Cv
6872.40	161.34	Free Outfall		02,03,04,Ib,01,Cv
6872.60	172.61	Free Outfall		02,03,04,Ib,01,Cv

Title... Project Date: 6/6/2007
Project Engineer: Benjamin E. Sheets
Project Title: SAND CREEK DETENTION POND NO. 6
Project Comments:
ULTIMATE DEVELOPMENT FLOWS
ULTIMATE POND CONSTRUCTION

***** COMPOSITE OUTFLOW SUMMARY ****

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
6872.80	178.53	Free Outfall		02,03,04,Ib,01,Cv
6873.00	184.20	Free Outfall		02,03,04,Ib,01,Cv
6873.20	189.48	Free Outfall		02,03,04,Ib,01,Cv
6873.40	194.88	Free Outfall		02,03,04,Ib,01,Cv
6873.60	199.97	Free Outfall		02,03,04,Ib,01,Cv
6873.80	204.88	Free Outfall		02,03,04,Ib,01,Cv
6874.00	209.59	Free Outfall		02,03,04,Ib,01,Cv
6874.20	214.24	Free Outfall		02,03,04,Ib,01,Cv
6874.40	218.74	Free Outfall		02,03,04,Ib,01,Cv
6874.60	223.25	Free Outfall		02,03,04,Ib,01,Cv
6874.80	227.39	Free Outfall		02,03,04,Ib,01,Cv
6875.00	231.44	Free Outfall		02,03,04,Ib,01,Cv
6875.20	235.57	Free Outfall		02,03,04,Ib,01,Cv
6875.40	239.48	Free Outfall		02,03,04,Ib,01,Cv
6875.60	243.45	Free Outfall		02,03,04,Ib,01,Cv
6875.80	247.31	Free Outfall		02,03,04,Ib,01,Cv
6876.00	251.00	Free Outfall		02,03,04,Ib,01,Cv
6876.20	254.67	Free Outfall		02,03,04,Ib,01,Cv
6876.40	258.27	Free Outfall		02,03,04,Ib,01,Cv
6876.60	262.11	Free Outfall		02,03,04,Ib,01,Cv
6876.80	265.64	Free Outfall		02,03,04,Ib,01,Cv
6877.00	269.17	Free Outfall		02,03,04,Ib,01,Cv
6877.20	272.40	Free Outfall		02,03,04,Ib,01,Cv
6877.40	275.88	Free Outfall		02,03,04,Ib,01,Cv
6877.60	279.24	Free Outfall		02,03,04,Ib,01,Cv
6877.80	282.36	Free Outfall		02,03,04,Ib,01,Cv
6878.00	285.54	Free Outfall		02,03,04,Ib,01,Cv
6878.20	288.68	Free Outfall		02,03,04,Ib,01,Cv
6878.40	291.77	Free Outfall		02,03,04,Ib,01,Cv
6878.60	294.84	Free Outfall		02,03,04,Ib,01,Cv
6878.80	297.87	Free Outfall		02,03,04,Ib,01,Cv
6879.00	300.86	Free Outfall		02,03,04,Ib,01,Cv

Type.... Composite Rating Curve
Name.... FINAL

File.... C:\Temp\Sand Creek Alt\Pond Pack\POND 6 ULT DEV FINAL.ppw

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Title... Project Date: 6/6/2007
Project Engineer: Benjamin E. Sheets
Project Title: SAND CREEK DETENTION POND NO. 6
Project Comments:
ULTIMATE DEVELOPMENT FLOWS
ULTIMATE POND CONSTRUCTION

***** COMPOSITE OUTFLOW SUMMARY ****

WS Elev, Total Q		Converge		Notes
Elev. ft	Q cfs	TW Elev ft	Error +/-ft	Contributing Structures
6879.20	303.82	Free Outfall		02,03,04,Ib,01,Cv
6879.40	306.75	Free Outfall		02,03,04,Ib,01,Cv
6879.60	309.75	Free Outfall		02,03,04,Ib,01,Cv
6879.80	312.52	Free Outfall		02,03,04,Ib,01,Cv
6880.00	315.37	Free Outfall		02,03,04,Ib,01,Cv

Title... Project Date: 6/6/2007
Project Engineer: Benjamin E. Sheets
Project Title: SAND CREEK DETENTION POND NO. 6
Project Comments:
ULTIMATE DEVELOPMENT FLOWS
ULTIMATE POND CONSTRUCTION

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 6860.00 ft
Increment = .20 ft
Max. Elev.= 6880.00 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Orifice-Circular	02	--->	CV	6862.000	6880.000
Orifice-Circular	03	--->	CV	6864.000	6880.000
Orifice-Circular	04	--->	CV	6866.000	6880.000
Inlet Box	Ib	--->	CV	6871.000	6880.000
Orifice-Circular	01	--->	CV	6860.000	6880.000
Culvert-Circular	Cv	--->	TW	6860.000	6880.000

TW SETUP, DS Channel

Title... Project Date: 6/6/2007
Project Engineer: Benjamin E. Sheets
Project Title: SAND CREEK DETENTION POND NO. 6
Project Comments:
ULTIMATE DEVELOPMENT FLOWS
ULTIMATE POND CONSTRUCTION

OUTLET STRUCTURE INPUT DATA

Structure ID	= 02	
Structure Type	= Orifice-Circular	
# of Openings	= 1	
Invert Elev.	= 6862.00	ft
Diameter	= 1.5000	ft
Orifice Coeff.	= .600	

Structure ID	= 03	
Structure Type	= Orifice-Circular	
# of Openings	= 1	
Invert Elev.	= 6864.00	ft
Diameter	= 1.5000	ft
Orifice Coeff.	= .600	

Structure ID	= 04	
Structure Type	= Orifice-Circular	
# of Openings	= 1	
Invert Elev.	= 6866.00	ft
Diameter	= 1.5000	ft
Orifice Coeff.	= .600	

Title... Project Date: 6/6/2007
Project Engineer: Benjamin E. Sheets
Project Title: SAND CREEK DETENTION POND NO. 6
Project Comments:
ULTIMATE DEVELOPMENT FLOWS
ULTIMATE POND CONSTRUCTION

OUTLET STRUCTURE INPUT DATA

Structure ID = Ib
Structure Type = Inlet Box

# of Openings	=	1
Invert Elev.	=	6871.00 ft
Orifice Area	=	14.0625 sq.ft
Orifice Coeff.	=	.600
Weir Length	=	15.00 ft
Weir Coeff.	=	3.000
K, Reverse	=	1.000
Mannings n	=	.0000
Kev,Charged Riser	=	.000
Weir Submergence	=	No

Structure ID = 01
Structure Type = Orifice-Circular

# of Openings	=	1
Invert Elev.	=	6860.00 ft
Diameter	=	1.5000 ft
Orifice Coeff.	=	.600

Title... Project Date: 6/6/2007
Project Engineer: Benjamin E. Sheets
Project Title: SAND CREEK DETENTION POND NO. 6
Project Comments:
ULTIMATE DEVELOPMENT FLOWS
ULTIMATE POND CONSTRUCTION

OUTLET STRUCTURE INPUT DATA

Structure ID = Cv
Structure Type = Culvert-Circular

No. Barrels	=	1	
Barrel Diameter	=	6.0000	ft
Upstream Invert	=	6860.00	ft
Dnstream Invert	=	6850.00	ft
Horiz. Length	=	350.00	ft
Barrel Length	=	350.14	ft
Barrel Slope	=	.02857	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0150	
Ke	=	.5000	(forward entrance loss)
Kb	=	.003819	(per ft of full flow)
Kr	=	.2000	(reverse entrance loss)
HW Convergence	=	.010	+/- ft

INLET CONTROL DATA...

Equation form	=	1
Inlet Control K	=	.0098
Inlet Control M	=	2.0000
Inlet Control c	=	.03980
Inlet Control Y	=	.6700
T1 ratio (HW/D)	=	.000
T2 ratio (HW/D)	=	1.327
Slope Factor	=	.700

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...
At T1 Elev = 6860.00 ft ---> Flow = 242.40 cfs
At T2 Elev = 6867.96 ft ---> Flow = 277.03 cfs

Title... Project Date: 6/6/2007
Project Engineer: Benjamin E. Sheets
Project Title: SAND CREEK DETENTION POND NO. 6
Project Comments:
ULTIMATE DEVELOPMENT FLOWS
ULTIMATE POND CONSTRUCTION

OUTLET STRUCTURE INPUT DATA

Structure ID = TW
Structure Type = TW SETUP, DS Channel

FREE OUTFALL CONDITIONS SPECIFIED

CONVERGENCE TOLERANCES...
Maximum Iterations= 30
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .10 cfs
Max. Q tolerance = .10 cfs

APPENDIX C

HEC-1 MODEL OUTPUT

100 YEAR OUTPUT

With Runoff Summary

Upstream of Woodmen Road

HEC1 S/N: 1343000062 HMVersion: 6.33 Data File: scbuw100.dat

```
*****************************************
*                                       *
*  FLOOD HYDROGRAPH PACKAGE  (HEC-1)    *
*               MAY  1991               *
*            VERSION 4.0.1E             *
*                                       *
*  RUN DATE  06/25/2009  TIME  11:40:26 *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    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
```

```
::::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::::
:::                                      :::
:::  Full Microcomputer Implementation   :::
:::                 by                   :::
:::        Haestad Methods, Inc.         :::
:::                                      :::
::::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::::
```

37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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

HEC-1 INPUT PAGE 1

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

   1          ID            Sand Creek Basin Upstream of Woodmen Road
   2          ID             Model prepared by WCI for Upper Sand Creek Basin
   3          ID             Detention Evaluation Report
   4          ID            FUTURE DEVELOPMENT CONDITION Including Sterling Ranch
   5          ID            Utilizes Extended Detention of Excess 2 Year Volume in
   6          ID            Sand Creek Regional Pond 3
   7          ID            100 Year, 24 hr Type IIA  Storm fn:SCBUW100.dat
              *DIAGRAM
   8          IT       4       0       0     300
   9          IO       5

  10          KK    SB82
  11          KM       RUNOFF FROM SUB-BASIN 82
  12          BA    .184
  13          IN      30
  14          PB     4.4
  15          PC  0.0000  0.0025  0.0050  0.0075  0.0100  0.0150  0.0200  0.0250  0.0300  0.0500
  16          PC  0.0600  0.1000  0.7000  0.7500  0.7800  0.7980  0.8200  0.8300  0.8400  0.8500
  17          PC  0.8600  0.8650  0.8700  0.8850  0.8900  0.9000  0.9050  0.9100  0.9150  0.9210
  18          PC  0.9270  0.9330  0.9400  0.9450  0.9500  0.9525  0.9550  0.9600  0.9650  0.9700
  19          PC  0.9750  0.9800  0.9830  0.9850  0.9880  0.9900  0.9930  0.9950  0.9980  1.0000
  20          LS       0      67
  21          UD    .282

  22          KK    RT-4
  23          KM   ROUTE FLOW FROM SUB-BASIN 82 TO DP 74
  24          RK    2300    .030    .035            TRAP      10      10

  25          KK    SB74
  26          KM   RUNOFF FROM SUB-BASIN 74
  27          BA    .188
  28          LS       0      67
  29          UD   0.318

  30          KK    DP74
  31          KM   DESIGN POINT 74 COMBINE RUNOFF FROM SUB-BASIN 74 AND RT-4
  32          HC       2

  33          KK    RT-3
  34          KM   ROUTE FLOW FROM DP 74 TO DP 75
  35          RK    2800    .025    .035            TRAP              10

  36          KK    SB80
  37          KM   RUNOFF FROM SUB-BASIN 80
  38          BA    .231
  39          LS       0      67
  40          UD    .379
  41          KK    RT-2
  42          KM   ROUTE FLOW FROM SB 80 TO DP 75
  43          RK    4100    .035    .035            TRAP              10
```

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

  44      KK   SB81
  45      KM   RUNOFF FROM SUB-BASIN 81
  46      BA    .411
  47      LS      0      67
  48      UD    .424

  49      KK   RT-1
  50      KM   ROUTE FLOW FROM SB 81 TO DP 75
  51      RK    3850    .03    .035            TRAP              10

  52      KK   SB73
  53      KM   RUNOFF FROM SUB-BASIN 73
  54      BA    .141
  55      LS      0      67
  56      UD    .298

  57      KK   SB75
  58      KM   RUNOFF FROM SUB-BASIN 75
  59      BA    .123
  60      LS      0      67
  61      UD    .360

  62      KK   SB76
  63      KM   RUNOFF FROM SUB-BASIN 76
  64      BA    .134
  65      LS      0      67
  66      UD    .368

  67      KK   DP75
  68      KM   DESIGN POINT 75 COMBINE RUNOFF FROM SUB-BASINS 73, 75, 76, RT-1, RT-2 & RT-3
  69      HC      6

  70      KK   RT-5
  71      KM   ROUTE FLOW FROM DP 75 TO DP 77
  72      RK    1700    .025    .035            TRAP      10      10

  73      KK   SB79
  74      KM   RUNOFF FROM SUB-BASIN 79
  75      BA    .295
  76      LS      0      67
  77      UD    .303

  78      KK   RT-7
  79      KM   ROUTE FLOW FROM SUB-BASIN 79 TO DP 78
  80      RK    3000    0.03   0.035            TRAP       6       6

  81      KK   SB78
  82      KM   RUNOFF FROM SUB-BASIN 78
  83      BA    .244
  84      LS      0      67
  85      UD    .311
```



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

  86      KK   DP78
  87      KM   DESIGN POINT 78 COMBINE RUNOFF FROM SUB-BASIN 78 AND RT-7
  88      HC      2

  89      KK   RT-6
  90      KM   ROUTE FLOW FROM DESIGN POINT 78 TO DP 77
  91      RK    3350    .025    .035            TRAP      10       6

  92      KK   SB77
  93      KM   RUNOFF FROM SUB-BASIN 77
  94      BA    .269
  95      LS      0      68
  96      UD    .338

  97      KK   SB88
  98      KM   RUNOFF FROM SUB-BASIN 88
  99      BA    .137
 100      LS      0      67
 101      UD    .311

 102      KK   DP77
 103      KM   DESIGN POINT 77 COMBINE RUNOFF FROM SUB-BASINS 77 AND 88 AND RT-6, AND RT-5
 104      HC      4

 105      KK   RT-8
 106      KM   ROUTE FLOW FROM DESIGN POINT 77 TO DP 71
 107      RK    4600    .018    .035            TRAP      25       4

 108      KK  SC3-20
 109      KM   RUNOFF FROM SUB-BASIN SC3-20
 110      BA    .306
 111      LS      0      68
 112      UD    .274

 113      KK   DP71
 114      KM   DESIGN POINT 71 COMBINE RUNOFF FROM SUB-BASIN SC3-20 AND RT-8
 115      HC      2

 116      KK   RT-9
 117      KM   ROUTE FLOW FROM DESIGN POINT 71 TO DP 70
 118      RK     980    .020    .035            TRAP      40       4

 119      KK  SB3-18
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```
120          KM   RUNOFF FROM SUB-BASIN SC3-18
121          BA    .267
122          LS       0      76
123          UD    .234

124          KK    DP70
125          KM   DESIGN POINT 70 COMBINE RUNOFF FROM SUB-BASIN SC3-18 AND RT-9
126          HC       2
                                        HEC-1 INPUT                                                    PAGE  4

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


127          KK   RT-11
128          KM   ROUTE FLOW FROM DESIGN POINT 70 TO DP 69 AT DB-SRMN
129          RK    1100    .018    .035            TRAP       40       5

130          KK  SC3-19
131          KM   RUNOFF FROM SUB-BASIN SC3-19
132          BA    .301
133          LS       0      76
134          UD    .197

135          KK   RT-10
136          KM   ROUTE FLOW FROM SUB-BASIN SC3-19 TO DESIGN POINT 69 AT DB-SRMN
137          RK    1720    .020    .013            CIRC       6

138          KK  SC3-17
139          KM   RUNOFF FROM SUB-BASIN SB3-17
140          BA   .178
141          LS       0      82
142          UD    .190

143          KK    DP69
144          KM   DESIGN POINT 69 COMBINE RUNOFF FROM SUB-BASIN SC3-17 RT-10 AND RT-11
145          HC       3

146          KK  DBSRMN
147          KM        ROUTE FLOW THROUGH THE STERLING RANCH MIDDLE NORTH POND
148          KM        STAGE STORAGE CURVE PER DRAFT MDDP FOR STERLING RANCH DATED 10-2007
149          KM        DISCHAGE CURVE ASSUMES A DOUBLE 8'X 8'CBC Ke=0.5 US INV=7094
150          KO       3
151          RS       1    ELEV       94
152          SV       0     4.4    12.3    23.5    36.6    50.3    64.7    79.8    95.6     112
153          SQ       0     111     314     576     887    1239    1536    1782    2000    2195
154          SE      94      96      98     100     102     104     106     108     110     112

155          KK   RT-12
156          KM   ROUTE FLOW FROM BASIN SC3-15 TO DP 87
157          RK    2000    .015    .035            TRAP       50       6

158          KK  SC3-15
159          KM   RUNOFF FROM SUB-BASIN SC3-15
160          BA   .210
161          LS       0    85.0
162          UD    .217

163          KK  RT-10A
164          KM   ROUTE FLOW FROM SC3-3-14 TO DP 87
165          RK    1600    .019    .013            CIRC     6.0

166          KK    DP87
167          KM   DESIGN POINT 87 COMBINE RUNOFF FROM RT-10A AND RT-11
168          HC       2
                                        HEC-1 INPUT                                                    PAGE  5

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


169          KK   RT-13
170          KM   ROUTE FLOW FROM DESIGN POINT 87 TO DP 68 AT DBSRMS
171          RK    2560    .012    .035            TRAP       50       4

172          KK  SC3-14
173          KM   RUNOFF FROM SUB-BASIN SC3-14
174          BA   .341
175          LS       0      86
176          UD    .229

177          KK  SC3-16
178          KM   RUNOFF FROM SUB-BASIN SC3-16
179          BA   .300
180          LS       0      85
181          UD    .247

182          KK  RT-13A
183          KM   ROUTE FLOW FROM SUB-BASIN SC3-16 TO DESIGN POINT 68 AT DBSRMS
184          RK    3060    .005    .035            TRAP       20       4

185          KK    DP68
186          KM   DESIGN POINT 68 COMBINE RUNOFF FROM SUB-BASIN SC3-14 RT-13 AND RT-13A
187          HC       3

188          KK  DBSRMS
189          KM        ROUTE FLOW THROUGH THE STERLING RANCH MIDDLE SOUTH POND
190          KM        STAGE STORAGE CURVE PER DRAFT MDDP FOR STERLING RANCH DATED 10-2007
191          KM        DISCHAGE CURVE ASSUMES A DOUBLE 8s'X 8r'CBC Ke=0.5 US INV=7024
192          KO       3
193          RS       1    ELEV       4
194          SV       0     2.7     7.6    15.8    28.2    45.4    65.8    87.8
195          SQ       0     110     313     576     887    1239    1546    1792
196          SE       4       6       8      10      12      14      16      18

197          KK   RT-17
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198          KM   ROUTE FLOW FROM DESIGN POINT 68 TO DP 63
199          RK    1750    .009    .035            TRAP      40       4

200          KK  SC3-13
201          KM   RUNOFF FROM SUB-BASIN SCS-13
202          BA   .337
203          LS       0      68
204          UD    .252

205          KK   RT-19
206          KM   ROUTE FLOW FROM SUB-BASIN SC3-13 TO DESIGN POINT 66
207          RK    4360    .023    .013            CIRC     4.5

208          KK  SC3-12
209          KM   RUNOFF FROM SUB-BASIN SC3-12
210          BA   .206
211          LS       0    84.0
212          UD    .211
                                      HEC-1 INPUT                                          PAGE  6

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


213          KK    DP66
214          KM   DESIGN POINT 66 COMBINE RUNOFF FROM SUB-BASIN SC3-12 AND RT-19
215          HC       2

216          KK   RT-20
217          KM   ROUTE FLOW FROM DESIGN POINT 66 TO DESIGN POINT 63A
218          RK    5760    .005    .030            TRAP      25       4

219          KK  SC3-11
220          KM   RUNOFF FROM SUB-BASIN SC3-11
221          BA   .285
222          LS       0    86.0
223          UD    .284

224          KK   DP63A
225          KM   DESIGN POINT 63A COMBINE RUNOFF FROM SUB-BASIN SC3-11 AND RT-20
226          HC       2

227          KK    DP63
228          KM   DESIGN POINT 63 COMBINE RUNOFF FROM RT-17 AND DP-63A
229          HC       2

230          KK  RT-17A
231          KM   ROUTE FLOW FROM DESIGN POINT 63 TO 61
232          RK    2080    .021    .035            TRAP      40       4

233          KK  SC3-10
234          KM   RUNOFF FROM SUB-BASIN SC3-10
235          BA   .064
236          LS       0    68.0
237          UD    .234

238          KK  SC3-9
239          KM   RUNOFF FROM SUB-BASIN SC3-9
240          BA   .499
241          LS       0    71.0
242          UD    .437

243          KK  RT-14
244          KM   ROUTE FLOW FROM BASIN SC3-9 TO DP 65
245          RK    1700    .005    .030            TRAP      10       4

246          KK  SC3-8
247          KM   RUNOFF FROM SUB-BASIN SC3-8
248          BA   .226
249          LS       0    75.0
250          UD    .401

251          KK    DP65
252          KM   DESIGN POINT 65 COMBINE RUNOFF FROM SUB-BASIN SC3-8 AND RT-14
253          HC       2
                                      HEC-1 INPUT                                          PAGE  7

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


254          KK   RT-15
255          KM   ROUTE FLOW FROM DP 65 TO DESIGN POINT 64
256          RK    1550    .020    .013            CIRC       6

257          KK  SC3-7
258          KM   RUNOFF FROM SUB-BASIN SC3-7
259          BA   .155
260          LS       0    86.0
261          UD    .183

262          KK  RT-15A
263          KM   ROUTE FLOW FROM BASIN SC3-7 TO DP 64
264          RK    2030    .015    .013            CIRC      5.0

265          KK    DP64
266          KM   DESIGN POINT 64 COMBINE RUNOFF FROM RT-15 AND RT-15A
267          HC       2

268          KK  RT-16
269          KM   ROUTE FLOW FROM BASIN DESIGN POINT 64 TO DESIGN POINT 62
270          RK    1030    .020    .013            CIRC       7

271          KK  SC3-6
272          KM   RUNOFF FROM SUB-BASIN SC3-6
273          BA    .206
```

```
LS       0    86.0
UD    .159

KK    DP62
KM   DESIGN POINT 62 COMBINE RUNOFF FROM RT-16 AND BASIN SC3-6
HC       2

KK   DBSRW
KM        ROUTE FLOW THROUGH THE STERLING RANCH WEST POND
KO       3
RS       1    ELEV       4
SV       0     1.6     7.5     16.0     25.1     34.6     44.7     55.3     66.5
SQ       0      19      66      115      146      171      192      212      230
SE      68      70      72       74       76       78       80       82       84

KK    DP61
KM   DESIGN POINT 61 COMBINE RUNOFF FROM SUB-BASIN SC3-10 AND RT-17A AND DB-SRW
HC       3

KK  RT-17B
KM   ROUTE FLOW FROM DP 61 TO DESIGN POINT 60
RK    2250    .013    .035            TRAP      40       4

KK   SB61
KM   RUNOFF FROM SUB-BASIN 61
BA   .121
LS       0    68.0
UD    .373
                                   HEC-1 INPUT                                                    PAGE  8

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

KK   RT-20
KM   ROUTE FLOW FROM BASIN 61 TO DESIGN POINT 60
RK    1460    .005    .035            CIRC      3.5

KK   SC3-5
KM   RUNOFF FROM SUB-BASIN SC3-5
BA   .155
LS       0    84.0
UD    .136

KK    DP60
KM   DESIGN POINT 60 COMBINE RUNOFF FROM SUB-BASINS SC3-5 AND 61 AND RT-15
HC       3

KK   RT-18
KM   ROUTE FLOW FROM DESIGN POINT 60 TO DESIGN POINT 53
RK    1870    .014    .035            TRAP      40       4

KK   SC3-4
KM   RUNOFF FROM SUB-BASIN SC3-4
BA    .081
LS       0    89.0
UD    .128

KK   RT-21
KM   ROUTE FLOW FROM BASIN 4 TO DESIGN POINT 53
RK    1350    .013    .013            CIRC      4.5

KK   SC3-1
KM   RUNOFF FROM SUB-BASIN SC3-1
BA    .170
LS       0    78.0
UD    .134

KK   SC3-3
KM   RUNOFF FROM SUB-BASIN SC3-3
BA   .236
LS       0    84.0
UD    .189

KK  DBSC33
KM    ROUTE FLOW THROUGH AN APPROXIMATE POND TO SIMULATE POTENTIAL DETENTION
KO       3
RS       1    ELEV       0
SV       0     2.3     5.0      8.0     11.5     15.4
SQ       0      37     104      195      280      340
SE       0       2       4        6        8       10

KK  RT-21B
KM   ROUTE FLOW FROM SUB-BASIN SC3-3 TO DESIGN POINT 53
RK    2640    .017    .013            CIRC       6
                                   HEC-1 INPUT                                                    PAGE  9

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

KK   SC3-2
KM   RUNOFF FROM SUB-BASIN SC3-2
BA    .081
LS       0    85.0
UD    .172

KK    DP53
KM   DESIGN POINT 53 COMBINE RUNOFF FROM SUB-BASINS SC3-1 AND SC3-2 WITH
KM   RT-18,RT-21 AND RT-21B
KO       3
HC       5

KK    DB-3
KM   MODEL AS AN EXTENDED RELEASE DETENTION POND WITH 8'DEPTH TO 35' WIDE BROAD
KM   CRESTED WIER WITH CREST ELEVATION AT 85 AND 18" EXTENDED RELEASE OUTLET
```

```
352          KM   PIPE. EXTENDED RELEASE STORAGE SIZED TO CONTAIN THE DELTA OF THE 2YEAR
353          KM   RUNOFF BETWEEN THE UNDELVELOPED AND PROPOSED DEVELOPED CONDITIONS
354          KO        1        0        0       10        2        0        0   0.083
355          RS        1     ELEV       77
356          SV        0       .6     11.7     24.5     40.2     72.7     89.2    106.4    141.2
357          SV    177.3    214.6
358          SQ        0        3       14       15       17       20       21      126      572
359          SQ     1200     1990
360          SE       77       78       80       81       82       84       85       86       88
361          SE       90       92
362          KM    ********************************************************************************
363          KM   BEGIN POND 6 WATERSHED
364          KM    ********************************************************************************

365          KK   SC6-1
366          KM   RUNOFF FROM SUB-BASIN SC6-1
367          BA    .108
368          LS        0     87.0
369          UD    .254

370          KK   DBSC61
371          KM         ROUTE FLOW THROUGH AN APPROXIMATE POND TO SIMULATE POTENTIAL DETENTION
372          KO        3
373          RS        1     ELEV        0
374          SV        0      2.2      5.0      8.0     11.2
375          SQ        0       23       64       90      117
376          SE        0        2        4        6        8

377          KK   RT-23A
378          KM    ROUTE FLOW FROM SUB-BASIN SC6-1 TO DESIGN POINT 54A
379          RK     3700    .020     .013             CIRC        4

380          KK   SC6-2
381          KM   RUNOFF FROM SUB-BASIN SC6-2
382          BA    .239
383          LS        0     81.0
384          UD    .213
                                        HEC-1 INPUT                                                    PAGE 10

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

385          KK   SC6-3
386          KM   RUNOFF FROM SUB-BASIN SC6-3
387          BA    .173
388          LS        0     83.0
389          UD    .194

390          KK   DBSC63
391          KM         ROUTE FLOW THROUGH AN APPROXIMATE POND TO SIMULATE POTENTIAL DETENTION
392          KO        3
393          RS        1     ELEV        0
394          SV        0      2.3      4.8      7.6     11.7
395          SQ        0       20       48       70      100
396          SE        0        2        4        6        8

397          KK   RT-23B
398          KM    ROUTE FLOW FROM SUB-BASIN SC6-3 TO DESIGN POINT 54A
399          RK     1500    .005     .013             CIRC      4.5

400          KK   DP54A
401          KM   DESIGN POINT 54A COMBINE RUNOFF FROM SUB-BASIN SC6-2 WITH ROUTED FLOW
402          KM   RT-23A AND RT 23B
403          HC        3

404          KK   RT-23C
405          KM    ROUTE FLOW FROM DESIGN POINT 54A TO DESIGN POINT 54 AT POND 6
406          RK     1600     .024     .013             CIRC        7

407          KK   SC6-4
408          KM   RUNOFF FROM SUB-BASIN SC6-4
409          BA    .100
410          LS        0     94.0
411          UD    .155

412          KK   DBSC64
413          KM         ROUTE FLOW THROUGH AN APPROXIMATE POND TO SIMULATE POTENTIAL DETENTION
414          KO        3
415          RS        1     ELEV        0
416          SV        0     3.30      7.1     11.4    15.90
417          SQ        0       16       37       53       65
418          SE        0        2        4        6        8

419          KK   RT-24
420          KM    ROUTE FLOW FROM SUB-BASIN SC6-4 TO DESIGN POINT 54 AT POND 6
421          RK     1350     .024     .013             CIRC      3.5

422          KK   SC6-5
423          KM   RUNOFF FROM SUB-BASIN SC6-5
424          BA    .281
425          LS        0     83.0
426          UD    .189
                                        HEC-1 INPUT                                                    PAGE 11

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

427          KK   SC6-6
428          KM   RUNOFF FROM SUB-BASIN SC6-6 (WOODMEN HEIGHTS MDDP BASINS 9 AND 10)
429          BA    .059
430          LS        0     92.0
431          UD    .153

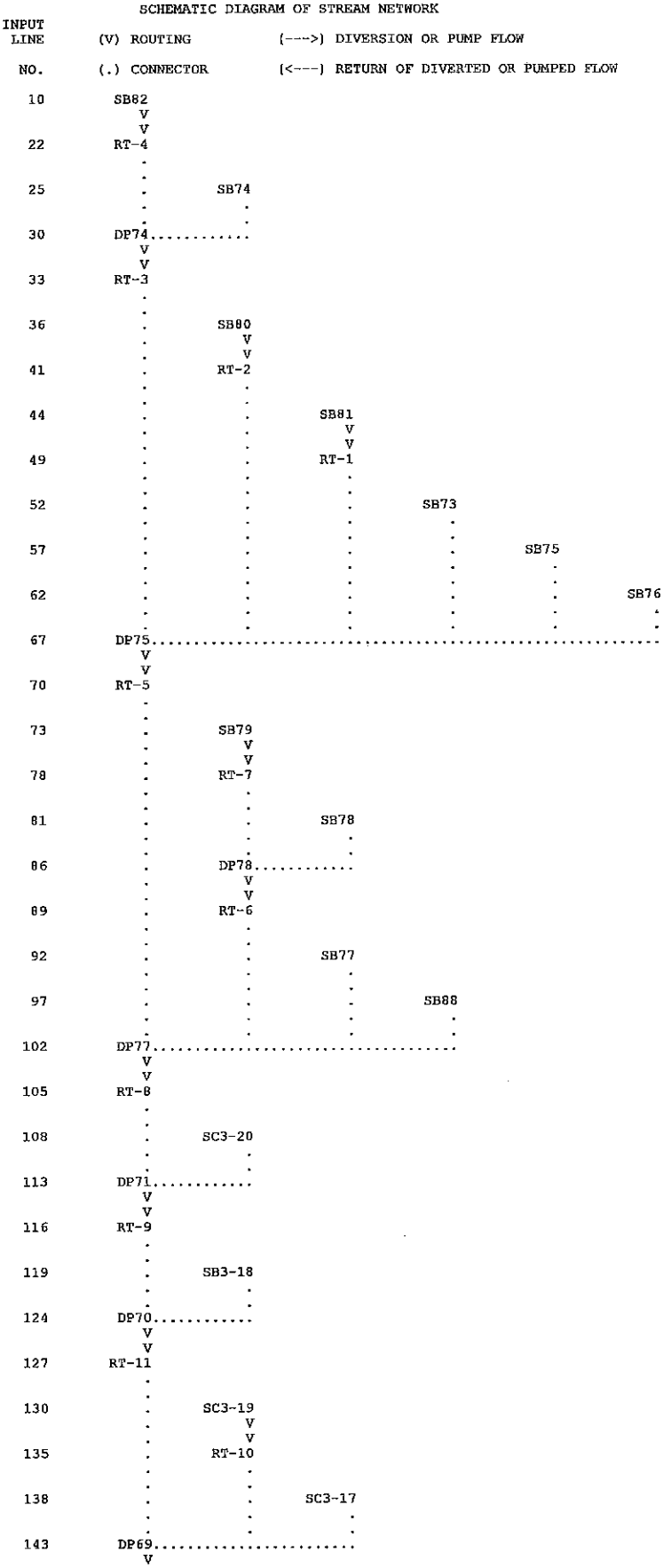
432          KK   DP54
```

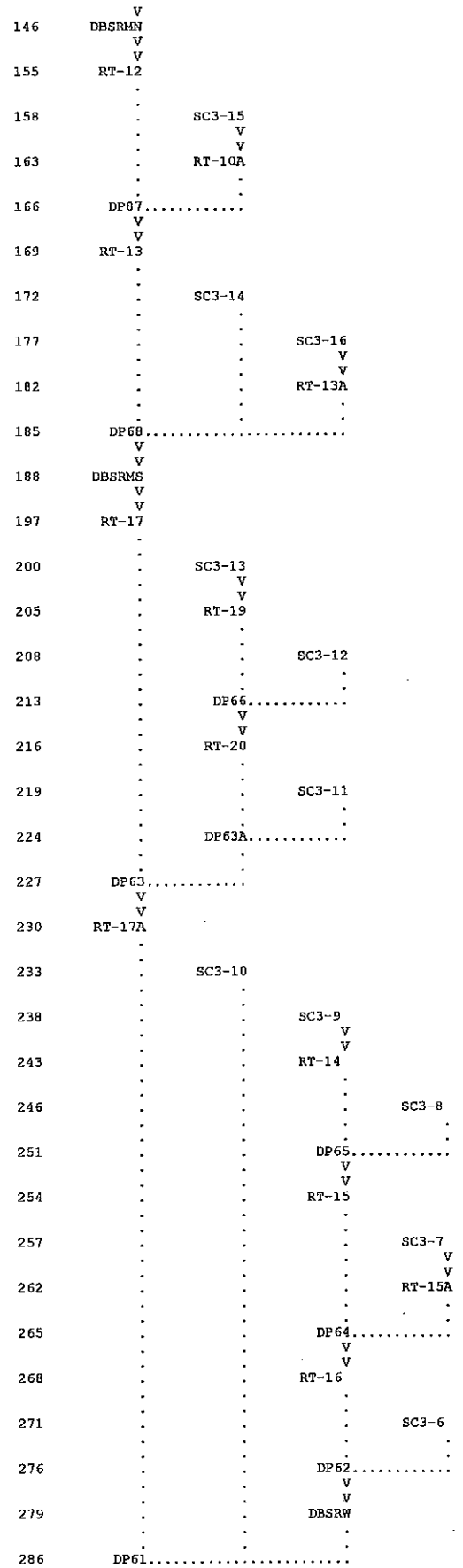
```
KM   DESIGN POINT 54 COMBINE RUNOFF FROM SUB-BASIN SC6-5 WITH ROUTED FLOW
KM   RT-23C AND RT 24
KO       3
HC       4

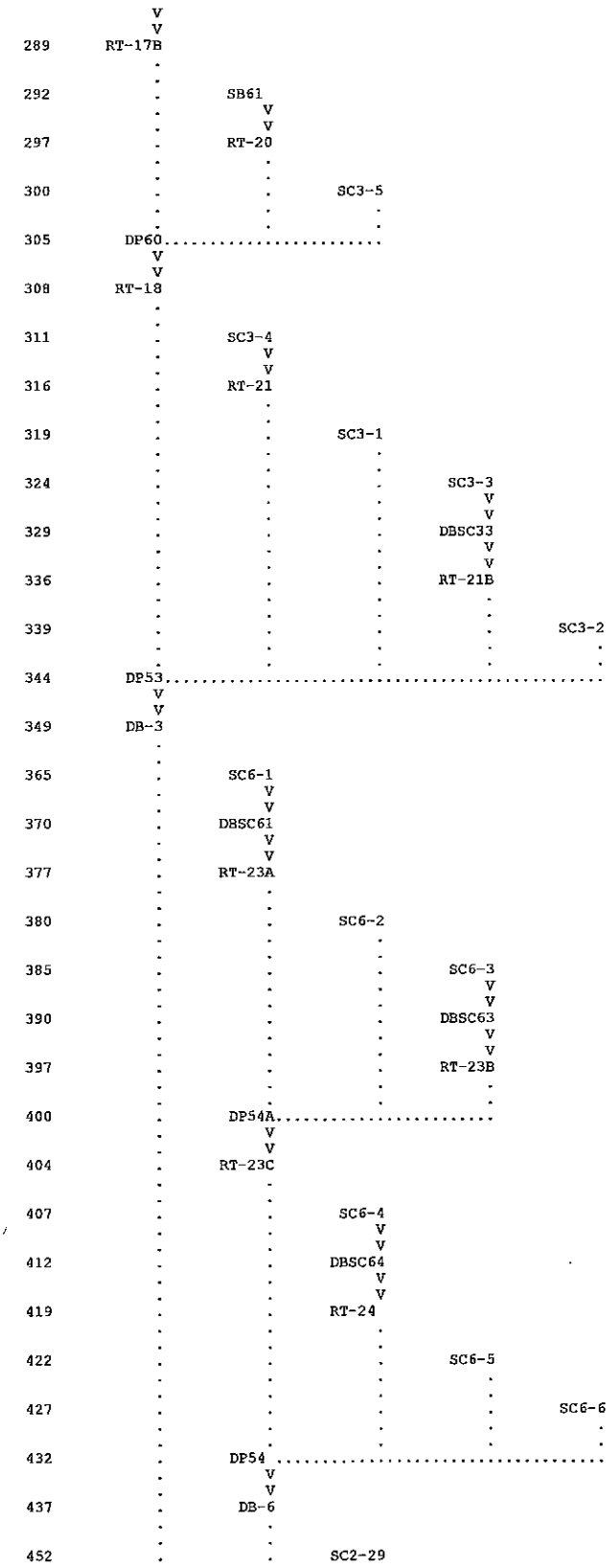
KK    DB-6
KM         ROUTE FLOW THROUGH THE M & S CIVIL CONSULTANTS PROPOSED POND 6
KM         STAGE STORAGE AND DISCHARGE CURVES ARE FROM M&S POND PACK MODEL
KM         DATED MARCH 15, 2008
KO       1       0       0      10       2       0       0   0.083333
RS       1    ELEV      60
SV       0    0.05    0.42    1.58    3.95    8.37    11.5   15.32   24.51
SV   36.16   50.60   68.61
SQ       0       8      22      41      62      78      84     132     210
SQ     251     286     316
SE      60      62      64      66      68      70      71      72      74
SE      76      78      80
KM      **************************************************************************
KM      BEGIN THE DIRECT DISCHARGE WATERSHED OF POND 2
KM      **************************************************************************

KK  SC2-29
KM   RUNOFF FROM SUB-BASIN SC2-29
KO       1       0       0      10       2       0       0   0.083
BA    .033
LS       0    94.0
UD    .148
ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK




146 DBSRMN
155 RT-12
158 SC3-15
163 RT-10A
166 DP87
169 RT-13
172 SC3-14
177 SC3-16
182 RT-13A
185 DP68
188 DBSRMS
197 RT-17
200 SC3-13
205 RT-19
208 SC3-12
213 DP66
216 RT-20
219 SC3-11
224 DP63A
227 DP63
230 RT-17A
233 SC3-10
238 SC3-9
243 RT-14
246 SC3-8
251 DP65
254 RT-15
257 SC3-7
262 RT-15A
265 DP64
268 RT-16
271 SC3-6
276 DP62
279 DBSRW
286 DP61



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*               MAY  1991               *
*            VERSION 4.0.1E             *
*                                       *
*  RUN DATE  06/25/2009  TIME  11:40:26 *
*                                       *
*****************************************
```


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


Sand Creek Basin Upstream of Woodmen Road
Model prepared by WCI for Upper Sand Creek Basin
Detention Evaluation Report
FUTURE DEVELOPMENT CONDITION Including Sterling Ranch
Utilizes Extended Detention of Excess 2 Year Volume in
Sand Creek Regional Pond 3
100 Year, 24 hr Type IIA Storm fn:SCBUW100.dat

```
  9 IO          OUTPUT CONTROL VARIABLES
                      IPRNT          5  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                      NMIN           4  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME         0000  STARTING TIME
                        NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      1    0  ENDING DATE
                     NDTIME        1956  ENDING TIME
                     ICENT           19  CENTURY MARK

                  COMPUTATION INTERVAL     0.07 HOURS
                      TOTAL TIME BASE     19.93 HOURS

        ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
146 KK    *    DBSRMN  *
          *            *
          **************

150 KO          OUTPUT CONTROL VARIABLES
                      IPRNT          3  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

            HYDROGRAPH ROUTING DATA

151 RS          STORAGE ROUTING
                      NSTPS          1  NUMBER OF SUBREACHES
                       ITYP       ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC      94.00  INITIAL CONDITION
                          X       0.00 WORKING R AND D COEFFICIENT

152 SV            STORAGE        0.0       4.4      12.3      23.5      36.6      50.3      64.7      79.8      95.6     112.0

153 SQ          DISCHARGE          0.      111.      314.      576.      887.     1239.     1536.     1782.     2000.     2195.

154 SE          ELEVATION      94.00     96.00     98.00    100.00    102.00    104.00    106.00    108.00    110.00    112.00


                                                                  ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION   DBSRMN

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR        24-HR        72-HR     19.93-HR
   (CFS)       (HR)
                             (CFS)
    1507.      6.67                    457.         170.         170.         170.
                           (INCHES)    1.248        1.538        1.538        1.538
                            (AC-FT)      227.         280.         280.         280.

PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                      6-HR        24-HR        72-HR     19.93-HR
  (AC-FT)      (HR)
      63.      6.67                     19.          7.           7.           7.

 PEAK STAGE    TIME                            MAXIMUM AVERAGE STAGE
```

```
                                          6-HR        24-HR       72-HR     19.93-HR
  (FEET)      (HR)
  105.80      6.67                       98.67        95.98       95.98        95.98

                       CUMULATIVE AREA =    3.41 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
 188 KK     *   DBSRMS   *
            *            *
            **************

 192 KO          OUTPUT CONTROL VARIABLES
                       IPRNT          3  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

 193 RS          STORAGE ROUTING
                       NSTPS          1  NUMBER OF SUBREACHES
                        ITYP       ELEV  TYPE OF INITIAL CONDITION
                      RSVRIC       4.00  INITIAL CONDITION
                           X       0.00 WORKING R AND D COEFFICIENT

 194 SV            STORAGE        0.0        2.7        7.6       15.8       28.2       45.4       65.8       87.8

 195 SQ          DISCHARGE         0.       110.       313.       576.       887.      1239.      1546.      1792.

 196 SE          ELEVATION       4.00       6.00       8.00      10.00      12.00      14.00      16.00      18.00
                                                               ***

     ***           ***            ***            ***            ***

                         HYDROGRAPH AT STATION   DBSRMS

 PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
                                          6-HR        24-HR       72-HR     19.93-HR
   (CFS)        (HR)
                              (CFS)
   1561.        7.00                      671.         246.        246.         246.
                            (INCHES)     1.464        1.781       1.781        1.781
                             (AC-FT)      333.         405.        405.         405.

PEAK STORAGE    TIME                        MAXIMUM AVERAGE STORAGE
                                          6-HR        24-HR       72-HR     19.93-HR
  (AC-FT)       (HR)
     67.        7.00                       24.           8.          8.           8.

 PEAK STAGE     TIME                         MAXIMUM AVERAGE STAGE
                                          6-HR        24-HR       72-HR     19.93-HR
  (FEET)        (HR)
   16.12        7.00                     10.21         6.63        6.63         6.63

                       CUMULATIVE AREA =    4.26 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

            **************
            *            *
 279 KK     *    DBSRW   *
            *            *
            **************

 281 KO          OUTPUT CONTROL VARIABLES
                       IPRNT          3  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

 282 RS          STORAGE ROUTING
                       NSTPS          1  NUMBER OF SUBREACHES
                        ITYP       ELEV  TYPE OF INITIAL CONDITION
                      RSVRIC       4.00  INITIAL CONDITION
                           X       0.00 WORKING R AND D COEFFICIENT

 283 SV            STORAGE        0.0        1.6        7.5       16.0       25.1       34.6       44.7       55.3       66.5

 284 SQ          DISCHARGE         0.        19.        66.       115.       146.       171.       192.       212.       230.

 285 SE          ELEVATION      68.00      70.00      72.00      74.00      76.00      78.00      80.00      82.00      84.00
                                                               ***

     ***           ***            ***            ***            ***

                         HYDROGRAPH AT STATION   DBSRW

 PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
                                          6-HR        24-HR       72-HR     19.93-HR
   (CFS)        (HR)
```

```
                    (CFS)
     219.    7.07                177.          74.          74.          74.
                    (INCHES)      1.518         2.091        2.091        2.091
                    (AC-FT)       88.           121.         121.         121.

PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                    6-HR          24-HR        72-HR     19.93-HR
  (AC-FT)      (HR)
     60.       7.07                40.           14.          14.          14.

PEAK STAGE     TIME                          MAXIMUM AVERAGE STAGE
                                    6-HR          24-HR        72-HR     19.93-HR
  (FEET)       (HR)
    82.79      7.07              78.88         72.62        72.62        72.62

                          CUMULATIVE AREA =    1.09 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
329 KK      *    DBSC33  *
            *            *
            **************

331 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

                HYDROGRAPH ROUTING DATA

332 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC      0.00  INITIAL CONDITION
                         X       0.00 WORKING R AND D COEFFICIENT

333 SV            STORAGE        0.0       2.3       5.0       8.0      11.5      15.4

334 SQ          DISCHARGE         0.       37.      104.      195.      280.      340.

335 SE          ELEVATION       0.00      2.00      4.00      6.00      8.00     10.00
                                                                        ***

     ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION    DBSC33

PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR          24-HR        72-HR     19.93-HR
  (CFS)        (HR)
                    (CFS)
     280.      6.27                58.           21.          21.          21.
                    (INCHES)      2.297         2.687        2.687        2.687
                    (AC-FT)       29.           34.          34.          34.

PEAK STORAGE   TIME                          MAXIMUM AVERAGE STORAGE
                                    6-HR          24-HR        72-HR     19.93-HR
  (AC-FT)      (HR)
     12.       6.27                3.            1.           1.           1.

PEAK STAGE     TIME                          MAXIMUM AVERAGE STAGE
                                    6-HR          24-HR        72-HR     19.93-HR
  (FEET)       (HR)
     8.01      6.27              2.20          0.82         0.82         0.82

                          CUMULATIVE AREA =    0.24 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
344 KK      *      DP53  *
            *            *
            **************

347 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

348 HC          HYDROGRAPH COMBINATION
                     ICOMP          5  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                    ***

     ***             ***             ***             ***             ***

                       HYDROGRAPH AT STATION     DP53

PEAK FLOW      TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR          24-HR        72-HR     19.93-HR
  (CFS)        (HR)
                    (CFS)
```

2967.	6.47		1200.	448.	448.	448.
		(INCHES)	1.576	1.953	1.953	1.953
		(AC-FT)	595.	738.	738.	738.

CUMULATIVE AREA = 7.08 SQ MI

*** ***

```
          **************
          *            *
349 KK    *    DB-3    *
          *            *
          **************
```

354 KO OUTPUT CONTROL VARIABLES

IPRNT	1	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE
IPNCH	10	PUNCH COMPUTED HYDROGRAPH
IOUT	20	SAVE HYDROGRAPH ON THIS UNIT
ISAV1	1	FIRST ORDINATE PUNCHED OR SAVED
ISAV2	300	LAST ORDINATE PUNCHED OR SAVED
TIMINT	0.083	TIME INTERVAL IN HOURS

****
BEGIN POND 6 WATERSHED
****

HYDROGRAPH ROUTING DATA

355 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	ELEV	TYPE OF INITIAL CONDITION
RSVRIC	77.00	INITIAL CONDITION
X	0.00	WORKING R AND D COEFFICIENT

356 SV	STORAGE	0.0	0.6	11.7	24.5	40.2	72.7	89.2	106.4	141.2	0.0
		177.3	214.6								
358 SQ	DISCHARGE	0.	3.	14.	15.	17.	20.	21.	126.	572.	0.
		1200.	1990.								
360 SE	ELEVATION	77.00	78.00	80.00	81.00	82.00	84.00	85.00	86.00	88.00	0.00
		90.00	92.00								

***

****

HYDROGRAPH AT STATION DB-3

****

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	77.0	*	1		0640	101	1055.	155.9	79.1	*	1		1320	201	323.	121.8	61.1
1		0004	2	0.	0.0	77.0	*	1		0644	102	1111.	164.1	83.3	*	1		1324	202	320.	121.5	61.0
1		0008	3	0.	0.0	77.0	*	1		0648	103	1161.	171.5	87.1	*	1		1328	203	317.	121.3	60.9
1		0012	4	0.	0.0	77.0	*	1		0652	104	1218.	178.2	90.0	*	1		1332	204	313.	121.0	60.7
1		0016	5	0.	0.0	77.0	*	1		0656	105	1341.	184.0	90.4	*	1		1336	205	310.	120.8	60.6
1		0020	6	0.	0.0	77.0	*	1		0700	106	1445.	188.9	90.6	*	1		1340	206	307.	120.5	60.5
1		0024	7	0.	0.0	77.0	*	1		0704	107	1532.	193.0	90.8	*	1		1344	207	303.	120.2	60.3
1		0028	8	0.	0.0	77.0	*	1		0708	108	1605.	196.4	91.0	*	1		1348	208	299.	119.9	60.2
1		0032	9	0.	0.0	77.0	*	1		0712	109	1664.	199.2	91.2	*	1		1352	209	296.	119.6	60.0
1		0036	10	0.	0.0	77.0	*	1		0716	110	1712.	201.5	91.3	*	1		1356	210	292.	119.3	59.9
1		0040	11	0.	0.0	77.0	*	1		0720	111	1750.	203.3	91.4	*	1		1400	211	288.	119.1	59.7
1		0044	12	0.	0.0	77.0	*	1		0724	112	1779.	204.6	91.5	*	1		1404	212	284.	118.8	59.6
1		0048	13	0.	0.0	77.0	*	1		0728	113	1799.	205.6	91.5	*	1		1408	213	281.	118.5	59.4
1		0052	14	0.	0.0	77.0	*	1		0732	114	1812.	206.2	91.5	*	1		1412	214	277.	118.2	59.3
1		0056	15	0.	0.0	77.0	*	1		0736	115	1818.	206.5	91.6	*	1		1416	215	273.	117.9	59.1
1		0100	16	0.	0.0	77.0	*	1		0740	116	1819.	206.5	91.6	*	1		1420	216	269.	117.6	59.0
1		0104	17	0.	0.0	77.0	*	1		0744	117	1814.	206.3	91.6	*	1		1424	217	266.	117.3	58.8
1		0108	18	0.	0.0	77.0	*	1		0748	118	1805.	205.9	91.5	*	1		1428	218	262.	117.0	58.7
1		0112	19	0.	0.0	77.0	*	1		0752	119	1791.	205.2	91.5	*	1		1432	219	258.	116.7	58.5
1		0116	20	0.	0.0	77.0	*	1		0756	120	1774.	204.4	91.5	*	1		1436	220	255.	116.5	58.4
1		0120	21	0.	0.0	77.0	*	1		0800	121	1752.	203.4	91.4	*	1		1440	221	252.	116.2	58.2
1		0124	22	0.	0.0	77.0	*	1		0804	122	1727.	202.2	91.3	*	1		1444	222	248.	115.9	58.1
1		0128	23	0.	0.0	77.0	*	1		0808	123	1697.	200.8	91.3	*	1		1448	223	245.	115.7	58.0
1		0132	24	0.	0.0	77.0	*	1		0812	124	1665.	199.3	91.2	*	1		1452	224	242.	115.4	57.9
1		0136	25	0.	0.0	77.0	*	1		0816	125	1630.	197.6	91.1	*	1		1456	225	239.	115.2	57.7
1		0140	26	0.	0.0	77.0	*	1		0820	126	1592.	195.8	91.0	*	1		1500	226	236.	115.0	57.6
1		0144	27	0.	0.0	77.0	*	1		0824	127	1553.	194.0	90.9	*	1		1504	227	233.	114.8	57.5
1		0148	28	0.	0.0	77.0	*	1		0828	128	1513.	192.1	90.8	*	1		1508	228	230.	114.5	57.4
1		0152	29	0.	0.0	77.0	*	1		0832	129	1471.	190.1	90.7	*	1		1512	229	228.	114.3	57.3
1		0156	30	0.	0.0	77.0	*	1		0836	130	1429.	188.1	90.6	*	1		1516	230	225.	114.2	57.2
1		0200	31	0.	0.0	77.0	*	1		0840	131	1386.	186.1	90.5	*	1		1520	231	223.	114.0	57.1
1		0204	32	0.	0.0	77.0	*	1		0844	132	1343.	184.1	90.4	*	1		1524	232	221.	113.8	57.0
1		0208	33	0.	0.0	77.0	*	1		0848	133	1301.	182.0	90.3	*	1		1528	233	219.	113.7	56.9
1		0212	34	0.	0.0	77.0	*	1		0852	134	1258.	180.1	90.1	*	1		1532	234	217.	113.5	56.9
1		0216	35	0.	0.0	77.0	*	1		0856	135	1216.	178.1	90.0	*	1		1536	235	215.	113.4	56.8
1		0220	36	0.	0.0	77.0	*	1		0900	136	1192.	176.1	89.4	*	1		1540	236	214.	113.2	56.7
1		0224	37	0.	0.0	77.0	*	1		0904	137	1177.	173.9	88.3	*	1		1544	237	212.	113.1	56.7
1		0228	38	0.	0.0	77.0	*	1		0908	138	1162.	171.7	87.2	*	1		1548	238	211.	113.0	56.6
1		0232	39	0.	0.0	77.0	*	1		0912	139	1147.	169.4	86.0	*	1		1552	239	210.	112.9	56.6
1		0236	40	0.	0.0	77.0	*	1		0916	140	1130.	167.0	84.8	*	1		1556	240	209.	112.9	56.5
1		0240	41	0.	0.0	77.0	*	1		0920	141	1114.	164.6	83.5	*	1		1600	241	208.	112.8	56.5
1		0244	42	0.	0.0	77.0	*	1		0924	142	1097.	162.1	82.3	*	1		1604	242	207.	112.7	56.5
1		0248	43	0.	0.0	77.0	*	1		0928	143	1080.	159.5	81.0	*	1		1608	243	206.	112.6	56.4
1		0252	44	0.	0.0	77.0	*	1		0932	144	1063.	157.0	79.7	*	1		1612	244	205.	112.6	56.4
1		0256	45	0.	0.0	77.0	*	1		0936	145	1045.	154.5	78.4	*	1		1616	245	205.	112.5	56.4

1	0300	46	0.	0.0	77.0 *	1	0940	146	1028.	151.9	77.1 *	1	1620	246	204.	112.5	56.3
1	0304	47	0.	0.0	77.0 *	1	0944	147	1011.	149.3	75.8 *	1	1624	247	203.	112.4	56.3
1	0308	48	0.	0.0	77.0 *	1	0948	148	994.	146.8	74.5 *	1	1628	248	202.	112.4	56.3
1	0312	49	0.	0.0	77.0 *	1	0952	149	976.	144.2	73.2 *	1	1632	249	202.	112.3	56.2
1	0316	50	0.	0.0	77.0 *	1	0956	150	959.	141.7	71.9 *	1	1636	250	201.	112.3	56.2
1	0320	51	0.	0.0	77.0 *	1	1000	151	560.	140.3	70.7 *	1	1640	251	200.	112.2	56.2
1	0324	52	0.	0.0	77.0 *	1	1004	152	555.	139.9	70.5 *	1	1644	252	200.	112.2	56.2
1	0328	53	0.	0.0	77.0 *	1	1008	153	550.	139.5	70.2 *	1	1648	253	199.	112.1	56.1
1	0332	54	0.	0.0	77.0 *	1	1012	154	544.	139.0	70.0 *	1	1652	254	198.	112.1	56.1
1	0336	55	0.	0.0	77.0 *	1	1016	155	537.	138.5	69.8 *	1	1656	255	198.	112.0	56.1
1	0340	56	0.	0.0	77.0 *	1	1020	156	531.	138.0	69.5 *	1	1700	256	197.	112.0	56.1
1	0344	57	0.	0.0	77.0 *	1	1024	157	524.	137.4	69.2 *	1	1704	257	197.	111.9	56.0
1	0348	58	0.	0.0	77.0 *	1	1028	158	517.	136.9	68.9 *	1	1708	258	196.	111.9	56.0
1	0352	59	0.	0.0	77.0 *	1	1032	159	510.	136.3	68.6 *	1	1712	259	195.	111.8	56.0
1	0356	60	0.	0.0	77.0 *	1	1036	160	503.	135.8	68.4 *	1	1716	260	194.	111.7	55.9
1	0400	61	0.	0.0	77.0 *	1	1040	161	495.	135.2	68.1 *	1	1720	261	193.	111.6	55.9
1	0404	62	0.	0.0	77.0 *	1	1044	162	488.	134.7	67.8 *	1	1724	262	192.	111.5	55.8
1	0408	63	0.	0.0	77.0 *	1	1048	163	481.	134.1	67.5 *	1	1728	263	190.	111.4	55.8
1	0412	64	0.	0.0	77.0 *	1	1052	164	474.	133.6	67.2 *	1	1732	264	189.	111.3	55.7
1	0416	65	0.	0.0	77.0 *	1	1056	165	467.	133.0	66.9 *	1	1736	265	187.	111.2	55.7
1	0420	66	0.	0.0	77.0 *	1	1100	166	460.	132.4	66.6 *	1	1740	266	185.	111.0	55.6
1	0424	67	0.	0.0	77.0 *	1	1104	167	452.	131.9	66.3 *	1	1744	267	184.	110.9	55.5
1	0428	68	0.	0.0	77.0 *	1	1108	168	445.	131.3	66.1 *	1	1748	268	182.	110.8	55.4
1	0432	69	0.	0.0	77.0 *	1	1112	169	439.	130.8	65.8 *	1	1752	269	180.	110.6	55.4
1	0436	70	0.	0.0	77.0 *	1	1116	170	433.	130.3	65.5 *	1	1756	270	178.	110.5	55.3
1	0440	71	0.	0.0	77.0 *	1	1120	171	427.	129.9	65.3 *	1	1800	271	176.	110.3	55.2
1	0444	72	0.	0.0	77.0 *	1	1124	172	422.	129.5	65.1 *	1	1804	272	174.	110.1	55.1
1	0448	73	0.	0.0	77.0 *	1	1128	173	417.	129.1	64.9 *	1	1808	273	172.	110.0	55.0
1	0452	74	0.	0.0	77.0 *	1	1132	174	412.	128.7	64.7 *	1	1812	274	170.	109.8	55.0
1	0456	75	0.	0.0	77.0 *	1	1136	175	407.	128.4	64.5 *	1	1816	275	168.	109.7	54.9
1	0500	76	0.	0.0	77.0 *	1	1140	176	403.	128.0	64.3 *	1	1820	276	166.	109.5	54.8
1	0504	77	0.	0.0	77.0 *	1	1144	177	398.	127.7	64.2 *	1	1824	277	164.	109.4	54.7
1	0508	78	0.	0.0	77.0 *	1	1148	178	394.	127.3	64.0 *	1	1828	278	162.	109.2	54.6
1	0512	79	0.	0.0	77.0 *	1	1152	179	389.	126.9	63.8 *	1	1832	279	160.	109.1	54.6
1	0516	80	0.	0.0	77.0 *	1	1156	180	385.	126.6	63.6 *	1	1836	280	158.	108.9	54.5
1	0520	81	0.	0.0	77.0 *	1	1200	181	381.	126.3	63.4 *	1	1840	281	156.	108.8	54.4
1	0524	82	0.	0.0	77.1 *	1	1204	182	376.	125.9	63.3 *	1	1844	282	155.	108.6	54.3
1	0528	83	0.	0.0	77.1 *	1	1208	183	373.	125.6	63.1 *	1	1848	283	153.	108.5	54.3
1	0532	84	0.	0.1	77.1 *	1	1212	184	369.	125.4	63.0 *	1	1852	284	151.	108.4	54.2
1	0536	85	1.	0.2	77.4 *	1	1216	185	367.	125.2	62.9 *	1	1856	285	150.	108.3	54.2
1	0540	86	3.	0.8	78.0 *	1	1220	186	364.	125.0	62.8 *	1	1900	286	148.	108.1	54.1
1	0544	87	5.	2.2	78.3 *	1	1224	187	362.	124.8	62.7 *	1	1904	287	147.	108.0	54.0
1	0548	88	7.	4.9	78.8 *	1	1228	188	359.	124.6	62.6 *	1	1908	288	146.	107.9	54.0
1	0552	89	12.	9.2	79.5 *	1	1232	189	357.	124.4	62.5 *	1	1912	289	144.	107.8	53.9
1	0556	90	14.	15.4	80.3 *	1	1236	190	355.	124.3	62.4 *	1	1916	290	143.	107.8	53.9
1	0600	91	15.	24.2	81.0 *	1	1240	191	352.	124.1	62.3 *	1	1920	291	142.	107.7	53.9
1	0604	92	16.	35.5	81.7 *	1	1244	192	350.	123.9	62.2 *	1	1924	292	142.	107.6	53.8
1	0608	93	18.	48.3	82.5 *	1	1248	193	347.	123.6	62.1 *	1	1928	293	141.	107.6	53.8
1	0612	94	19.	61.7	83.3 *	1	1252	194	344.	123.4	62.0 *	1	1932	294	140.	107.5	53.8
1	0616	95	20.	75.8	84.2 *	1	1256	195	341.	123.2	61.9 *	1	1936	295	140.	107.5	53.8
1	0620	96	30.	90.7	45.2 *	1	1300	196	338.	123.0	61.7 *	1	1940	296	140.	107.5	53.7
1	0624	97	125.	106.3	53.1 *	1	1304	197	335.	122.7	61.6 *	1	1944	297	140.	107.5	53.7
1	0628	98	318.	121.4	60.9 *	1	1308	198	332.	122.5	61.5 *	1	1948	298	140.	107.5	53.7
1	0632	99	496.	135.3	68.1 *	1	1312	199	329.	122.2	61.4 *	1	1952	299	140.	107.5	53.7
1	0636	100	993.	146.7	74.5 *	1	1316	200	326.	122.0	61.2 *	1	1956	300	140.	107.5	53.7
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 PEAK FLOW     TIME                               MAXIMUM AVERAGE FLOW
                                      6-HR         24-HR        72-HR       19.93-HR
   (CFS)       (HR)
                          (CFS)
   1819.       7.67                    988.          383.         383.         383.
                        (INCHES)      1.298         1.668        1.668        1.668
                         (AC-FT)       490.          630.         630.         630.

PEAK STORAGE   TIME                             MAXIMUM AVERAGE STORAGE
                                      6-HR         24-HR        72-HR       19.93-HR
  (AC-FT)      (HR)
    207.       7.67                    160.           93.          93.          93.

 PEAK STAGE    TIME                               MAXIMUM AVERAGE STAGE
                                      6-HR         24-HR        72-HR       19.93-HR
  (FEET)       (HR)
   91.57       7.67                   82.47         69.79        69.79        69.79

                        CUMULATIVE AREA =    7.08 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
370 KK      *   DBSC61   *
            *            *
            **************

372 KO           OUTPUT CONTROL VARIABLES
                      IPRNT          3  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

373 RS           STORAGE ROUTING
                      NSTPS          1  NUMBER OF SUBREACHES
                       ITYP       ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC       0.00  INITIAL CONDITION
                          X       0.00 WORKING R AND D COEFFICIENT

374 SV             STORAGE          0.0        2.2        5.0        8.0        11.2
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375 SQ          DISCHARGE          0.       23.       64.       90.       117.

376 SE          ELEVATION        0.00      2.00      4.00      6.00      8.00
                                                                  ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION   DBSC61

PEAK FLOW     TIME                                MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR     19.93-HR
  (CFS)       (HR)
                          (CFS)
    84.       6.47                      29.          10.          10.          10.
                        (INCHES)       2.511        2.946        2.946        2.946
                         (AC-FT)         14.          17.          17.          17.

PEAK STORAGE  TIME                              MAXIMUM AVERAGE STORAGE
                                        6-HR        24-HR        72-HR     19.93-HR
  (AC-FT)     (HR)
     7.       6.47                       3.           1.           1.           1.

PEAK STAGE    TIME                              MAXIMUM AVERAGE STAGE
                                        6-HR        24-HR        72-HR     19.93-HR
  (FEET)      (HR)
    5.54      6.47                     2.09         0.76         0.76         0.76

                      CUMULATIVE AREA =    0.11 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
390 KK    *    DBSC63  *
          *            *
          **************

392 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

              HYDROGRAPH ROUTING DATA

393 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC      0.00  INITIAL CONDITION
                          X      0.00 WORKING R AND D COEFFICIENT

394 SV            STORAGE         0.0       2.3       4.8       7.6       11.7

395 SQ          DISCHARGE          0.       20.       48.       70.       100.

396 SE          ELEVATION        0.00      2.00      4.00      6.00      8.00
                                                                  ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION   DBSC63

PEAK FLOW     TIME                                MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR     19.93-HR
  (CFS)       (HR)
                          (CFS)
    96.       6.40                      40.          14.          14.          14.
                        (INCHES)       2.145        2.574        2.574        2.574
                         (AC-FT)         20.          24.          24.          24.

PEAK STORAGE  TIME                              MAXIMUM AVERAGE STORAGE
                                        6-HR        24-HR        72-HR     19.93-HR
  (AC-FT)     (HR)
    11.       6.40                       4.           2.           2.           2.

PEAK STAGE    TIME                              MAXIMUM AVERAGE STAGE
                                        6-HR        24-HR        72-HR     19.93-HR
  (FEET)      (HR)
    7.72      6.40                     3.46         1.28         1.28         1.28

                      CUMULATIVE AREA =    0.17 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
412 KK    *    DBSC64  *
          *            *
          **************

414 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
```

HYDROGRAPH ROUTING DATA

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415 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                     ITYP       ELEV  TYPE OF INITIAL CONDITION
                    RSVRIC       0.00  INITIAL CONDITION
                         X       0.00 WORKING R AND D COEFFICIENT

416 SV            STORAGE        0.0        3.3        7.1       11.4       15.9

417 SQ           DISCHARGE         0.        16.        37.        53.        65.

418 SE           ELEVATION       0.00       2.00       4.00       6.00       8.00
                                                                    ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION    DBSC64

 PEAK FLOW      TIME                              MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR     19.93-HR
   (CFS)        (HR)
                                (CFS)
      53.       6.40                   30.          12.          12.          12.
                              (INCHES)  2.829        3.588        3.588        3.588
                               (AC-FT)   15.          19.          19.          19.

PEAK STORAGE    TIME                           MAXIMUM AVERAGE STORAGE
                                        6-HR        24-HR        72-HR     19.93-HR
   (AC-FT)      (HR)
      11.       6.40                    6.           2.           2.           2.

 PEAK STAGE     TIME                           MAXIMUM AVERAGE STAGE
                                        6-HR        24-HR        72-HR     19.93-HR
   (FEET)       (HR)
      6.00      6.40                   3.46         1.35         1.35         1.35

                        CUMULATIVE AREA =    0.10 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


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            *            *
432 KK      *     DP54   *
            *            *
            **************

435 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

436 HC          HYDROGRAPH COMBINATION
                     ICOMP          4  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                    ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION    DP54

 PEAK FLOW      TIME                              MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR     19.93-HR
   (CFS)        (HR)
                                (CFS)
    1382.       6.07                  240.          86.          86.          86.
                              (INCHES)  2.324        2.760        2.760        2.760
                               (AC-FT)   119.         141.         141.         141.

                        CUMULATIVE AREA =    0.96 SQ MI


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            *            *
437 KK      *      DB-6  *
            *            *
            **************

441 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          1  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                     IPNCH         10  PUNCH COMPUTED HYDROGRAPH
                      IOUT         20  SAVE HYDROGRAPH ON THIS UNIT
                     ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                     ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                    TIMINT      0.083  TIME INTERVAL IN HOURS

                          ************************************************************************
                          BEGIN THE DIRECT DISCHARGE WATERSHED OF POND 2
                          ************************************************************************

HYDROGRAPH ROUTING DATA
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442 RS          STORAGE ROUTING
                    NSTPS          1  NUMBER OF SUBREACHES
                     ITYP       ELEV  TYPE OF INITIAL CONDITION
                    RSVRIC      60.00 INITIAL CONDITION
                        X        0.00 WORKING R AND D COEFFICIENT

443 SV          STORAGE          0.0       0.1       0.4       1.6       4.0       8.4      11.5      15.3      24.5       0.0
                                36.2      50.6      68.6

445 SQ          DISCHARGE        0.        8.       22.       41.       62.       78.       84.      132.      210.       0.
                               251.      286.      316.

447 SE          ELEVATION       60.00     62.00     64.00     66.00     68.00     70.00     71.00     72.00     74.00      0.00
                                76.00     78.00     80.00

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HYDROGRAPH AT STATION DB-6

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	60.0	1		0640	101	283.	49.3	77.8	1		1320	201	76.	7.7	16.3
1		0004	2	0.	0.0	60.0	1		0644	102	284.	49.8	77.9	1		1324	202	75.	7.5	15.9
1		0008	3	0.	0.0	60.0	1		0648	103	285.	50.1	77.9	1		1328	203	74.	7.3	15.4
1		0012	4	0.	0.0	60.0	1		0652	104	285.	50.3	78.0	1		1332	204	73.	7.1	15.0
1		0016	5	0.	0.0	60.0	1		0656	105	286.	50.5	78.0	1		1336	205	72.	6.8	14.5
1		0020	6	0.	0.0	60.0	1		0700	106	286.	50.5	78.0	1		1340	206	72.	6.6	14.1
1		0024	7	0.	0.0	60.0	1		0704	107	286.	50.5	78.0	1		1344	207	71.	6.4	13.6
1		0028	8	0.	0.0	60.0	1		0708	108	286.	50.5	78.0	1		1348	208	70.	6.2	13.2
1		0032	9	0.	0.0	60.0	1		0712	109	286.	50.4	78.0	1		1352	209	69.	6.0	12.8
1		0036	10	0.	0.0	60.0	1		0716	110	285.	50.2	77.9	1		1356	210	69.	5.8	12.4
1		0040	11	0.	0.0	60.0	1		0720	111	285.	50.0	77.9	1		1400	211	68.	5.6	11.9
1		0044	12	0.	0.0	60.0	1		0724	112	284.	49.7	77.9	1		1404	212	67.	5.4	11.5
1		0048	13	0.	0.0	60.0	1		0728	113	283.	49.4	77.8	1		1408	213	67.	5.2	11.1
1		0052	14	0.	0.0	60.0	1		0732	114	282.	49.0	77.8	1		1412	214	66.	5.0	10.7
1		0056	15	0.	0.0	60.0	1		0736	115	281.	48.6	77.7	1		1416	215	65.	4.8	10.4
1		0100	16	0.	0.0	60.0	1		0740	116	280.	48.1	77.7	1		1420	216	65.	4.7	10.0
1		0104	17	0.	0.0	60.0	1		0744	117	279.	47.7	77.6	1		1424	217	64.	4.5	9.6
1		0108	18	0.	0.0	60.0	1		0748	118	278.	47.3	77.5	1		1428	218	63.	4.3	9.3
1		0112	19	0.	0.0	60.0	1		0752	119	277.	46.8	77.5	1		1432	219	63.	4.2	9.0
1		0116	20	0.	0.0	60.0	1		0756	120	276.	46.3	77.4	1		1436	220	62.	4.0	8.6
1		0120	21	0.	0.0	60.0	1		0800	121	275.	45.9	77.3	1		1440	221	61.	3.8	8.3
1		0124	22	0.	0.0	60.0	1		0804	122	273.	45.4	77.3	1		1444	222	60.	3.7	8.0
1		0128	23	0.	0.0	60.0	1		0808	123	272.	44.9	77.2	1		1448	223	58.	3.6	7.7
1		0132	24	0.	0.0	60.0	1		0812	124	271.	44.3	77.1	1		1452	224	57.	3.4	7.4
1		0136	25	0.	0.0	60.0	1		0816	125	269.	43.7	77.0	1		1456	225	56.	3.3	7.1
1		0140	26	0.	0.0	60.0	1		0820	126	268.	43.0	76.9	1		1500	226	55.	3.2	6.8
1		0144	27	0.	0.0	60.0	1		0824	127	266.	42.3	76.9	1		1504	227	54.	3.0	6.6
1		0148	28	0.	0.0	60.0	1		0828	128	264.	41.6	76.8	1		1508	228	53.	2.9	6.3
1		0152	29	0.	0.0	60.0	1		0832	129	262.	40.8	76.6	1		1512	229	52.	2.8	6.1
1		0156	30	0.	0.0	60.0	1		0836	130	261.	40.1	76.5	1		1516	230	51.	2.7	5.9
1		0200	31	0.	0.0	60.0	1		0840	131	259.	39.3	76.4	1		1520	231	50.	2.6	5.7
1		0204	32	0.	0.0	60.0	1		0844	132	257.	38.5	76.3	1		1524	232	49.	2.5	5.5
1		0208	33	0.	0.0	60.0	1		0848	133	255.	37.7	76.2	1		1528	233	48.	2.4	5.3
1		0212	34	0.	0.0	60.0	1		0852	134	253.	36.9	76.1	1		1532	234	48.	2.3	5.1
1		0216	35	0.	0.0	60.0	1		0856	135	251.	36.1	76.0	1		1536	235	47.	2.3	4.9
1		0220	36	0.	0.0	60.0	1		0900	136	245.	35.3	74.3	1		1540	236	46.	2.2	4.7
1		0224	37	0.	0.0	60.0	1		0904	137	240.	34.6	72.6	1		1544	237	46.	2.1	4.6
1		0228	38	0.	0.0	60.0	1		0908	138	235.	33.8	71.0	1		1548	238	45.	2.0	4.5
1		0232	39	0.	0.0	60.0	1		0912	139	229.	33.1	69.5	1		1552	239	45.	2.0	4.3
1		0236	40	0.	0.0	60.0	1		0916	140	224.	32.3	67.9	1		1556	240	44.	1.9	4.2
1		0240	41	0.	0.0	60.0	1		0920	141	219.	31.6	66.4	1		1600	241	44.	1.9	4.1
1		0244	42	0.	0.0	60.0	1		0924	142	215.	30.9	65.0	1		1604	242	43.	1.8	4.0
1		0248	43	0.	0.0	60.0	1		0928	143	210.	30.2	63.5	1		1608	243	43.	1.8	3.9
1		0252	44	0.	0.0	60.0	1		0932	144	205.	29.6	62.1	1		1612	244	42.	1.7	3.8
1		0256	45	0.	0.0	60.0	1		0936	145	201.	28.9	60.8	1		1616	245	42.	1.7	3.7
1		0300	46	0.	0.0	60.0	1		0940	146	196.	28.3	59.4	1		1620	246	41.	1.6	3.6
1		0304	47	0.	0.0	60.0	1		0944	147	192.	27.7	58.1	1		1624	247	41.	1.6	3.4
1		0308	48	0.	0.0	60.0	1		0948	148	188.	27.1	56.9	1		1628	248	40.	1.5	3.3
1		0312	49	0.	0.0	60.0	1		0952	149	184.	26.5	55.7	1		1632	249	39.	1.4	3.2
1		0316	50	0.	0.0	60.0	1		0956	150	180.	25.9	54.5	1		1636	250	38.	1.4	3.1
1		0320	51	0.	0.0	60.0	1		1000	151	176.	25.4	53.3	1		1640	251	37.	1.3	3.0
1		0324	52	0.	0.0	60.0	1		1004	152	172.	24.8	52.2	1		1644	252	36.	1.3	2.9
1		0328	53	0.	0.0	60.0	1		1008	153	207.	24.2	51.0	1		1648	253	36.	1.3	2.8
1		0332	54	0.	0.0	60.0	1		1012	154	201.	23.4	49.5	1		1652	254	35.	1.2	2.7
1		0336	55	0.	0.0	60.0	1		1016	155	195.	22.7	47.9	1		1656	255	34.	1.2	2.6
1		0340	56	0.	0.0	60.0	1		1020	156	189.	22.0	46.4	1		1700	256	34.	1.1	2.6
1		0344	57	0.	0.0	60.0	1		1024	157	183.	21.3	45.0	1		1704	257	33.	1.1	2.5
1		0348	58	0.	0.0	60.0	1		1028	158	177.	20.6	43.5	1		1708	258	33.	1.1	2.4
1		0352	59	0.	0.0	60.0	1		1032	159	171.	20.0	42.1	1		1712	259	32.	1.0	2.3
1		0356	60	0.	0.0	60.0	1		1036	160	166.	19.3	40.8	1		1716	260	31.	1.0	2.2
1		0400	61	0.	0.0	60.0	1		1040	161	161.	18.7	39.5	1		1720	261	31.	0.9	2.1
1		0404	62	0.	0.0	60.0	1		1044	162	156.	18.1	38.3	1		1724	262	30.	0.9	2.0
1		0408	63	0.	0.0	60.0	1		1048	163	151.	17.6	37.1	1		1728	263	29.	0.9	1.9
1		0412	64	0.	0.0	60.0	1		1052	164	146.	17.0	35.9	1		1732	264	28.	0.8	1.8
1		0416	65	0.	0.0	60.0	1		1056	165	142.	16.5	34.8	1		1736	265	28.	0.8	1.7
1		0420	66	0.	0.0	60.0	1		1100	166	138.	16.0	33.7	1		1740	266	27.	0.7	1.6
1		0424	67	0.	0.0	60.0	1		1104	167	133.	15.5	32.7	1		1744	267	26.	0.7	1.5
1		0428	68	0.	0.0	60.0	1		1108	168	128.	15.0	31.7	1		1748	268	25.	0.6	1.4
1		0432	69	0.	0.0	60.1	1		1112	169	123.	14.6	30.9	1		1752	269	25.	0.6	1.4
1		0436	70	0.	0.0	60.1	1		1116	170	119.	14.3	30.1	1		1756	270	24.	0.6	1.3
1		0440	71	1.	0.0	60.1	1		1120	171	115.	14.0	29.5	1		1800	271	24.	0.5	1.2
1		0444	72	1.	0.0	60.2	1		1124	172	112.	13.7	28.9	1		1804	272	23.	0.5	1.1
1		0448	73	1.	0.0	60.2	1		1128	173	109.	13.5	28.4	1		1808	273	23.	0.5	1.1
1		0452	74	1.	0.0	60.2	1		1132	174	106.	13.3	28.0	1		1812	274	22.	0.4	1.0
1		0456	75	1.	0.0	60.2	1		1136	175	104.	13.1	27.6	1		1816	275	22.	0.4	1.0
1		0500	76	1.	0.0	60.2	1		1140	176	101.	12.9	27.1	1		1820	276	22.	0.4	1.0
1		0504	77	1.	0.0	60.3	1		1144	177	99.	12.7	26.7	1		1824	277	22.	0.4	1.0
1		0508	78	1.	0.0	60.3	1		1148	178	96.	12.4	26.2	1		1828	278	22.	0.4	1.0

1	0512	79	2.	0.0	60.5	*	1	1152	179	93.	12.2	25.7	*	1	1832	279	22.	0.4	1.1
1	0516	80	3.	0.0	60.7	*	1	1156	180	90.	12.0	25.2	*	1	1836	280	23.	0.5	1.1
1	0520	81	3.	0.0	60.9	*	1	1200	181	87.	11.7	24.7	*	1	1840	281	23.	0.5	1.1
1	0524	82	4.	0.0	61.1	*	1	1204	182	84.	11.5	24.2	*	1	1844	282	23.	0.5	1.1
1	0528	83	5.	0.0	61.2	*	1	1208	183	84.	11.3	23.7	*	1	1848	283	23.	0.5	1.1
1	0532	84	8.	0.0	61.9	*	1	1212	184	83.	11.1	23.3	*	1	1852	284	23.	0.5	1.1
1	0536	85	13.	0.2	62.7	*	1	1216	185	83.	10.9	22.9	*	1	1856	285	23.	0.5	1.1
1	0540	86	26.	0.7	64.5	*	1	1220	186	82.	10.7	22.5	*	1	1900	286	23.	0.5	1.2
1	0544	87	44.	2.0	66.3	*	1	1224	187	82.	10.5	22.2	*	1	1904	287	23.	0.5	1.2
1	0548	88	63.	4.3	68.1	*	1	1228	188	82.	10.4	21.8	*	1	1908	288	23.	0.5	1.2
1	0552	89	76.	7.8	69.8	*	1	1232	189	81.	10.2	21.5	*	1	1912	289	24.	0.5	1.2
1	0556	90	97.	12.6	71.3	*	1	1236	190	81.	10.0	21.2	*	1	1916	290	24.	0.5	1.2
1	0600	91	157.	18.3	38.6	*	1	1240	191	81.	9.9	20.8	*	1	1920	291	24.	0.5	1.2
1	0604	92	171.	24.7	51.8	*	1	1244	192	81.	9.7	20.4	*	1	1924	292	24.	0.5	1.2
1	0608	93	215.	31.0	65.2	*	1	1248	193	80.	9.5	20.0	*	1	1928	293	24.	0.5	1.2
1	0612	94	252.	36.4	76.0	*	1	1252	194	80.	9.3	19.6	*	1	1932	294	24.	0.5	1.2
1	0616	95	262.	40.5	76.6	*	1	1256	195	79.	9.1	19.1	*	1	1936	295	24.	0.5	1.3
1	0620	96	268.	43.4	77.0	*	1	1300	196	79.	8.8	18.7	*	1	1940	296	24.	0.5	1.3
1	0624	97	273.	45.3	77.3	*	1	1304	197	78.	8.6	18.2	*	1	1944	297	24.	0.6	1.3
1	0628	98	277.	46.8	77.5	*	1	1308	198	78.	8.4	17.7	*	1	1948	298	24.	0.6	1.3
1	0632	99	279.	47.9	77.6	*	1	1312	199	77.	8.2	17.3	*	1	1952	299	24.	0.6	1.3
1	0636	100	281.	48.7	77.7	*	1	1316	200	76.	7.9	16.8	*	1	1956	300	24.	0.6	1.3

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	19.93-HR
(CFS)	(HR)					
		(CFS)				
286.	7.07		216.	85.	85.	85.
		(INCHES)	2.095	2.749	2.749	2.749
		(AC-FT)	107.	141.	141.	141.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	19.93-HR
(AC-FT)	(HR)				
51.	7.07	33.	11.	11.	11.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	19.93-HR
(FEET)	(HR)				
77.99	7.07	69.18	39.35	39.35	39.35

CUMULATIVE AREA = 0.96 SQ MI

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          *            *
452 KK    *   SC2-29   *
          *            *
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454 KO         OUTPUT CONTROL VARIABLES
                    IPRNT          1  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE
                    IPNCH         10  PUNCH COMPUTED HYDROGRAPH
                     IOUT         20  SAVE HYDROGRAPH ON THIS UNIT
                    ISAV1          1  FIRST ORDINATE PUNCHED OR SAVED
                    ISAV2        300  LAST ORDINATE PUNCHED OR SAVED
                   TIMINT      0.083  TIME INTERVAL IN HOURS

             SUBBASIN RUNOFF DATA

455 BA         SUBBASIN CHARACTERISTICS
                    TAREA       0.03  SUBBASIN AREA

               PRECIPITATION DATA

 14 PB              STORM       4.40  BASIN TOTAL PRECIPITATION

 15 PI           INCREMENTAL PRECIPITATION PATTERN
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0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.04	0.08	0.08	0.08	0.08	0.08	0.08	0.08
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

456 LS SCS LOSS RATE

STRTL	0.13	INITIAL ABSTRACTION
CRVNBR	94.00	CURVE NUMBER
RTIMP	0.00	PERCENT IMPERVIOUS AREA

457 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	0.15	LAG

***

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

UNIT HYDROGRAPH
13 END-OF-PERIOD ORDINATES

24.	75.	87.	62.	32.	18.	10.	5.	3.	2.
1.	1.	0.							

****

HYDROGRAPH AT STATION SC2-29

****

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
								*								
1		0000	1	0.00	0.00	0.00	0.	*	1		1000	151	0.01	0.00	0.01	2.
1		0004	2	0.00	0.00	0.00	0.	*	1		1004	152	0.00	0.00	0.00	2.
1		0008	3	0.00	0.00	0.00	0.	*	1		1008	153	0.00	0.00	0.00	2.
1		0012	4	0.00	0.00	0.00	0.	*	1		1012	154	0.00	0.00	0.00	1.
1		0016	5	0.00	0.00	0.00	0.	*	1		1016	155	0.00	0.00	0.00	1.
1		0020	6	0.00	0.00	0.00	0.	*	1		1020	156	0.00	0.00	0.00	1.
1		0024	7	0.00	0.00	0.00	0.	*	1		1024	157	0.00	0.00	0.00	1.
1		0028	8	0.00	0.00	0.00	0.	*	1		1028	158	0.00	0.00	0.00	1.
1		0032	9	0.00	0.00	0.00	0.	*	1		1032	159	0.00	0.00	0.00	1.
1		0036	10	0.00	0.00	0.00	0.	*	1		1036	160	0.00	0.00	0.00	1.
1		0040	11	0.00	0.00	0.00	0.	*	1		1040	161	0.00	0.00	0.00	1.
1		0044	12	0.00	0.00	0.00	0.	*	1		1044	162	0.00	0.00	0.00	1.
1		0048	13	0.00	0.00	0.00	0.	*	1		1048	163	0.00	0.00	0.00	1.
1		0052	14	0.00	0.00	0.00	0.	*	1		1052	164	0.00	0.00	0.00	1.
1		0056	15	0.00	0.00	0.00	0.	*	1		1056	165	0.00	0.00	0.00	1.
1		0100	16	0.00	0.00	0.00	0.	*	1		1100	166	0.00	0.00	0.00	1.
1		0104	17	0.00	0.00	0.00	0.	*	1		1104	167	0.01	0.00	0.01	1.
1		0108	18	0.00	0.00	0.00	0.	*	1		1108	168	0.01	0.00	0.01	2.
1		0112	19	0.00	0.00	0.00	0.	*	1		1112	169	0.01	0.00	0.01	2.
1		0116	20	0.00	0.00	0.00	0.	*	1		1116	170	0.01	0.00	0.01	2.
1		0120	21	0.00	0.00	0.00	0.	*	1		1120	171	0.01	0.00	0.01	3.
1		0124	22	0.00	0.00	0.00	0.	*	1		1124	172	0.01	0.00	0.01	3.
1		0128	23	0.00	0.00	0.00	0.	*	1		1128	173	0.01	0.00	0.01	3.
1		0132	24	0.00	0.00	0.00	0.	*	1		1132	174	0.01	0.00	0.01	3.
1		0136	25	0.00	0.00	0.00	0.	*	1		1136	175	0.00	0.00	0.00	2.
1		0140	26	0.00	0.00	0.00	0.	*	1		1140	176	0.00	0.00	0.00	2.
1		0144	27	0.00	0.00	0.00	0.	*	1		1144	177	0.00	0.00	0.00	2.
1		0148	28	0.00	0.00	0.00	0.	*	1		1148	178	0.00	0.00	0.00	1.
1		0152	29	0.00	0.00	0.00	0.	*	1		1152	179	0.00	0.00	0.00	1.
1		0156	30	0.00	0.00	0.00	0.	*	1		1156	180	0.00	0.00	0.00	1.
1		0200	31	0.00	0.00	0.00	0.	*	1		1200	181	0.00	0.00	0.00	1.
1		0204	32	0.00	0.00	0.00	0.	*	1		1204	182	0.01	0.00	0.01	1.
1		0208	33	0.00	0.00	0.00	0.	*	1		1208	183	0.01	0.00	0.01	1.
1		0212	34	0.00	0.00	0.00	0.	*	1		1212	184	0.01	0.00	0.01	1.
1		0216	35	0.00	0.00	0.00	0.	*	1		1216	185	0.01	0.00	0.01	2.
1		0220	36	0.00	0.00	0.00	0.	*	1		1220	186	0.01	0.00	0.01	2.
1		0224	37	0.00	0.00	0.00	0.	*	1		1224	187	0.01	0.00	0.01	2.
1		0228	38	0.00	0.00	0.00	0.	*	1		1228	188	0.01	0.00	0.01	2.
1		0232	39	0.00	0.00	0.00	0.	*	1		1232	189	0.00	0.00	0.00	2.
1		0236	40	0.00	0.00	0.00	0.	*	1		1236	190	0.00	0.00	0.00	2.
1		0240	41	0.00	0.00	0.00	0.	*	1		1240	191	0.00	0.00	0.00	1.
1		0244	42	0.00	0.00	0.00	0.	*	1		1244	192	0.00	0.00	0.00	1.
1		0248	43	0.00	0.00	0.00	0.	*	1		1248	193	0.00	0.00	0.00	1.
1		0252	44	0.00	0.00	0.00	0.	*	1		1252	194	0.00	0.00	0.00	1.
1		0256	45	0.00	0.00	0.00	0.	*	1		1256	195	0.00	0.00	0.00	1.
1		0300	46	0.00	0.00	0.00	0.	*	1		1300	196	0.00	0.00	0.00	1.
1		0304	47	0.00	0.00	0.00	0.	*	1		1304	197	0.00	0.00	0.00	1.
1		0308	48	0.00	0.00	0.00	0.	*	1		1308	198	0.00	0.00	0.00	1.
1		0312	49	0.00	0.00	0.00	0.	*	1		1312	199	0.00	0.00	0.00	1.
1		0316	50	0.00	0.00	0.00	0.	*	1		1316	200	0.00	0.00	0.00	1.
1		0320	51	0.00	0.00	0.00	0.	*	1		1320	201	0.00	0.00	0.00	1.
1		0324	52	0.00	0.00	0.00	0.	*	1		1324	202	0.00	0.00	0.00	1.
1		0328	53	0.00	0.00	0.00	0.	*	1		1328	203	0.00	0.00	0.00	1.
1		0332	54	0.00	0.00	0.00	0.	*	1		1332	204	0.00	0.00	0.00	1.
1		0336	55	0.00	0.00	0.00	0.	*	1		1336	205	0.00	0.00	0.00	1.
1		0340	56	0.00	0.00	0.00	0.	*	1		1340	206	0.00	0.00	0.00	1.
1		0344	57	0.00	0.00	0.00	0.	*	1		1344	207	0.00	0.00	0.00	1.
1		0348	58	0.00	0.00	0.00	0.	*	1		1348	208	0.00	0.00	0.00	1.
1		0352	59	0.00	0.00	0.00	0.	*	1		1352	209	0.00	0.00	0.00	1.
1		0356	60	0.00	0.00	0.00	0.	*	1		1356	210	0.00	0.00	0.00	1.
1		0400	61	0.00	0.00	0.00	0.	*	1		1400	211	0.00	0.00	0.00	1.
1		0404	62	0.01	0.01	0.00	0.	*	1		1404	212	0.00	0.00	0.00	1.
1		0408	63	0.01	0.01	0.00	0.	*	1		1408	213	0.00	0.00	0.00	1.
1		0412	64	0.01	0.01	0.00	0.	*	1		1412	214	0.00	0.00	0.00	1.
1		0416	65	0.01	0.01	0.00	0.	*	1		1416	215	0.00	0.00	0.00	1.
1		0420	66	0.01	0.01	0.00	0.	*	1		1420	216	0.00	0.00	0.00	1.
1		0424	67	0.01	0.01	0.00	0.	*	1		1424	217	0.00	0.00	0.00	1.
1		0428	68	0.01	0.01	0.00	1.	*	1		1428	218	0.00	0.00	0.00	1.
1		0432	69	0.01	0.01	0.00	1.	*	1		1432	219	0.00	0.00	0.00	1.
1		0436	70	0.01	0.00	0.00	1.	*	1		1436	220	0.00	0.00	0.00	1.
1		0440	71	0.01	0.00	0.00	1.	*	1		1440	221	0.00	0.00	0.00	1.
1		0444	72	0.01	0.00	0.00	1.	*	1		1444	222	0.00	0.00	0.00	1.
1		0448	73	0.01	0.00	0.00	1.	*	1		1448	223	0.00	0.00	0.00	1.
1		0452	74	0.01	0.00	0.00	1.	*	1		1452	224	0.00	0.00	0.00	1.

1	0456	75	0.01	0.00	0.00	1.	*	1	1456	225	0.00	0.00	0.00	1.
1	0500	76	0.01	0.00	0.00	1.	*	1	1500	226	0.00	0.00	0.00	1.
1	0504	77	0.02	0.02	0.01	1.	*	1	1504	227	0.00	0.00	0.00	1.
1	0508	78	0.02	0.01	0.01	1.	*	1	1508	228	0.00	0.00	0.00	1.
1	0512	79	0.02	0.01	0.01	2.	*	1	1512	229	0.00	0.00	0.00	1.
1	0516	80	0.02	0.01	0.01	3.	*	1	1516	230	0.00	0.00	0.00	1.
1	0520	81	0.02	0.01	0.01	3.	*	1	1520	231	0.00	0.00	0.00	1.
1	0524	82	0.02	0.01	0.01	3.	*	1	1524	232	0.00	0.00	0.00	1.
1	0528	83	0.02	0.01	0.01	4.	*	1	1528	233	0.00	0.00	0.00	1.
1	0532	84	0.19	0.07	0.12	6.	*	1	1532	234	0.00	0.00	0.00	1.
1	0536	85	0.36	0.09	0.28	18.	*	1	1536	235	0.00	0.00	0.00	1.
1	0540	86	0.36	0.05	0.31	40.	*	1	1540	236	0.00	0.00	0.00	1.
1	0544	87	0.36	0.04	0.33	63.	*	1	1544	237	0.00	0.00	0.00	1.
1	0548	88	0.36	0.03	0.34	81.	*	1	1548	238	0.00	0.00	0.00	1.
1	0552	89	0.36	0.02	0.34	92.	*	1	1552	239	0.00	0.00	0.00	1.
1	0556	90	0.36	0.02	0.35	100.	*	1	1556	240	0.00	0.00	0.00	1.
1	0600	91	0.36	0.01	0.35	104.	*	1	1600	241	0.00	0.00	0.00	1.
1	0604	92	0.03	0.00	0.03	100.	*	1	1604	242	0.00	0.00	0.00	1.
1	0608	93	0.03	0.00	0.03	78.	*	1	1608	243	0.00	0.00	0.00	1.
1	0612	94	0.03	0.00	0.03	51.	*	1	1612	244	0.00	0.00	0.00	1.
1	0616	95	0.03	0.00	0.03	32.	*	1	1616	245	0.00	0.00	0.00	1.
1	0620	96	0.03	0.00	0.03	22.	*	1	1620	246	0.00	0.00	0.00	1.
1	0624	97	0.03	0.00	0.03	16.	*	1	1624	247	0.00	0.00	0.00	1.
1	0628	98	0.03	0.00	0.03	13.	*	1	1628	248	0.00	0.00	0.00	1.
1	0632	99	0.02	0.00	0.02	11.	*	1	1632	249	0.00	0.00	0.00	1.
1	0636	100	0.02	0.00	0.02	10.	*	1	1636	250	0.00	0.00	0.00	1.
1	0640	101	0.02	0.00	0.02	8.	*	1	1640	251	0.00	0.00	0.00	1.
1	0644	102	0.02	0.00	0.02	7.	*	1	1644	252	0.00	0.00	0.00	1.
1	0648	103	0.02	0.00	0.02	6.	*	1	1648	253	0.00	0.00	0.00	1.
1	0652	104	0.02	0.00	0.02	6.	*	1	1652	254	0.00	0.00	0.00	1.
1	0656	105	0.02	0.00	0.02	6.	*	1	1656	255	0.00	0.00	0.00	1.
1	0700	106	0.02	0.00	0.02	6.	*	1	1700	256	0.00	0.00	0.00	1.
1	0704	107	0.01	0.00	0.01	6.	*	1	1704	257	0.00	0.00	0.00	1.
1	0708	108	0.01	0.00	0.01	5.	*	1	1708	258	0.00	0.00	0.00	1.
1	0712	109	0.01	0.00	0.01	4.	*	1	1712	259	0.00	0.00	0.00	1.
1	0716	110	0.01	0.00	0.01	4.	*	1	1716	260	0.00	0.00	0.00	1.
1	0720	111	0.01	0.00	0.01	4.	*	1	1720	261	0.00	0.00	0.00	1.
1	0724	112	0.01	0.00	0.01	4.	*	1	1724	262	0.00	0.00	0.00	1.
1	0728	113	0.01	0.00	0.01	3.	*	1	1728	263	0.00	0.00	0.00	0.
1	0732	114	0.01	0.00	0.01	3.	*	1	1732	264	0.00	0.00	0.00	0.
1	0736	115	0.01	0.00	0.01	4.	*	1	1736	265	0.00	0.00	0.00	0.
1	0740	116	0.01	0.00	0.01	4.	*	1	1740	266	0.00	0.00	0.00	0.
1	0744	117	0.01	0.00	0.01	4.	*	1	1744	267	0.00	0.00	0.00	0.
1	0748	118	0.01	0.00	0.01	4.	*	1	1748	268	0.00	0.00	0.00	0.
1	0752	119	0.01	0.00	0.01	4.	*	1	1752	269	0.00	0.00	0.00	0.
1	0756	120	0.01	0.00	0.01	4.	*	1	1756	270	0.00	0.00	0.00	0.
1	0800	121	0.01	0.00	0.01	4.	*	1	1800	271	0.00	0.00	0.00	0.
1	0804	122	0.01	0.00	0.01	4.	*	1	1804	272	0.00	0.00	0.00	1.
1	0808	123	0.01	0.00	0.01	3.	*	1	1808	273	0.00	0.00	0.00	1.
1	0812	124	0.01	0.00	0.01	3.	*	1	1812	274	0.00	0.00	0.00	1.
1	0816	125	0.01	0.00	0.01	2.	*	1	1816	275	0.00	0.00	0.00	1.
1	0820	126	0.01	0.00	0.01	2.	*	1	1820	276	0.00	0.00	0.00	1.
1	0824	127	0.01	0.00	0.01	2.	*	1	1824	277	0.00	0.00	0.00	1.
1	0828	128	0.01	0.00	0.01	2.	*	1	1828	278	0.00	0.00	0.00	1.
1	0832	129	0.01	0.00	0.01	2.	*	1	1832	279	0.00	0.00	0.00	1.
1	0836	130	0.01	0.00	0.01	2.	*	1	1836	280	0.00	0.00	0.00	1.
1	0840	131	0.01	0.00	0.01	2.	*	1	1840	281	0.00	0.00	0.00	1.
1	0844	132	0.01	0.00	0.01	2.	*	1	1844	282	0.00	0.00	0.00	1.
1	0848	133	0.01	0.00	0.01	2.	*	1	1848	283	0.00	0.00	0.00	1.
1	0852	134	0.01	0.00	0.01	2.	*	1	1852	284	0.00	0.00	0.00	1.
1	0856	135	0.01	0.00	0.01	2.	*	1	1856	285	0.00	0.00	0.00	1.
1	0900	136	0.01	0.00	0.01	2.	*	1	1900	286	0.00	0.00	0.00	1.
1	0904	137	0.01	0.00	0.01	2.	*	1	1904	287	0.00	0.00	0.00	1.
1	0908	138	0.01	0.00	0.01	2.	*	1	1908	288	0.00	0.00	0.00	1.
1	0912	139	0.01	0.00	0.01	2.	*	1	1912	289	0.00	0.00	0.00	1.
1	0916	140	0.01	0.00	0.01	2.	*	1	1916	290	0.00	0.00	0.00	1.
1	0920	141	0.01	0.00	0.01	2.	*	1	1920	291	0.00	0.00	0.00	1.
1	0924	142	0.01	0.00	0.01	2.	*	1	1924	292	0.00	0.00	0.00	1.
1	0928	143	0.01	0.00	0.01	2.	*	1	1928	293	0.00	0.00	0.00	1.
1	0932	144	0.01	0.00	0.01	2.	*	1	1932	294	0.00	0.00	0.00	1.
1	0936	145	0.01	0.00	0.01	2.	*	1	1936	295	0.00	0.00	0.00	1.
1	0940	146	0.01	0.00	0.01	2.	*	1	1940	296	0.00	0.00	0.00	1.
1	0944	147	0.01	0.00	0.01	2.	*	1	1944	297	0.00	0.00	0.00	1.
1	0948	148	0.01	0.00	0.01	2.	*	1	1948	298	0.00	0.00	0.00	1.
1	0952	149	0.01	0.00	0.01	2.	*	1	1952	299	0.00	0.00	0.00	1.
1	0956	150	0.01	0.00	0.01	2.	*	1	1956	300	0.00	0.00	0.00	1.

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TOTAL RAINFALL = 4.40, TOTAL LOSS = 0.68, TOTAL EXCESS = 3.72

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	19.93-HR
(CFS)	(HR)					
		(CFS)				
104.	6.00		11.	4.	4.	4.
		(INCHES)	3.228	3.708	3.708	3.708
		(AC-FT)	6.	7.	7.	7.

CUMULATIVE AREA = 0.03 SQ MI

100 YEAR 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			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	SB82	163.	6.20	22.	8.	8.	0.18		
ROUTED TO	RT-4	161.	6.20	22.	8.	8.	0.18		
HYDROGRAPH AT	SB74	156.	6.20	23.	8.	8.	0.19		
2 COMBINED AT	DP74	317.	6.20	45.	17.	17.	0.37		
ROUTED TO	RT-3	314.	6.27	45.	17.	17.	0.37		
HYDROGRAPH AT	SB80	170.	6.27	28.	10.	10.	0.23		
ROUTED TO	RT-2	168.	6.33	28.	10.	10.	0.23		
HYDROGRAPH AT	SB81	279.	6.33	50.	18.	18.	0.41		
ROUTED TO	RT-1	278.	6.40	49.	18.	18.	0.41		
HYDROGRAPH AT	SB73	122.	6.20	17.	6.	6.	0.14		
HYDROGRAPH AT	SB75	94.	6.27	15.	6.	6.	0.12		
HYDROGRAPH AT	SB76	101.	6.27	16.	6.	6.	0.13		
6 COMBINED AT	DP75	1022.	6.33	170.	63.	63.	1.41		
ROUTED TO	RT-5	1021.	6.33	170.	63.	63.	1.41		
HYDROGRAPH AT	SB79	252.	6.20	36.	13.	13.	0.29		
ROUTED TO	RT-7	249.	6.27	36.	13.	13.	0.29		
HYDROGRAPH AT	SB78	205.	6.20	30.	11.	11.	0.24		
2 COMBINED AT	DP78	446.	6.20	65.	24.	24.	0.54		
ROUTED TO	RT-6	446.	6.27	65.	24.	24.	0.54		
HYDROGRAPH AT	SB77	226.	6.20	34.	13.	13.	0.27		
HYDROGRAPH AT	SB88	115.	6.20	17.	6.	6.	0.14		
4 COMBINED AT	DP77	1761.	6.27	285.	106.	106.	2.36		
ROUTED TO	RT-8	1757.	6.40	284.	105.	105.	2.36		
HYDROGRAPH AT	SC3-20	291.	6.13	39.	14.	14.	0.31		
2 COMBINED AT	DP71	1922.	6.40	320.	119.	119.	2.66		
ROUTED TO	RT-9	1917.	6.40	320.	119.	119.	2.66		
HYDROGRAPH AT	SB3-18	410.	6.13	49.	18.	18.	0.27		
2 COMBINED AT	DP70	2078.	6.40	367.	137.	137.	2.93		
ROUTED TO	RT-11	2077.	6.40	367.	137.	137.	2.93		
HYDROGRAPH AT	SC3-19	500.	6.07	56.	20.	20.	0.30		
ROUTED TO	RT-10	491.	6.07	56.	20.	20.	0.30		
HYDROGRAPH AT	SC3-17	379.	6.07	42.	15.	15.	0.18		

3 COMBINED AT	DP69	2372.	6.33	463.	171.	171.	3.41	
ROUTED TO	DBSRMN	1507.	6.67	457.	170.	170.	3.41	105.80 6.67
ROUTED TO	RT-12	1501.	6.67	457.	169.	169.	3.41	
HYDROGRAPH AT	SC3-15	471.	6.07	55.	19.	19.	0.21	
ROUTED TO	RT-10A	466.	6.07	55.	19.	19.	0.21	
2 COMBINED AT	DP87	1569.	6.67	509.	188.	188.	3.62	
ROUTED TO	RT-13	1564.	6.73	508.	188.	188.	3.62	
HYDROGRAPH AT	SC3-14	772.	6.07	92.	32.	32.	0.34	
HYDROGRAPH AT	SC3-16	634.	6.13	78.	27.	27.	0.30	
ROUTED TO	RT-13A	632.	6.27	78.	27.	27.	0.30	
3 COMBINED AT	DP68	2242.	6.20	675.	247.	247.	4.26	
ROUTED TO	DBSRMS	1561.	7.00	671.	246.	246.	4.26	16.12 7.00
ROUTED TO	RT-17	1560.	7.00	671.	245.	245.	4.26	
HYDROGRAPH AT	SC3-13	340.	6.13	43.	16.	16.	0.34	
ROUTED TO	RT-19	330.	6.20	43.	16.	16.	0.34	
HYDROGRAPH AT	SC3-12	452.	6.07	52.	18.	18.	0.21	
2 COMBINED AT	DP66	756.	6.13	95.	34.	34.	0.54	
ROUTED TO	RT-20	735.	6.40	94.	34.	34.	0.54	
HYDROGRAPH AT	SC3-11	593.	6.13	77.	27.	27.	0.28	
2 COMBINED AT	DP63A	1114.	6.33	169.	60.	60.	0.83	
2 COMBINED AT	DP63	2292.	6.40	837.	305.	305.	5.09	
ROUTED TO	RT-17A	2283.	6.40	837.	305.	305.	5.09	
HYDROGRAPH AT	SC3-10	67.	6.13	8.	3.	3.	0.06	
HYDROGRAPH AT	SC3-9	416.	6.33	73.	27.	27.	0.50	
ROUTED TO	RT-14	413.	6.33	73.	27.	27.	0.50	
HYDROGRAPH AT	SC3-8	246.	6.27	40.	14.	14.	0.23	
2 COMBINED AT	DP65	650.	6.33	113.	41.	41.	0.73	
ROUTED TO	RT-15	648.	6.33	113.	41.	41.	0.73	
HYDROGRAPH AT	SC3-7	380.	6.07	42.	15.	15.	0.16	
ROUTED TO	RT-15A	377.	6.07	42.	15.	15.	0.16	
2 COMBINED AT	DP64	833.	6.20	154.	56.	56.	0.88	
ROUTED TO	RT-16	830.	6.20	154.	56.	56.	0.88	
HYDROGRAPH AT	SC3-6	517.	6.07	56.	19.	19.	0.21	
2 COMBINED AT	DP62	1218.	6.13	209.	75.	75.	1.09	

ROUTED TO	DBSRW	219.	7.07	177.	74.	74.	1.09	82.79	7.07
3 COMBINED AT	DP61	2506.	6.40	1021.	381.	381.	6.24		
ROUTED TO	RT-17B	2485.	6.47	1020.	381.	381.	6.24		
HYDROGRAPH AT	SB61	96.	6.27	15.	6.	6.	0.12		
ROUTED TO	RT-20	95.	6.33	15.	6.	6.	0.12		
HYDROGRAPH AT	SC3-5	380.	6.00	39.	14.	14.	0.16		
3 COMBINED AT	DP60	2618.	6.40	1068.	400.	400.	6.51		
ROUTED TO	RT-18	2615.	6.47	1068.	399.	399.	6.51		
HYDROGRAPH AT	SC3-4	233.	6.00	24.	8.	8.	0.08		
ROUTED TO	RT-21	231.	6.00	24.	8.	8.	0.08		
HYDROGRAPH AT	SC3-1	338.	6.00	34.	12.	12.	0.17		
HYDROGRAPH AT	SC3-3	539.	6.07	59.	21.	21.	0.24		
ROUTED TO	DBSC33	280.	6.27	58.	21.	21.	0.24	8.01	6.27
ROUTED TO	RT-21B	279.	6.27	58.	21.	21.	0.24		
HYDROGRAPH AT	SC3-2	195.	6.07	21.	7.	7.	0.08		
5 COMBINED AT	DP53	2967.	6.47	1200.	448.	448.	7.08		
ROUTED TO	DB-3	1819.	7.67	988.	383.	383.	7.08	91.57	7.67
HYDROGRAPH AT	SC6-1	242.	6.13	30.	10.	10.	0.11		
ROUTED TO	DBSC61	84.	6.47	29.	10.	10.	0.11	5.54	6.47
ROUTED TO	RT-23A	84.	6.53	29.	10.	10.	0.11		
HYDROGRAPH AT	SC6-2	467.	6.07	54.	19.	19.	0.24		
HYDROGRAPH AT	SC6-3	378.	6.07	42.	15.	15.	0.17		
ROUTED TO	DBSC63	96.	6.40	40.	14.	14.	0.17	7.72	6.40
ROUTED TO	RT-23B	96.	6.40	40.	14.	14.	0.17		
3 COMBINED AT	DP54A	575.	6.13	122.	44.	44.	0.52		
ROUTED TO	RT-23C	572.	6.13	122.	44.	44.	0.52		
HYDROGRAPH AT	SC6-4	313.	6.00	35.	12.	12.	0.10		
ROUTED TO	DBSC64	53.	6.40	30.	12.	12.	0.10	6.00	6.40
ROUTED TO	RT-24	53.	6.40	30.	12.	12.	0.10		
HYDROGRAPH AT	SC6-5	620.	6.07	68.	24.	24.	0.28		
HYDROGRAPH AT	SC6-6	177.	6.00	19.	7.	7.	0.06		
4 COMBINED AT	DP54	1382.	6.07	240.	86.	86.	0.96		
ROUTED TO									

	DB-6	286.	7.07	216.	85.	85.	0.96	77.99	7.07
HYDROGRAPH AT	SC2-29	104.	6.00	11.	4.	4.	0.03		

Downstream of Woodmen Road

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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             MAY  1991                 *
*          VERSION 4.0.1E               *
*                                       *
*  RUN DATE  06/25/2009  TIME  16:45:31 *
*                                       *
*****************************************
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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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::::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::::
:::                                      :::
:::  Full Microcomputer Implementation   :::
:::                 by                   :::
:::        Haestad Methods, Inc.         :::
:::                                      :::
::::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::::
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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


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

   1          ID            Sand Creek Detention Basin No.2 final design**Mod n. of Woodmen
   2          ID            FUTURE DEVELOPMENT CONDITION WITH SAND CREEK NO. 1
   3          ID            DETENTION BASIN MODELED PER DBPS WITH SPRINGS RANCH DETENTION
   4          ID                     Model prepared by Kiowa Engineering has been modified by WCI
   5          ID             for the Upper sand Creek Detention Evaluation Report
   6          ID            100 Year, 24 hr Type IIA Storms fn:SCBDW.DAT
   7          ID            File Modified By WCI To Remove Routing Segment RT-40 and delete
   8          ID                  the model above Woodmen Road and substitute hydrographs from a
   9          ID                  revised model SCBUW.dat for the watershed above Woodmen.
  10          ID             Basin 25 reduced by 16.4 ac and Basin 26 reduced by 21.2 acres to
  11          ID             reflect commercial area near Woodmen and Black Forrest Rd. that is
  12          ID             routed through Pond 6.
              *DIAGRAM
  13          IT       5       0       0     300

  14          KK   DP53
  15          KM   ************************************************************************
  16          KM   IMPORT OUTFLOW HYDROGRAPH FROM POND 3 LOCATED NORTH OF WOODMEN ROAD
  17          KM   ************************************************************************
  18          BI    DB-3      20
  19          KO       1

  20          KK   RT-27
  21          KM   ROUTE FLOW FROM DESIGN POINT 53 (DETENTION BASIN 3) TO DESIGN POINT 50
  22          RK    1380    .022    .035            TRAP      10      10
  23          IO       5

  24          KK  SC2-24
  25          KM   RUNOFF FROM SUB-BASIN SC2-24
  26          BA   .0660
  27          IN      30
  28          PB     4.4
  29          PC  0.0000  0.0025  0.0050  0.0075  0.0100  0.0150  0.0200  0.0250  0.0300  0.0500
  30          PC  0.0600  0.1000  0.7000  0.7500  0.7800  0.7980  0.8200  0.8300  0.8400  0.8500
  31          PC  0.8600  0.8650  0.8700  0.8850  0.8900  0.9000  0.9050  0.9100  0.9150  0.9210
  32          PC  0.9270  0.9330  0.9400  0.9450  0.9500  0.9525  0.9550  0.9600  0.9650  0.9700
  33          PC  0.9750  0.9800  0.9830  0.9850  0.9880  0.9900  0.9930  0.9950  0.9980  1.0000
  34          LS       0    90.7
  35          UD    .190

  36          KK   RT-29
  37          KM   ROUTE FLOW FROM SUB-BASIN SC2-24 TO DESIGN POINT 50
  38          RK     330    .020    .013            CIRC       4

  39          KK  SC2-27
  40          KM   RUNOFF FROM SUB-BASIN SC2-27
  41          BA   .0780
  42          LS       0    92.0
  43          UD    .210
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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
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44          KK    DP50
45          KM   DESIGN POINT 50 COMBINE RUNOFF FROM SC2-27, RT-27 AND RT-29
46          HC       3

47          KK   RT-31
48          KM   ROUTE FLOW FROM DESIGN POINT 50 TO DESIGN POINT 49
49          RK     940    .020    .035            TRAP      40       6
50          KM    ************************************************************************
51          KM      BEGIN THE DIRECT DISCHARGE WATERSHED OF POND 2
52          KM    ************************************************************************

53          KK    DP51
54          KM    ************************************************************************
55          KM     IMPORT THE HYDROGRAPH FOR BASIN SC2-29 LOCATED NORTH OF WOODMEN ROAD
56          KM    ************************************************************************
57          BI  SC2-29      20
58          KO       1

59          KK   RT-30
60          KM   ROUTE FLOW FROM DESIGN POINT 51TO DESIGN POINT 49
61          RK    1590    .019    .035            TRAP      20      10

62          KK    DP49
63          KM   DESIGN POINT 49 COMBINE RUNOFF FROM RT-31 AND RT-30
64          HC       2

65          KK   RT-32
66          KM   ROUTE FLOW FROM DESIGN POINT 49 TO DESIGN POINT 48
67          RK    4930    .017    .035            TRAP      40       6

68          KK   DP54
69          KM   ************************************************************************
70          KM   INPUT HYDROGRAPH FOR OUTFLOW FROM POND 6 LOCATED NORTH OF WOODMEN ROAD
71          KM   ************************************************************************
72          BI    DB-6      20
73          KO       1

74          KK   RT-26
75          KM   ROUTE FLOW FROM DESIGN POINT 54 (DETENTION BASIN 92 OUTLET)TO DESIGN POINT 47
76          RK    4680    .028    .035            TRAP      40      10

77          KK  SC2-26
78          KM   RUNOFF FROM SUB-BASIN SC2-26
79          KM   Basin area reduced by 21.2 ac to reflect commercial area near Balck Forrest
80          KM   RD  and Woodmen Rd that is routed through Pond 6
81          BA   .1530
82          LS       0      79
83          UD    .320
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LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

84          KK   RT-34
85          KM   ROUTE FLOW FROM SUB-BASIN SC2-26 TO DESIGN POINT 47
86          RK    1620    .014    .035            TRAP       4       4

87          KK  SC2-25
88          KM   RUNOFF FROM SUB-BASIN SC2-25
89          KM   Basin area reduced by 16.4 ac to reflect commercial area near Balck Forrest
90          KM   RD and Woodmen Rd that is routed through Pond 6
91          BA   .4180
92          LS       0      79
93          UD    .440

94          KK    DP47
95          KM   DESIGN POINT 47 COMBINE RUNOFF FROM SUB-BASIN SC3-26 AND RT-26 AND RT-34
96          HC       3

97          KK   RT-33
98          KM   ROUTE FLOW FROM DESIGN POINT 47 TO DESIGN POINT 48
99          RK     510    .020    .035            TRAP       6       4

100         KK  SC2-28
101         KM   RUNOFF FROM SUB-BASIN SC2-28
102         BA   .2740
103         LS       0    67.1
104         UD    .510

105         KK  SC2-21
106         KM   RUNOFF FROM SUB-BASIN SC2-21
107         BA   .1930
108         LS       0    79.0
109         UD    .390

110         KK    DP48
111         KM   DESIGN POINT 48 COMBINE RUNOFF FROM SB'S SC2-21 AND SC2-28, RT-33 AND RT-32
112         HC       4

113         KK   RT-37
114         KM   ROUTE FLOW FROM DESIGN POINT 48 TO DESIGN POINT 42
115         RK    1080    .022    .035            TRAP      60       6

116         KK  SC2-23
117         KM   RUNOFF FROM SUB-BASIN SC2-23
118         BA   .1960
119         LS       0      79
120         UD    .330

121         KK   RT-35
122         KM   ROUTE FLOW FROM SUB-BASIN SC2-23 TO DESIGN POINT 46
123         RK    1180    .015    .013            CIRC       5
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 124      KK  SC2-22
 125      KM   RUNOFF FROM SUB-BASIN SC2-22
 126      BA   .0810
 127      LS       0    79.0
 128      UD    .220

 129      KK    DP46
 130      KM   DESIGN POINT 46 COMBINE RUNOFF FROM SUB-BASIN SC2-22 AND RT-35
 131      HC       2

 132      KK   RT-36
 133      KM   ROUTE FLOW FROM DESIGN POINT 46 TO DESIGN POINT 42
 134      RK    1790    .017    .013            TRAP      30       4

 135      KK    DP42
 136      KM   DESIGN POINT 42 COMBINE RUNOFF FROM RT- 37 AND RT-36
 137      HC       2

 138      KK   RT-38
 139      KM   ROUTE FLOW FROM DESIGN POINT 42 TO DESIGN POINT 85
 140      RK    1790    .013    .035            TRAP      60       6

 141      KK  SC2-20
 142      KM   RUNOFF FROM SUB-BASIN SC2-20
 143      BA   .3240
 144      LS       0    79.0
 145      UD    .380

 146      KK   RT-41
 147      KM   ROUTE FLOW FROM SUB-BASIN SC2-20 TO DESIGN POINT 85
 148      RK    1560    .020    .013            CIRC     6.5

 149      KK  SC2-15
 150      KM   RUNOFF FROM SUB-BASIN SC2-15
 151      BA   .1810
 152      LS       0    79.0
 153      UD    .240

 154      KK   RT-39
 155      KM   ROUTE FLOW FROM SUB-BASIN SC2-15 TO DESIGN POINT 85
 156      RK     990    .022    .013            CIRC     6.5

 157      KK  SC2-13
 158      KM   RUNOFF FROM SUB-BASIN SC2-13
 159      BA   .1630
 160      LS       0    79.0
 161      UD    .280
 162      KM   RT-40 ELIMINATED DUE TO PROBLEMS WITH RUN ERRORS AT 5 MIN TIME
 163      KM   STEP
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 164      KK    DP85
 165      KM   DESIGN POINT 85 COMBINE RUNOFF FROM RT-41, RT-38, RT-39 AND
 166      KM   SUB-BASIN SC2-13
 167      HC       4

 168      KK   RT-42
 169      KM   ROUTE FLOW FROM DESIGN POINT 85 TO DESIGN POINT 37
 170      RK    2900    .016    .035            TRAP      60       6

 171      KK  SC2-14
 172      KM   RUNOFF FROM SUB-BASIN SC2-14
 173      BA   .2650
 174      LS       0    76.2
 175      UD    .450

 176      KK  SC2-16
 177      KM   RUNOFF FROM SUB-BASIN SC2-16
 178      BA   .2120
 179      LS       0    76.2
 180      UD    .310

 181      KK    DP37
 182      KM   DESIGN POINT 37 COMBINE RUNOFF FROM RT-42, SUB-BASINS SC2-14 AND SC2-16
 183      HC       3

 184      KK   RT-43
 185      KM   ROUTE FLOW FROM DESIGN POINT 37 TO DESIGN POINT 36
 186      RK    3380    .016    .035            TRAP      60       4

 187      KK  SC2-12
 188      KM   RUNOFF FROM SUB-BASIN SC2-12
 189      BA   .1790
 190      LS       0    70.6
 191      UD    .280

 192      KK   RT-46
 193      KM   ROUTE FLOW FROM SUB-BASIN SC2-12 TO DESIGN POINT 33
 194      RK    2280    .024    .035            TRAP      20       4

 195      KK   SC2-8
 196      KM   RUNOFF FROM SUB-BASIN SC2-8
 197      BA   .3480
 198      LS       0    79.0
 199      UD    .440

 200      KK    DP33
 201      KM   DESIGN POINT 33 COMBINE RUNOFF FROM RT-46 AND SUB-BASIN SC2-8
 202      HC       2
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  203     KK   RT-45
  204     KM   ROUTE FLOW FROM DESIGN POINT 33 TO DESIGN POINT 36
  205     RK     850    .021    .035            TRAP      20       4

  206     KK    DP36
  207     KM   DESIGN POINT 36 COMBINE RUNOFF FROM RT-45 AND RT-43
  208     HC       2

  209     KK   RT-44
  210     KM   ROUTE FLOW FROM DESIGN POINT 36 TO DESIGN POINT 35
  211     RK    1740    .016    .035            TRAP      60       4

  212     KK  SC2-11
  213     KM   RUNOFF FROM SUB-BASIN SC2-11
  214     BA   .2100
  215     LS       0    79.0
  216     UD    .240

  217     KK   RT-52
  218     KM   ROUTE FLOW FROM SUB-BASIN SC2-11 TO DESIGN POINT 39
  219     RK    2680    .008    .035            TRAP      30       4

  220     KK  SC2-19
  221     KM   RUNOFF FROM SUB-BASIN SC2-19
  222     BA   .1820
  223     LS       0    86.0
  224     UD    .300

  225     KK   RT-51
  226     KM   ROUTE FLOW FROM SUB-BASIN SC2-19 TO DESIGN POINT 39
  227     RK    3100    .022    .013            CIRC       6

  228     KK  SC2-18
  229     KM   RUNOFF FROM SUB-BASIN SC2-18
  230     BA   .1980
  231     LS       0    88.0
  232     UD    .290

  233     KK    DP39
  234     KM   DESIGN POINT 39 COMBINE RUNOFF FROM RT-52, RT-51 AND SUB-BASIN SC2-18
  235     HC       3

  236     KK   RT-49
  237     KM   ROUTE FLOW FROM DESIGN POINT 39 TO DESIGN POINT 34
  238     RK    1160    .024    .035            TRAP      20       4

  239     KK  SC2-17
  240     KM   RUNOFF FROM SUB-BASIN SC2-17
  241     BA   .1600
  242     LS       0    79.0
  243     UD    .320
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  244     KK   RT-50
  245     KM   ROUTE FLOW FROM SUB-BASIN SC2-17 TO DESIGN POINT 34
  246     RK    1840    .025    .035            TRAP      20       4

  247     KK  SC2-29
  248     KM   RUNOFF FROM SUB-BASIN SC2-29
  249     BA   .1510
  250     LS       0    88.0
  251     UD    .210

  252     KK    DP34
  253     KM   DESIGN POINT 34 COMBINE RUNOFF FROM RT-49, RT-50 AND SUB-BASIN SC2-29
  254     HC       3

  255     KK   RT-48
  256     KM   ROUTE FLOW FROM DESIGN POINT 34 TO DESIGN POINT 32
  257     RK    1470    .020     .04            TRAP      20       4

  258     KK  SC2-10
  259     KM   RUNOFF FROM SUB-BASIN SC2-10
  260     BA   .3290
  261     LS       0    78.4
  262     UD    .390

  263     KK    DP32
  264     KM   DESIGN POINT 32 COMBINE RUNOFF FROM RT-48 AND SUB-BASIN SC2-10
  265     HC       2

  266     KK   RT-47
  267     KM   ROUTE FLOW FROM SUB-BASIN DESIGN POINT 32 TO DESIGN POINT 35
  268     RK     991    .028    .031            TRAP      20       4

  269     KK   SC2-9
  270     KM   RUNOFF FROM SUB-BASIN SC2-9
  271     BA   .2060
  272     LS       0    73.0
  273     UD    .520

  274     KK    DP35
  275     KM   DESIGN POINT 35 COMBINE RUNOFF FROM RT-47, RT-44 AND SUB-BASIN SC2-9
  276     HC       3

  277     KK   RT-53
  278     KM   ROUTE FLOW FROM DESIGN POINT 35 TO DESIGN POINT 29
  279     RK    1120    .020    .035            TRAP      60       6
```

```
280          KK   SC2-7
281          KM   RUNOFF FROM SUB-BASIN SC2-7
282          BA   .1440
283          LS      0    79.0
284          UD    .320
```



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

285          KK    DP29
286          KM   DESIGN POINT 29 COMBINE RUNOFF FROM RT-53 AND SUB-BASIN SC2-7
287          HC       2

288          KK   RT-54
289          KM   ROUTE FLOW FROM DESIGN POINT 29 TO DESIGN POINT 28
290          RK    1560    .011    .035            TRAP      60       4

291          KK   SC2-6
292          KM   RUNOFF FROM SUB-BASIN SC2-6
293          BA   .1500
294          LS      0    81.6
295          UD    .240

296          KK   RT-55
297          KM   ROUTE FLOW FROM SUB-BASIN SC2-6 TO DESIGN POINT 28
298          RD     950    .020    .035            TRAP      10       4

299          KK   SC2-2
300          KM   RUNOFF FROM SUB-BASIN SC2-2
301          BA   .1670
302          LS      0    80.8
303          UD    .280

304          KK    DP28
305          KM   DESIGN POINT 28 COMBINE RUNOFF FROM RT-54, RT-55 AND SUB-BASIN SC2-2
306          HC       3

307          KK   RT-56
308          KM   ROUTE FLOW FROM DESIGN POINT 28 TO DESIGN POINT 21
309          RK    1280    .017    .035            TRAP      60       4

310          KK   SC2-5
311          KM   RUNOFF FROM SUB-BASIN SC2-5
312          BA   .1610
313          LS      0    92.0
314          UD    .280

315          KK   RT-58
316          KM   ROUTE FLOW FROM SUB-BASIN SC2-5 TO DESIGN POINT 21
317          RK    1670    .027    .024            CIRC       5

318          KK   SC2-0
319          KM   RUNOFF FROM SUB-BASIN SC2-0
320          BA   .1500
321          LS      0    73.4
322          UD    .320

323          KK   RT-57
324          KM   ROUTE FLOW FROM SUB-BASIN SC2-0 TO DESIGN POINT 21
325          RK     800    .032    .035            TRAP      10       4
```



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

326          KK    DP21
327          KM   DESIGN POINT 21 COMBINE RUNOFF FROM RT-58, RT-56 AND RT- 57
328          HC       3

329          KK   RT-59
330          KM   ROUTE FLOW FROM DESIGN POINT 21 TO DESIGN POINT 20
331          RK     830    .01     .035            TRAP      80       4

332          KK   SC2-4
333          KM   RUNOFF FROM SUB-BASIN SC2-4
334          BA   .2850
335          LS      0    92.0
336          UD    .320

337          KK   RT-61
338          KM   ROUTE FLOW FROM SUB-BASIN SC2-4 TO DESIGN POINT 22
339          RK    1670    .019    .035            TRAP      20       3

340          KK   SC2-3
341          KM   RUNOFF FROM SUB-BASIN SC2-3
342          BA   .0710
343          LS      0    92.0
344          UD    .210

345          KK    DP22
346          KM   DESIGN POINT 22 COMBINE RUNOFF FROM RT-61 AND SC2-3
347          HC       2

348          KK   RT-60
349          KM   ROUTE FLOW FROM DESIGN POINT 22 TO DESIGN POINT 20
350          RK    1010    .018    .035            TRAP      20       3

351          KK   SC2-1
352          KM   RUNOFF FROM SUB-BASIN SC2-1
353          BA   .1850
354          LS      0    80.0
355          UD    .290
```

```
356          KK    DP20
357          KM    DESIGN POINT 20 COMBINE RUNOFF FROM RT-60, RT-59 AND SB SC2-1
358          KO       1
359          HC       3

360          KK    DBSC2
361          KM         ROUTE FLOW FROM DP 20 THROUGH SAND CREEK DETENTION BASIN DBSC2
362          KM         TRIPLE 12 x 8 CBC
363          RS       1     ELEV  6495.5
364          SV       0      .41    8.35   28.53   54.91   83.35  115.75  153.35  194.03  237.59
365          SV   283.9      349
366          SQ       0       75     150     930    1530    2300    2810    3360    4050    4250
367          SQ    4550     7150
368          SE  6495.5     6496    6498    6500    6502    6504    6506    6508    6510    6512
369          SE    6514     6516
```



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

370          KK   RT-63
371          KM   ROUTE FLOW FROM DETENTION BASIN SC2 TO DESIGN POINT 18
372          KO       1
373          RK    1290     .007     .035            TRAP     100       3

374          KK  SC1-10
375          KM   RUNOFF FROM SUB-BASIN SC1-10
376          BA   .2880
377          LS       0     78.2
378          UD    .390

379          KK    DP18
380          KM   DESIGN POINT 18 COMBINE RUNOFF FROM RT-63 AND SUB-BASIN SC1-10
381          HC       2

382          KK   RT-66
383          KM   ROUTE FLOW FROM DESIGN POINT 18 TO DESIGN POINT 17
384          RK     320     .007     .035            TRAP     100       3

385          KK  SC1-13
386          KM   RUNOFF FROM SUB-BASIN SC1-13
387          BA   .1300
388          LS       0     87.3
389          UD    .270

390          KK   RT-64
391          KM   ROUTE FLOW FROM SUB-BASIN SC1-13 TO DESIGN POINT 19
392          RK    1970     .026     .013            CIRC     4.5

393          KK  SC1-14
394          KM   RUNOFF FROM SUB-BASIN SC1-14
395          BA   .1100
396          LS       0     92.0
397          UD    .280

398          KK    DP19
399          KM   DESIGN POINT 19 COMBINE RUNOFF FROM RT-64 AND SUB-BASIN SC1-14
400          HC       2

401          KK   RT-65
402          KM   ROUTE FLOW FROM DESIGN POINT 19 TO DESIGN POINT 17
403          RK     700     .022     .013            TRAP      10      .1

404          KK    DP17
405          KM   DESIGN POINT 17 COMBINE RUNOFF FROM RT-65 AND RT-66
406          HC       2

407          KK   RT-67
408          KM   ROUTE FLOW FROM DESIGN POINT 17 TO DESIGN POINT 13
409          RK     910     .007     .035            TRAP     100       3
```



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

410          KK   SC1-9
411          KM   RUNOFF FROM SUB-BASIN SC1-9
412          BA   .2400
413          LS       0     76.9
414          UD    .240

415          KK  DBSR29
416          KM         ROUTE FLOW FROM SB SC1-9 THROUGH SPRINGS RANCH DETENTION BASIN DBSR29
417          RS       1     ELEV     100
418          SV       0      .03    0.47    1.20    2.60    6.70     8.8    10.7
419          SQ       0       .2     7.8      22      40      73      97     113
420          SE     100    100.5   101.5   102.5   103.5   104.5   105.5   106.5

421          KK   RT-70
422          KM   ROUTE FLOW FROM SPRINGS RANCH DETENTION BASIN DBSR29 TO DESIGN POINT 14
423          RD    2750     .013     .013            CIRC     5.5

424          KK   SC1-8
425          KM   RUNOFF FROM SUB-BASIN SC1-8
426          BA   .2100
427          LS       0     79.5
428          UD    .320

429          KK   RT-71
430          KM   ROUTE FLOW FROM SUB-BASIN SC1-8 TO DESIGN POINT 14
431          RK     600     .010     .013            CIRC       5

432          KK    DP14
433          KM   DESIGN POINT 14 COMBINE RUNOFF FROM RT-71 AND RT-70
434          HC       2
```

```
435          KK   RT-69
436          KM   ROUTE FLOW FROM DESIGN POINT 14 TO DESIGN POINT 12
437          RK    1550    .015    .013            TRAP       7      .1

438          KK   SC1-7
439          KM   RUNOFF FROM SUB-BASIN SC1-7
440          BA   .0960
441          LS       0    80.1
442          UD    .230

443          KK    DP12
444          KM   DESIGN POINT 12 COMBINE RUNOFF FROM SUB-BASIN SC1-7 AND RT-69
445          HC       2

446          KK   RT-68
447          KM   ROUTE FLOW FROM DESIGN POINT 12 TO DESIGN POINT 13
448          RK     390    .025    .013            TRAP       7      .1
```



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

449          KK    DP13
450          KM   DESIGN POINT 13 COMBINE RUNOFF FROM RT-67 AND RT-68
451          HC       2

452          KK   RT-72
453          KM   ROUTE FLOW FROM DESIGN POINT 13 TO DESIGN POINT 10
454          RK    1150    .007     .04            TRAP     100       3

455          KK   SC1-6
456          KM   RUNOFF FROM SUB-BASIN SC1-6
457          BA   .1590
458          LS       0    80.6
459          UD    .220

460          KK  DBSR15
461          KM        ROUTE FLOW FROM SB SC1-6 THROUGH SPRINGS RANCH DETENTION BASIN DBSR15
462          RS       1    ELEV     100
463          SV       0    1.50    3.80    6.50    9.70   13.80
464          SQ       0      80     125     150     180     210
465          SE     100     102     104     106     108     110

466          KK   RT-74
467          KM   ROUTE FLOW FROM SPRINGS RANCH DETENTION BASIN DBSR15 TO DESIGN POINT 11
468          RK    2080    .021    .013            CIRC     3.5

469          KK   SC1-5
470          KM   RUNOFF FROM SUB-BASIN SC1-5
471          BA   .1730
472          LS       0    79.0
473          UD    .310

474          KK    DP11
475          KM   DESIGN POINT 11 COMBINE RUNOFF FROM SUB-BASIN SC1-5 AND RT-74
476          HC       2

477          KK   RT-73
478          KM   ROUTE FLOW FROM DESIGN POINT 11 TO DESIGN POINT 10
479          RK     580    .024    .013            CIRC     3.5

480          KK    DP10
481          KM   DESIGN POINT 10 COMBINE RUNOFF FROM RT-72 AND RT-73
482          HC       2

483          KK   RT-75
484          KM   ROUTE FLOW FROM DESIGN POINT 10 TO DESIGN POINT 9
485          RK    2270    .007    .035            TRAP     100       3

486          KK   SC1-2
487          KM   RUNOFF FROM SUB-BASIN SC1-2
488          BA   .1360
489          LS       0    79.0
490          UD    .320
```



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

491          KK   RT-76
492          KM   ROUTE FLOW FROM SUB-BASIN SC1-2 TO DESIGN POINT 9
493          RD     500    .039    .013            CIRC       3

494          KK     DP9
495          KM   DESIGN POINT 9 COMBINE RUNOFF FROM RT-75 AND RT-76
496          HC       2

497          KK   RT-78
498          KM   ROUTE FLOW FROM DESIGN POINT 9 TO DESIGN POINT 4
499          RK    1530    .007    .035            TRAP     100       3

500          KK  SC1-12
501          KM   RUNOFF FROM SUB-BASIN SC1-12
502          BA   .2480
503          LS       0    84.0
504          UD    .370

505          KK   RT-81
506          KM   ROUTE FLOW FROM SUB-BASIN SC1-12 TO DESIGN POINT 8
507          RK    1400    .008    .035            TRAP      30       4

508          KK  SC1-11
509          KM   RUNOFF FROM SUB-BASIN SC1-11
510          BA   .1600
```

```
511          LS       0    92.0
512          UD    .290

513          KK      DP8
514          KM   DESIGN POINT 8 COMBINE RUNOFF FROM SUB-BASIN SC1-11 AND RT-81
515          HC       2

516          KK   RT-77
517          KM   ROUTE FLOW FROM DESIGN POINT 8 TO DESIGN POINT 4
518          RK    3100    .007    .035            TRAP     100       3

519          KK   SC1-4
520          KM   RUNOFF FROM SUB-BASIN SC1-4
521          BA   .1010
522          LS       0    92.0
523          UD    .270

524          KK   RT-80
525          KM   ROUTE FLOW FROM SUB-BASIN SC1-4 TO DESIGN POINT 4
526          RK     720    .014    .013            CIRC       5

527          KK   SC1-1
528          KM   RUNOFF FROM SUB-BASIN SC1-1
529          BA   .1090
530          LS       0    79.0
531          UD    .280
```



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

532          KK   RT-79
533          KM   ROUTE FLOW FROM SUB-BASIN SC1-1 TO DESIGN POINT 4
534          RK    1115    .027    .013            CIRC       3

535          KK   SC1-3
536          KM   RUNOFF FROM SUB-BASIN SC1-3
537          BA   .3530
538          LS       0    65.0
539          UD    .460

540          KK      DP4
541          KM   DESIGN POINT 4 COMBINE RUNOFF FROM SB SC1-3, RT-80, RT-77, RT-78 AND RT-79
542          HC       5

543          KK   DBSC1
544          KM        ROUTE FLOW FROM DP 4 THROUGH SAND CREEK DETENTION BASIN DBSC1
545          KO       0
546          RS       1    ELEV    6393
547          SV       0    3.06   14.95   31.12   53.59   69.95   86.31   106.5   126.7   150.4
548          SV   174.1   200.4   226.7   254.9   283.2   313.4   343.6   375.2   406.8   439.5
549          SQ       0       3       5     189     954    1465    2055    2431    2755    3045
550          SQ    3310    3555    3785    4037    5518    7863   10797   14211   18042   22245
551          SE    6393    6394    6396    6398    6400    6401    6402    6403    6404    6405
552          SE    6406    6407    6408    6409    6410    6411    6412    6413    6414    6415
553          ZZ
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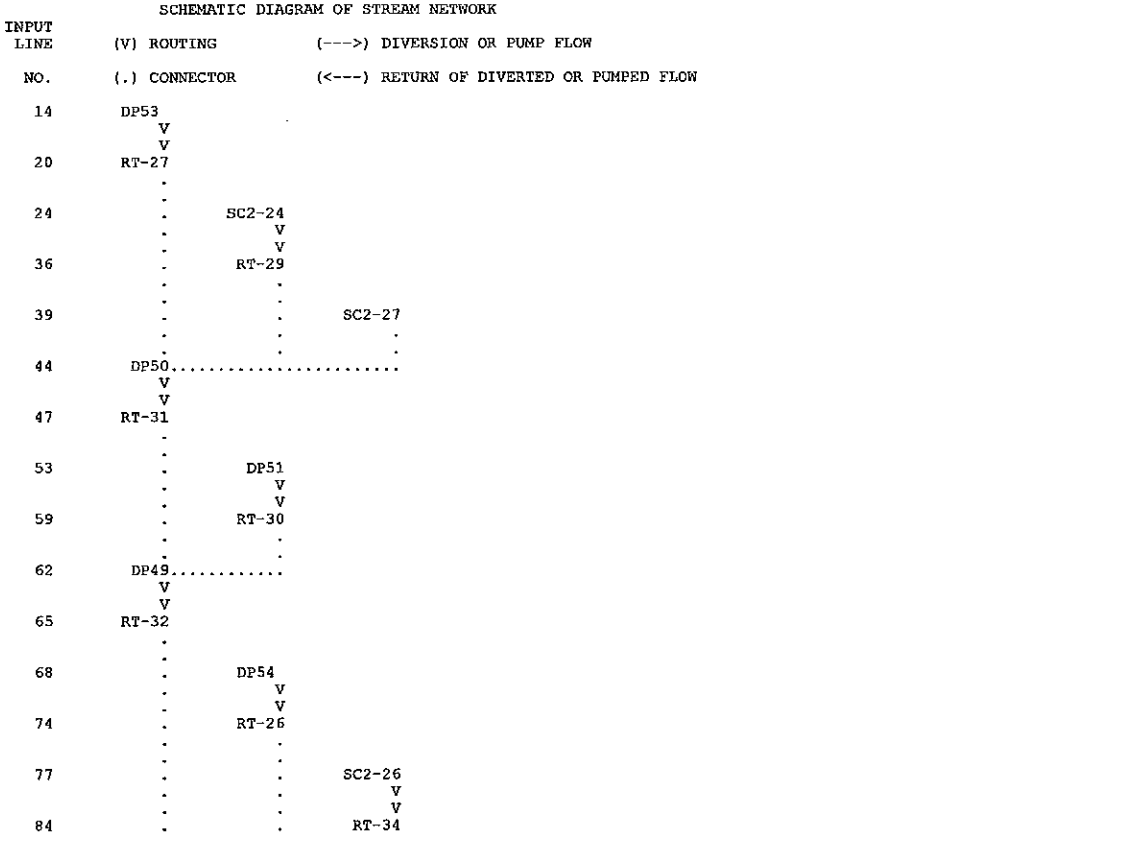
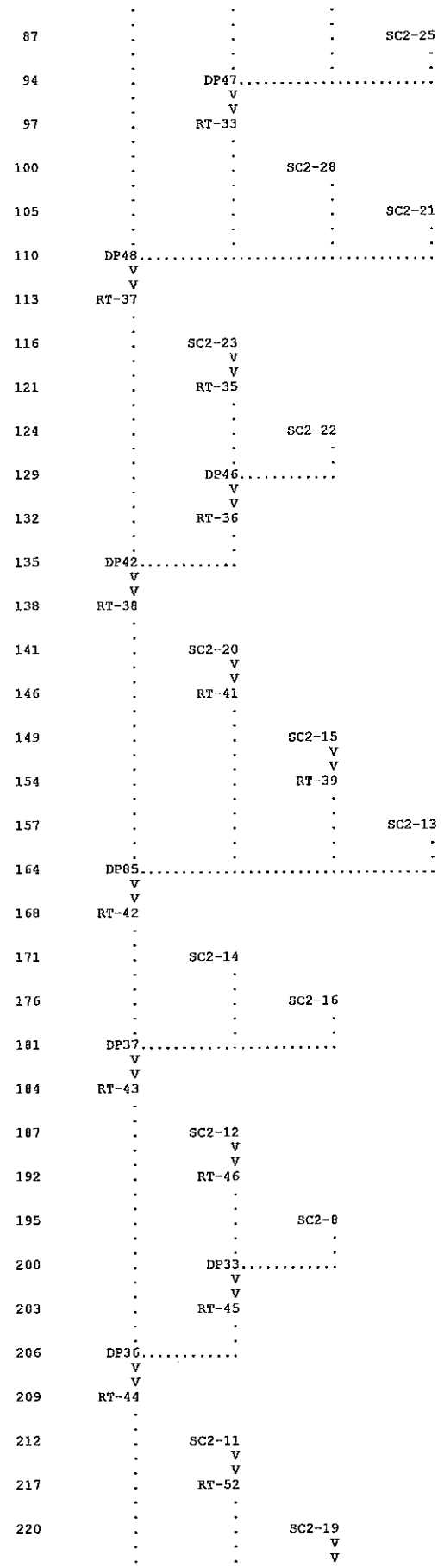
SCHEMATIC DIAGRAM OF STREAM NETWORK

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SC2-25
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DP47
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RT-33
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SC2-28
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SC2-21
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DP48
113
RT-37
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121
RT-35
124
SC2-22
129
DP46
132
RT-36
135
DP42
138
RT-38
141
SC2-20
146
RT-41
149
SC2-15
154
RT-39
157
SC2-13
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DP85
168
RT-42
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SC2-16
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DP37
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RT-43
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SC2-12
192
RT-46
195
SC2-8
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DP36
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RT-44
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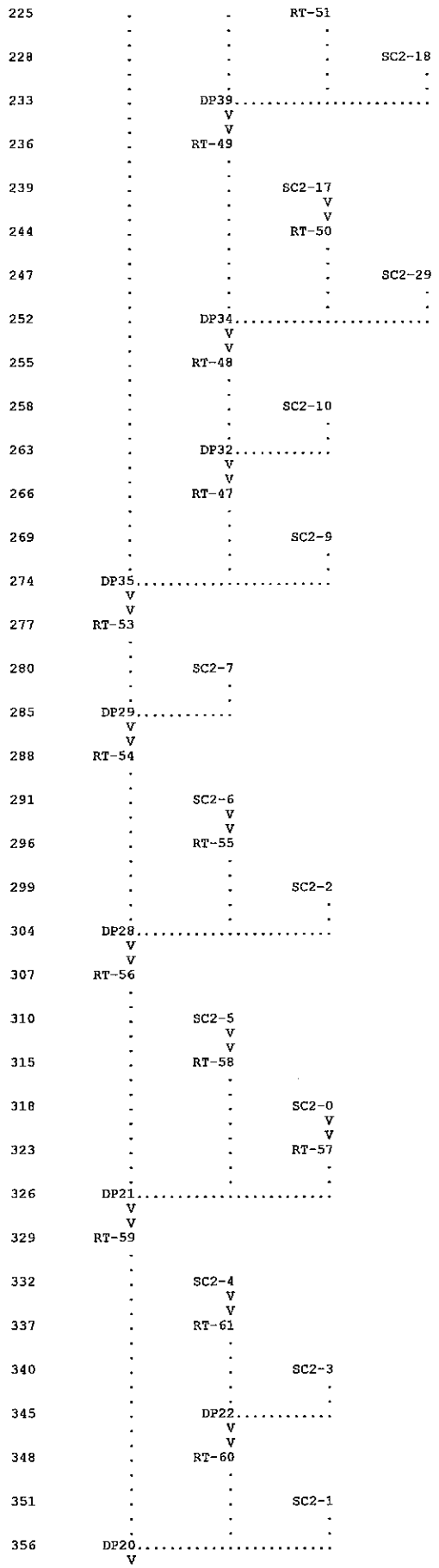
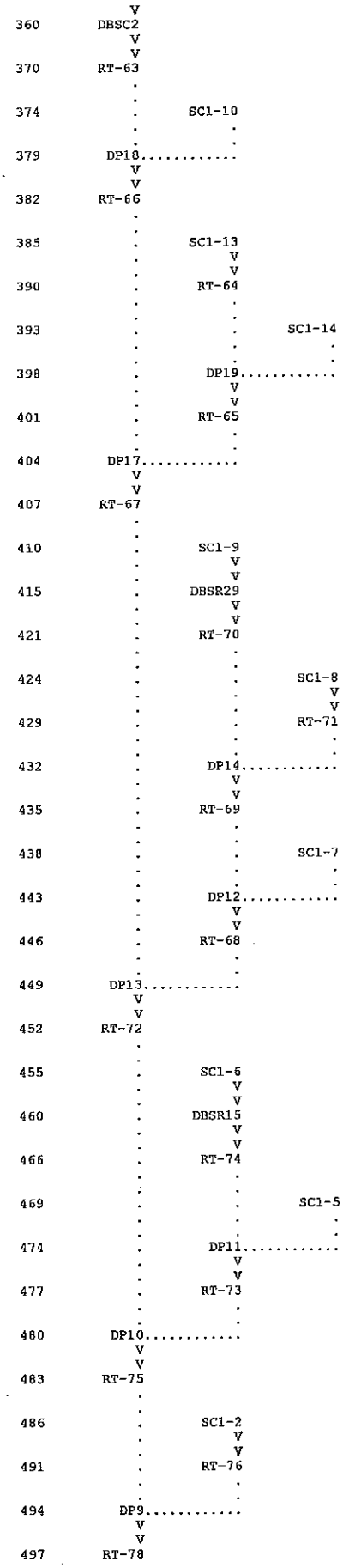
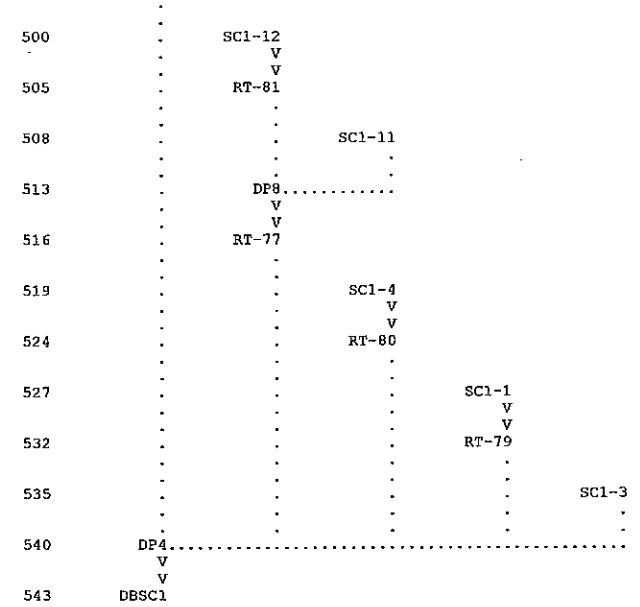
SC2-11
217
RT-52
220
SC2-19


225 RT-51
228 SC2-18
233 DP39
236 RT-49
239 SC2-17
244 RT-50
247 SC2-29
252 DP34
255 RT-48
258 SC2-10
263 DP32
266 RT-47
269 SC2-9
274 DP35
277 RT-53
280 SC2-7
285 DP29
288 RT-54
291 SC2-6
296 RT-55
299 SC2-2
304 DP28
307 RT-56
310 SC2-5
315 RT-58
318 SC2-0
323 RT-57
326 DP21
329 RT-59
332 SC2-4
337 RT-61
340 SC2-3
345 DP22
348 RT-60
351 SC2-1
356 DP20


360 DBSC2
370 RT-63
374 SC1-10
379 DP18
382 RT-66
385 SC1-13
390 RT-64
393 SC1-14
398 DP19
401 RT-65
404 DP17
407 RT-67
410 SC1-9
415 DBSR29
421 RT-70
424 SC1-8
429 RT-71
432 DP14
435 RT-69
438 SC1-7
443 DP12
446 RT-68
449 DP13
452 RT-72
455 SC1-6
460 DBSR15
466 RT-74
469 SC1-5
474 DP11
477 RT-73
480 DP10
483 RT-75
486 SC1-2
491 RT-76
494 DP9
497 RT-78



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

HEC1 S/N: 1343000062 HMVersion: 6.33 Data File: SCBDW.DAT

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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             MAY  1991                 *
*          VERSION 4.0.1E               *
*                                       *
*  RUN DATE  06/25/2009  TIME  16:45:31 *
*                                       *
*****************************************
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

Sand Creek Detention Basin No.2 final design**Mod n. of Woodmen
FUTURE DEVELOPMENT CONDITION WITH SAND CREEK NO. 1
DETENTION BASIN MODELED PER DBPS WITH SPRINGS RANCH DETENTION
Model prepared by Kiowa Engineering has been modified by WCI
for the Upper sand Creek Detention Evaluation Report
100 Year, 24 hr Type IIA Storms fn:SCBDW.DAT
File Modified By WCI To Remove Routing Segment RT-40 and delete
the model above Woodmen Road and substitute hydrographs from a
revised model SCBUW.dat for the watershed above Woodmen.
Basin 25 reduced by 16.4 ac and Basin 26 reduced by 21.2 acres to
reflect commercial area near Woodmen and Black Forrest Rd. that is
routed through Pond 6.

```
IT          HYDROGRAPH TIME DATA
                NMIN            5  MINUTES IN COMPUTATION INTERVAL
               IDATE      1     0  STARTING DATE
               ITIME         0000  STARTING TIME
                  NQ          300  NUMBER OF HYDROGRAPH ORDINATES
              NDDATE      2     0  ENDING DATE
              NDTIME         0055  ENDING TIME
               ICENT           19  CENTURY MARK

            COMPUTATION INTERVAL     0.08 HOURS
                TOTAL TIME BASE     24.92 HOURS

      ENGLISH UNITS
           DRAINAGE AREA          SQUARE MILES
           PRECIPITATION DEPTH    INCHES
           LENGTH, ELEVATION      FEET
           FLOW                   CUBIC FEET PER SECOND
           STORAGE VOLUME         ACRE-FEET
           SURFACE AREA           ACRES
           TEMPERATURE            DEGREES FAHRENHEIT
```

*** ***

```
          **************
          *            *
14 KK     *    DP53    *
          *            *
          **************
                    ************************************************************************
                    IMPORT OUTFLOW HYDROGRAPH FROM POND 3 LOCATED NORTH OF WOODMEN ROAD
                    ************************************************************************

18 BI          READ STATION     DB-3 HYDROGRAPH FROM UNIT 20
```

****

HYDROGRAPH AT STATION DP53

****

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0615	76	20.	1		1230	151	358.	1		1845	226	154.
1		0005	2	0.	1		0620	77	30.	1		1235	152	355.	1		1850	227	152.
1		0010	3	0.	1		0625	78	174.	1		1240	153	352.	1		1855	228	150.
1		0015	4	0.	1		0630	79	407.	1		1245	154	349.	1		1900	229	148.
1		0020	5	0.	1		0635	80	869.	1		1250	155	346.	1		1905	230	147.
1		0025	6	0.	1		0640	81	1055.	1		1255	156	342.	1		1910	231	145.
1		0030	7	0.	1		0645	82	1123.	1		1300	157	338.	1		1915	232	144.
1		0035	8	0.	1		0650	83	1189.	1		1305	158	335.	1		1920	233	142.
1		0040	9	0.	1		0655	84	1310.	1		1310	159	331.	1		1925	234	141.
1		0045	10	0.	1		0700	85	1445.	1		1315	160	327.	1		1930	235	141.
1		0050	11	0.	1		0705	86	1550.	1		1320	161	323.	1		1935	236	140.
1		0055	12	0.	1		0710	87	1634.	1		1325	162	319.	1		1940	237	140.
1		0100	13	0.	1		0715	88	1700.	1		1330	163	315.	1		1945	238	140.
1		0105	14	0.	1		0720	89	1750.	1		1335	164	311.	1		1950	239	140.
1		0110	15	0.	1		0725	90	1784.	1		1340	165	307.	1		1955	240	140.
1		0115	16	0.	1		0730	91	1805.	1		1345	166	302.	1		2000	241	140.
1		0120	17	0.	1		0735	92	1817.	1		1350	167	298.	1		2005	242	140.
1		0125	18	0.	1		0740	93	1819.	1		1355	168	293.	1		2010	243	140.
1		0130	19	0.	1		0745	94	1812.	1		1400	169	288.	1		2015	244	140.
1		0135	20	0.	1		0750	95	1798.	1		1405	170	283.	1		2020	245	140.
1		0140	21	0.	1		0755	96	1778.	1		1410	171	279.	1		2025	246	140.
1		0145	22	0.	1		0800	97	1752.	1		1415	172	274.	1		2030	247	140.
1		0150	23	0.	1		0805	98	1719.	1		1420	173	269.	1		2035	248	140.
1		0155	24	0.	1		0810	99	1681.	1		1425	174	265.	1		2040	249	140.
1		0200	25	0.	1		0815	100	1639.	1		1430	175	260.	1		2045	250	140.
1		0205	26	0.	1		0820	101	1592.	1		1435	176	256.	1		2050	251	140.
1		0210	27	0.	1		0825	102	1543.	1		1440	177	252.	1		2055	252	140.
1		0215	28	0.	1		0830	103	1492.	1		1445	178	247.	1		2100	253	140.
1		0220	29	0.	1		0835	104	1439.	1		1450	179	243.	1		2105	254	140.
1		0225	30	0.	1		0840	105	1386.	1		1455	180	240.	1		2110	255	140.
1		0230	31	0.	1		0845	106	1332.	1		1500	181	236.	1		2115	256	140.
1		0235	32	0.	1		0850	107	1279.	1		1505	182	232.	1		2120	257	140.

1	0240	33	0.	*	1	0855	108	1227.	*	1	1510	183	229.	*	1	2125	258	140.
1	0245	34	0.	*	1	0900	109	1192.	*	1	1515	184	226.	*	1	2130	259	140.
1	0250	35	0.	*	1	0905	110	1174.	*	1	1520	185	223.	*	1	2135	260	140.
1	0255	36	0.	*	1	0910	111	1154.	*	1	1525	186	221.	*	1	2140	261	140.
1	0300	37	0.	*	1	0915	112	1134.	*	1	1530	187	218.	*	1	2145	262	140.
1	0305	38	0.	*	1	0920	113	1114.	*	1	1535	188	216.	*	1	2150	263	140.
1	0310	39	0.	*	1	0925	114	1093.	*	1	1540	189	214.	*	1	2155	264	140.
1	0315	40	0.	*	1	0930	115	1071.	*	1	1545	190	212.	*	1	2200	265	140.
1	0320	41	0.	*	1	0935	116	1050.	*	1	1550	191	210.	*	1	2205	266	140.
1	0325	42	0.	*	1	0940	117	1028.	*	1	1555	192	209.	*	1	2210	267	140.
1	0330	43	0.	*	1	0945	118	1006.	*	1	1600	193	208.	*	1	2215	268	140.
1	0335	44	0.	*	1	0950	119	985.	*	1	1605	194	207.	*	1	2220	269	140.
1	0340	45	0.	*	1	0955	120	963.	*	1	1610	195	206.	*	1	2225	270	140.
1	0345	46	0.	*	1	1000	121	560.	*	1	1615	196	205.	*	1	2230	271	140.
1	0350	47	0.	*	1	1005	122	554.	*	1	1620	197	204.	*	1	2235	272	140.
1	0355	48	0.	*	1	1010	123	547.	*	1	1625	198	203.	*	1	2240	273	140.
1	0400	49	0.	*	1	1015	124	539.	*	1	1630	199	202.	*	1	2245	274	140.
1	0405	50	0.	*	1	1020	125	531.	*	1	1635	200	201.	*	1	2250	275	140.
1	0410	51	0.	*	1	1025	126	522.	*	1	1640	201	200.	*	1	2255	276	140.
1	0415	52	0.	*	1	1030	127	513.	*	1	1645	202	200.	*	1	2300	277	140.
1	0420	53	0.	*	1	1035	128	504.	*	1	1650	203	199.	*	1	2305	278	140.
1	0425	54	0.	*	1	1040	129	495.	*	1	1655	204	198.	*	1	2310	279	140.
1	0430	55	0.	*	1	1045	130	486.	*	1	1700	205	197.	*	1	2315	280	140.
1	0435	56	0.	*	1	1050	131	478.	*	1	1705	206	196.	*	1	2320	281	140.
1	0440	57	0.	*	1	1055	132	469.	*	1	1710	207	195.	*	1	2325	282	140.
1	0445	58	0.	*	1	1100	133	460.	*	1	1715	208	194.	*	1	2330	283	140.
1	0450	59	0.	*	1	1105	134	451.	*	1	1720	209	193.	*	1	2335	284	140.
1	0455	60	0.	*	1	1110	135	442.	*	1	1725	210	191.	*	1	2340	285	140.
1	0500	61	0.	*	1	1115	136	434.	*	1	1730	211	189.	*	1	2345	286	140.
1	0505	62	0.	*	1	1120	137	427.	*	1	1735	212	188.	*	1	2350	287	140.
1	0510	63	0.	*	1	1125	138	420.	*	1	1740	213	185.	*	1	2355	288	140.
1	0515	64	0.	*	1	1130	139	414.	*	1	1745	214	183.	*	2	0000	289	140.
1	0520	65	0.	*	1	1135	140	409.	*	1	1750	215	181.	*	2	0005	290	140.
1	0525	66	0.	*	1	1140	141	403.	*	1	1755	216	179.	*	2	0010	291	140.
1	0530	67	0.	*	1	1145	142	397.	*	1	1800	217	176.	*	2	0015	292	140.
1	0535	68	1.	*	1	1150	143	392.	*	1	1805	218	174.	*	2	0020	293	140.
1	0540	69	3.	*	1	1155	144	386.	*	1	1810	219	171.	*	2	0025	294	140.
1	0545	70	5.	*	1	1200	145	381.	*	1	1815	220	168.	*	2	0030	295	140.
1	0550	71	9.	*	1	1205	146	375.	*	1	1820	221	166.	*	2	0035	296	140.
1	0555	72	14.	*	1	1210	147	371.	*	1	1825	222	163.	*	2	0040	297	140.
1	0600	73	15.	*	1	1215	148	367.	*	1	1830	223	161.	*	2	0045	298	140.
1	0605	74	17.	*	1	1220	149	364.	*	1	1835	224	159.	*	2	0050	299	140.
1	0610	75	18.	*	1	1225	150	361.	*	1	1840	225	156.	*	2	0055	300	140.
				*					*					*				

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
(CFS)	(HR)					
		(CFS)				
1819.	7.67		988.	347.	334.	334.
		(INCHES)	1.297	1.820	1.820	1.820
		(AC-FT)	490.	687.	687.	687.

CUMULATIVE AREA = 7.08 SQ MI

19 KO OUTPUT CONTROL VARIABLES
IPRNT 1 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

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* *
20 KK * RT-27 *
* *
****
ROUTE FLOW FROM DESIGN POINT 53 (DETENTION BASIN 3) TO DESIGN POINT 50

23 IO OUTPUT CONTROL VARIABLES
IPRNT 5 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

57 BI READ STATION SC2-29 HYDROGRAPH FROM UNIT 20

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****
* *
53 KK * DP51 *
* *
****

58 KO OUTPUT CONTROL VARIABLES
IPRNT 1 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

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72 BI READ STATION DB-6 HYDROGRAPH FROM UNIT 20

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          **************
          *            *
 68 KK    *     DP54   *
          *            *
          **************

 73 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           1  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

                                                  ***

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
356 KK    *      DP20  *
          *            *
          **************

358 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           1  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

359 HC          HYDROGRAPH COMBINATION
                     ICOMP           3  NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION DP20
SUM OF 3 HYDROGRAPHS

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0615	76	7484.	1		1230	151	678.	1		1845	226	304.
1		0005	2	0.	1		0620	77	7409.	1		1235	152	678.	1		1850	227	308.
1		0010	3	0.	1		0625	78	6772.	1		1240	153	680.	1		1855	228	311.
1		0015	4	0.	1		0630	79	5898.	1		1245	154	680.	1		1900	229	313.
1		0020	5	0.	1		0635	80	5028.	1		1250	155	677.	1		1905	230	315.
1		0025	6	0.	1		0640	81	4285.	1		1255	156	669.	1		1910	231	315.
1		0030	7	0.	1		0645	82	3739.	1		1300	157	657.	1		1915	232	315.
1		0035	8	0.	1		0650	83	3398.	1		1305	158	642.	1		1920	233	314.
1		0040	9	0.	1		0655	84	3199.	1		1310	159	626.	1		1925	234	314.
1		0045	10	0.	1		0700	85	3060.	1		1315	160	610.	1		1930	235	312.
1		0050	11	0.	1		0705	86	2946.	1		1320	161	596.	1		1935	236	311.
1		0055	12	0.	1		0710	87	2861.	1		1325	162	583.	1		1940	237	310.
1		0100	13	0.	1		0715	88	2810.	1		1330	163	572.	1		1945	238	309.
1		0105	14	0.	1		0720	89	2781.	1		1335	164	563.	1		1950	239	308.
1		0110	15	0.	1		0725	90	2759.	1		1340	165	555.	1		1955	240	307.
1		0115	16	0.	1		0730	91	2739.	1		1345	166	548.	1		2000	241	306.
1		0120	17	0.	1		0735	92	2718.	1		1350	167	541.	1		2005	242	305.
1		0125	18	0.	1		0740	93	2700.	1		1355	168	535.	1		2010	243	305.
1		0130	19	0.	1		0745	94	2685.	1		1400	169	529.	1		2015	244	304.
1		0135	20	0.	1		0750	95	2675.	1		1405	170	524.	1		2020	245	304.
1		0140	21	0.	1		0755	96	2668.	1		1410	171	519.	1		2025	246	304.
1		0145	22	0.	1		0800	97	2660.	1		1415	172	514.	1		2030	247	304.
1		0150	23	0.	1		0805	98	2648.	1		1420	173	510.	1		2035	248	304.
1		0155	24	0.	1		0810	99	2625.	1		1425	174	507.	1		2040	249	303.
1		0200	25	0.	1		0815	100	2586.	1		1430	175	504.	1		2045	250	302.
1		0205	26	0.	1		0820	101	2530.	1		1435	176	501.	1		2050	251	299.
1		0210	27	0.	1		0825	102	2459.	1		1440	177	499.	1		2055	252	295.
1		0215	28	0.	1		0830	103	2380.	1		1445	178	496.	1		2100	253	291.
1		0220	29	0.	1		0835	104	2298.	1		1450	179	494.	1		2105	254	285.
1		0225	30	0.	1		0840	105	2217.	1		1455	180	490.	1		2110	255	279.
1		0230	31	0.	1		0845	106	2140.	1		1500	181	487.	1		2115	256	273.
1		0235	32	0.	1		0850	107	2068.	1		1505	182	483.	1		2120	257	267.
1		0240	33	0.	1		0855	108	1999.	1		1510	183	479.	1		2125	258	260.
1		0245	34	0.	1		0900	109	1935.	1		1515	184	474.	1		2130	259	254.
1		0250	35	0.	1		0905	110	1874.	1		1520	185	469.	1		2135	260	249.
1		0255	36	0.	1		0910	111	1818.	1		1525	186	464.	1		2140	261	244.
1		0300	37	0.	1		0915	112	1768.	1		1530	187	460.	1		2145	262	240.
1		0305	38	0.	1		0920	113	1727.	1		1535	188	455.	1		2150	263	237.
1		0310	39	0.	1		0925	114	1692.	1		1540	189	451.	1		2155	264	236.
1		0315	40	0.	1		0930	115	1662.	1		1545	190	448.	1		2200	265	235.
1		0320	41	0.	1		0935	116	1635.	1		1550	191	445.	1		2205	266	235.
1		0325	42	0.	1		0940	117	1608.	1		1555	192	444.	1		2210	267	236.
1		0330	43	0.	1		0945	118	1581.	1		1600	193	443.	1		2215	268	237.
1		0335	44	0.	1		0950	119	1554.	1		1605	194	442.	1		2220	269	238.
1		0340	45	0.	1		0955	120	1528.	1		1610	195	442.	1		2225	270	238.
1		0345	46	0.	1		1000	121	1501.	1		1615	196	440.	1		2230	271	237.
1		0350	47	0.	1		1005	122	1469.	1		1620	197	437.	1		2235	272	236.
1		0355	48	0.	1		1010	123	1415.	1		1625	198	433.	1		2240	273	235.
1		0400	49	0.	1		1015	124	1327.	1		1630	199	428.	1		2245	274	233.
1		0405	50	0.	1		1020	125	1215.	1		1635	200	421.	1		2250	275	232.
1		0410	51	0.	1		1025	126	1105.	1		1640	201	415.	1		2255	276	232.
1		0415	52	0.	1		1030	127	1021.	1		1645	202	408.	1		2300	277	232.
1		0420	53	0.	1		1035	128	965.	1		1650	203	402.	1		2305	278	233.
1		0425	54	0.	1		1040	129	928.	1		1655	204	396.	1		2310	279	235.
1		0430	55	0.	1		1045	130	899.	1		1700	205	391.	1		2315	280	236.
1		0435	56	0.	1		1050	131	873.	1		1705	206	387.	1		2320	281	237.
1		0440	57	0.	1		1055	132	849.	1		1710	207	382.	1		2325	282	237.
1		0445	58	0.	1		1100	133	828.	1		1715	208	377.	1		2330	283	237.
1		0450	59	0.	1		1105	134	809.	1		1720	209	371.	1		2335	284	236.
1		0455	60	1.	1		1110	135	795.	1		1725	210	364.	1		2340	285	235.
1		0500	61	2.	1		1115	136	788.	1		1730	211	356.	1		2345	286	233.
1		0505	62	3.	1		1120	137	789.	1		1735	212	347.	1		2350	287	232.
1		0510	63	3.	1		1125	138	799.	1		1740	213	338.	1		2355	288	232.

1	0515	64	5.	*	1	1130	139	815.	*	1	1745	214	329.	*	2	0000	289	232.
1	0520	65	7.	*	1	1135	140	832.	*	1	1750	215	321.	*	2	0005	290	233.
1	0525	66	12.	*	1	1140	141	847.	*	1	1755	216	313.	*	2	0010	291	235.
1	0530	67	18.	*	1	1145	142	852.	*	1	1800	217	306.	*	2	0015	292	236.
1	0535	68	31.	*	1	1150	143	846.	*	1	1805	218	300.	*	2	0020	293	237.
1	0540	69	94.	*	1	1155	144	828.	*	1	1810	219	295.	*	2	0025	294	238.
1	0545	70	297.	*	1	1200	145	802.	*	1	1815	220	292.	*	2	0030	295	237.
1	0550	71	829.	*	1	1205	146	772.	*	1	1820	221	291.	*	2	0035	296	236.
1	0555	72	1748.	*	1	1210	147	741.	*	1	1825	222	291.	*	2	0040	297	234.
1	0600	73	3126.	*	1	1215	148	715.	*	1	1830	223	293.	*	2	0045	298	230.
1	0605	74	5008.	*	1	1220	149	696.	*	1	1835	224	296.	*	2	0050	299	226.
1	0610	75	6683.	*	1	1225	150	684.	*	1	1840	225	300.	*	2	0055	300	221.
				*					*					*				

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
(CFS)	(HR)					
		(CFS)				
7484.	6.25		2343.	798.	769.	769.
		(INCHES)	1.561	2.126	2.126	2.126
		(AC-FT)	1162.	1583.	1583.	1583.

CUMULATIVE AREA = 13.96 SQ MI

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          **************
          *            *
370 KK    *    RT-63   *
          *            *
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372 KO OUTPUT CONTROL VARIABLES

IPRNT	1	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

HYDROGRAPH ROUTING DATA

373 RK KINEMATIC WAVE STREAM ROUTING

L	1290.	CHANNEL LENGTH
S	0.0070	SLOPE
N	0.035	CHANNEL ROUGHNESS COEFFICIENT
CA	0.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	100.00	BOTTOM WIDTH OR DIAMETER
Z	3.00	SIDE SLOPE
NDXMIN	2	MINIMUM NUMBER OF DX INTERVALS

***

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	0.21	1.60	0.59	430.00	4062.91	401.45	2.11	13.62

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.1572E+04 EXCESS=0.0000E+00 OUTFLOW=0.1571E+04 BASIN STORAGE=0.1474E+01 PERCENT ERROR= 0.0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	0.21	1.60	5.00	4061.78	405.00	2.11

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HYDROGRAPH AT STATION RT-63

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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW
1	0000	1	0.	*	1	0615	76	2515.	*	1	1230	151	744.	*	1	1845	226	300.
1	0005	2	0.	*	1	0620	77	3028.	*	1	1235	152	729.	*	1	1850	227	301.
1	0010	3	0.	*	1	0625	78	3450.	*	1	1240	153	717.	*	1	1855	228	302.
1	0015	4	0.	*	1	0630	79	3782.	*	1	1245	154	708.	*	1	1900	229	304.
1	0020	5	0.	*	1	0635	80	3989.	*	1	1250	155	702.	*	1	1905	230	306.
1	0025	6	0.	*	1	0640	81	4055.	*	1	1255	156	695.	*	1	1910	231	308.
1	0030	7	0.	*	1	0645	82	4062.	*	1	1300	157	689.	*	1	1915	232	310.
1	0035	8	0.	*	1	0650	83	4042.	*	1	1305	158	681.	*	1	1920	233	311.
1	0040	9	0.	*	1	0655	84	3972.	*	1	1310	159	671.	*	1	1925	234	312.
1	0045	10	0.	*	1	0700	85	3883.	*	1	1315	160	660.	*	1	1930	235	312.
1	0050	11	0.	*	1	0705	86	3789.	*	1	1320	161	648.	*	1	1935	236	312.
1	0055	12	0.	*	1	0710	87	3694.	*	1	1325	162	636.	*	1	1940	237	312.
1	0100	13	0.	*	1	0715	88	3601.	*	1	1330	163	623.	*	1	1945	238	312.
1	0105	14	0.	*	1	0720	89	3513.	*	1	1335	164	611.	*	1	1950	239	311.
1	0110	15	0.	*	1	0725	90	3432.	*	1	1340	165	600.	*	1	1955	240	310.
1	0115	16	0.	*	1	0730	91	3359.	*	1	1345	166	589.	*	1	2000	241	309.
1	0120	17	0.	*	1	0735	92	3298.	*	1	1350	167	580.	*	1	2005	242	309.
1	0125	18	0.	*	1	0740	93	3242.	*	1	1355	168	571.	*	1	2010	243	308.
1	0130	19	0.	*	1	0745	94	3190.	*	1	1400	169	562.	*	1	2015	244	307.
1	0135	20	0.	*	1	0750	95	3141.	*	1	1405	170	555.	*	1	2020	245	306.
1	0140	21	0.	*	1	0755	96	3096.	*	1	1410	171	547.	*	1	2025	246	306.
1	0145	22	0.	*	1	0800	97	3055.	*	1	1415	172	541.	*	1	2030	247	305.
1	0150	23	0.	*	1	0805	98	3017.	*	1	1420	173	534.	*	1	2035	248	305.
1	0155	24	0.	*	1	0810	99	2981.	*	1	1425	174	529.	*	1	2040	249	305.
1	0200	25	0.	*	1	0815	100	2945.	*	1	1430	175	523.	*	1	2045	250	304.

1	0205	26	0.	*	1	0820	101	2909.	*	1	1435	176	519.	*	1	2050	251	304.
1	0210	27	0.	*	1	0825	102	2871.	*	1	1440	177	515.	*	1	2055	252	303.
1	0215	28	0.	*	1	0830	103	2830.	*	1	1445	178	511.	*	1	2100	253	301.
1	0220	29	0.	*	1	0835	104	2782.	*	1	1450	179	507.	*	1	2105	254	299.
1	0225	30	0.	*	1	0840	105	2731.	*	1	1455	180	504.	*	1	2110	255	295.
1	0230	31	0.	*	1	0845	106	2676.	*	1	1500	181	501.	*	1	2115	256	292.
1	0235	32	0.	*	1	0850	107	2619.	*	1	1505	182	498.	*	1	2120	257	288.
1	0240	33	0.	*	1	0855	108	2561.	*	1	1510	183	494.	*	1	2125	258	283.
1	0245	34	0.	*	1	0900	109	2502.	*	1	1515	184	490.	*	1	2130	259	278.
1	0250	35	0.	*	1	0905	110	2442.	*	1	1520	185	487.	*	1	2135	260	272.
1	0255	36	0.	*	1	0910	111	2383.	*	1	1525	186	482.	*	1	2140	261	267.
1	0300	37	0.	*	1	0915	112	2323.	*	1	1530	187	478.	*	1	2145	262	262.
1	0305	38	0.	*	1	0920	113	2242.	*	1	1535	188	474.	*	1	2150	263	257.
1	0310	39	0.	*	1	0925	114	2154.	*	1	1540	189	469.	*	1	2155	264	252.
1	0315	40	0.	*	1	0930	115	2075.	*	1	1545	190	465.	*	1	2200	265	248.
1	0320	41	0.	*	1	0935	116	2004.	*	1	1550	191	461.	*	1	2205	266	245.
1	0325	42	0.	*	1	0940	117	1940.	*	1	1555	192	457.	*	1	2210	267	243.
1	0330	43	0.	*	1	0945	118	1882.	*	1	1600	193	454.	*	1	2215	268	241.
1	0335	44	0.	*	1	0950	119	1830.	*	1	1605	194	452.	*	1	2220	269	240.
1	0340	45	0.	*	1	0955	120	1782.	*	1	1610	195	449.	*	1	2225	270	240.
1	0345	46	0.	*	1	1000	121	1738.	*	1	1615	196	448.	*	1	2230	271	239.
1	0350	47	0.	*	1	1005	122	1696.	*	1	1620	197	446.	*	1	2235	272	239.
1	0355	48	0.	*	1	1010	123	1655.	*	1	1625	198	444.	*	1	2240	273	238.
1	0400	49	0.	*	1	1015	124	1611.	*	1	1630	199	441.	*	1	2245	274	237.
1	0405	50	0.	*	1	1020	125	1558.	*	1	1635	200	438.	*	1	2250	275	237.
1	0410	51	0.	*	1	1025	126	1502.	*	1	1640	201	434.	*	1	2255	276	236.
1	0415	52	0.	*	1	1030	127	1442.	*	1	1645	202	429.	*	1	2300	277	235.
1	0420	53	0.	*	1	1035	128	1380.	*	1	1650	203	424.	*	1	2305	278	234.
1	0425	54	0.	*	1	1040	129	1320.	*	1	1655	204	419.	*	1	2310	279	234.
1	0430	55	0.	*	1	1045	130	1263.	*	1	1700	205	414.	*	1	2315	280	234.
1	0435	56	0.	*	1	1050	131	1209.	*	1	1705	206	408.	*	1	2320	281	235.
1	0440	57	0.	*	1	1055	132	1160.	*	1	1710	207	403.	*	1	2325	282	235.
1	0445	58	0.	*	1	1100	133	1115.	*	1	1715	208	398.	*	1	2330	283	236.
1	0450	59	0.	*	1	1105	134	1073.	*	1	1720	209	393.	*	1	2335	284	236.
1	0455	60	0.	*	1	1110	135	1035.	*	1	1725	210	388.	*	1	2340	285	236.
1	0500	61	0.	*	1	1115	136	1000.	*	1	1730	211	382.	*	1	2345	286	236.
1	0505	62	0.	*	1	1120	137	970.	*	1	1735	212	376.	*	1	2350	287	235.
1	0510	63	0.	*	1	1125	138	944.	*	1	1740	213	369.	*	1	2355	288	235.
1	0515	64	0.	*	1	1130	139	918.	*	1	1745	214	362.	*	2	0000	289	234.
1	0520	65	0.	*	1	1135	140	896.	*	1	1750	215	354.	*	2	0005	290	234.
1	0525	66	1.	*	1	1140	141	881.	*	1	1755	216	347.	*	2	0010	291	234.
1	0530	67	3.	*	1	1145	142	873.	*	1	1800	217	339.	*	2	0015	292	234.
1	0535	68	7.	*	1	1150	143	867.	*	1	1805	218	331.	*	2	0020	293	234.
1	0540	69	15.	*	1	1155	144	861.	*	1	1810	219	324.	*	2	0025	294	235.
1	0545	70	45.	*	1	1200	145	852.	*	1	1815	220	317.	*	2	0030	295	236.
1	0550	71	84.	*	1	1205	146	839.	*	1	1820	221	311.	*	2	0035	296	236.
1	0555	72	161.	*	1	1210	147	823.	*	1	1825	222	307.	*	2	0040	297	236.
1	0600	73	574.	*	1	1215	148	803.	*	1	1830	223	303.	*	2	0045	298	235.
1	0605	74	1143.	*	1	1220	149	782.	*	1	1835	224	301.	*	2	0050	299	234.
1	0610	75	1849.	*	1	1225	150	762.	*	1	1840	225	300.	*	2	0055	300	232.
				*					*					*				

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
(CFS)	(HR)					
		(CFS)				
4062.	6.75		2310.	792.	763.	763.
		(INCHES)	1.539	2.111	2.111	2.111
		(AC-FT)	1146.	1571.	1571.	1571.

CUMULATIVE AREA = 13.96 SQ MI

*** FDKRUT - NEWTON RAPHSON FAILEDFIXED POINT ITERATION USED - ITERATION= 1

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          *            *
543 KK    *     DBSC1  *
          *            *
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545 KO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

100 YEAR RUNOFF SUMAMRY

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	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	DP53	1819.	7.67	988.	347.	334.	7.08	POND 3 DISCHARGE - DB-3	
ROUTED TO	RT-27	1818.	7.67	988.	346.	334.	7.08		
HYDROGRAPH AT	SC2-24	173.	6.08	20.	6.	6.	0.07		
ROUTED TO	RT-29	173.	6.08	20.	6.	6.	0.07		
HYDROGRAPH AT	SC2-27	208.	6.08	25.	7.	7.	0.08		
3 COMBINED AT	DP50	1833.	7.67	1000.	360.	346.	7.23		
ROUTED TO	RT-31	1833.	7.67	1000.	360.	346.	7.23		
HYDROGRAPH AT	DP51	104.	6.00	11.	3.	3.	0.03	BASIN SC2-29 - SC2-29	
ROUTED TO	RT-30	100.	6.08	11.	3.	3.	0.03		
2 COMBINED AT	DP49	1836.	7.67	1002.	363.	350.	7.26		
ROUTED TO	RT-32	1835.	7.75	1002.	362.	348.	7.26		
HYDROGRAPH AT	DP54	286.	7.08	216.	76.	73.	0.96	POND 6 DISCHARGE - DB-6	
ROUTED TO	RT-26	286.	7.17	216.	76.	73.	0.96		
HYDROGRAPH AT	SC2-26	216.	6.17	30.	9.	9.	0.15		
ROUTED TO	RT-34	210.	6.25	30.	9.	9.	0.15		
HYDROGRAPH AT	SC2-25	479.	6.33	83.	26.	25.	0.42		
3 COMBINED AT	DP47	918.	6.33	327.	111.	107.	1.53		
ROUTED TO	RT-33	916.	6.33	327.	111.	107.	1.53		
HYDROGRAPH AT	SC2-28	152.	6.42	31.	10.	10.	0.27		
HYDROGRAPH AT	SC2-21	242.	6.25	38.	12.	11.	0.19		
4 COMBINED AT	DP48	2222.	7.67	1394.	495.	477.	9.26		
ROUTED TO	RT-37	2222.	7.67	1394.	494.	476.	9.26		
HYDROGRAPH AT	SC2-23	271.	6.17	39.	12.	12.	0.20		
ROUTED TO	RT-35	267.	6.17	39.	12.	12.	0.20		
HYDROGRAPH AT	SC2-22	137.	6.08	16.	5.	5.	0.08		
2 COMBINED AT	DP46	393.	6.17	55.	17.	16.	0.28		
ROUTED TO	RT-36	388.	6.17	55.	17.	16.	0.28		
2 COMBINED AT	DP42	2247.	7.67	1446.	512.	493.	9.53		
ROUTED TO	RT-38	2246.	7.67	1446.	511.	492.	9.53		
HYDROGRAPH AT	SC2-20	412.	6.25	64.	20.	19.	0.32		
ROUTED TO	RT-41	410.	6.25	64.	20.	19.	0.32		
HYDROGRAPH AT	SC2-15	293.	6.08	36.	11.	11.	0.18		
ROUTED TO									

	RT-39	290.	6.08	36.	11.	11.	0.18
HYDROGRAPH AT	SC2-13	246.	6.17	32.	10.	10.	0.16
4 COMBINED AT	DP85	2885.	6.25	1572.	552.	532.	10.20
ROUTED TO	RT-42	2833.	6.25	1571.	551.	531.	10.20
HYDROGRAPH AT	SC2-14	264.	6.33	47.	15.	14.	0.26
HYDROGRAPH AT	SC2-16	269.	6.17	38.	12.	11.	0.21
3 COMBINED AT	DP37	3344.	6.25	1653.	577.	556.	10.68
ROUTED TO	RT-43	3302.	6.33	1650.	576.	555.	10.68
HYDROGRAPH AT	SC2-12	182.	6.17	25.	8.	8.	0.18
ROUTED TO	RT-46	175.	6.25	25.	8.	8.	0.18
HYDROGRAPH AT	SC2-8	398.	6.33	69.	21.	21.	0.35
2 COMBINED AT	DP33	573.	6.25	93.	29.	28.	0.53
ROUTED TO	RT-45	566.	6.25	93.	29.	28.	0.53
2 COMBINED AT	DP36	3857.	6.33	1740.	605.	583.	11.21
ROUTED TO	RT-44	3842.	6.33	1740.	605.	582.	11.21
HYDROGRAPH AT	SC2-11	340.	6.08	42.	13.	12.	0.21
ROUTED TO	RT-52	338.	6.17	42.	13.	12.	0.21
HYDROGRAPH AT	SC2-19	350.	6.17	47.	14.	14.	0.18
ROUTED TO	RT-51	347.	6.17	47.	14.	14.	0.18
HYDROGRAPH AT	SC2-18	412.	6.17	55.	17.	16.	0.20
3 COMBINED AT	DP39	1096.	6.17	144.	44.	42.	0.59
ROUTED TO	RT-49	1085.	6.17	144.	44.	42.	0.59
HYDROGRAPH AT	SC2-17	226.	6.17	32.	10.	9.	0.16
ROUTED TO	RT-50	219.	6.25	32.	10.	9.	0.16
HYDROGRAPH AT	SC2-29	360.	6.08	42.	13.	12.	0.15
3 COMBINED AT	DP34	1611.	6.17	217.	66.	64.	0.90
ROUTED TO	RT-48	1594.	6.17	217.	66.	64.	0.90
HYDROGRAPH AT	SC2-10	401.	6.25	64.	20.	19.	0.33
2 COMBINED AT	DP32	1972.	6.17	281.	86.	83.	1.23
ROUTED TO	RT-47	1953.	6.17	281.	86.	83.	1.23
HYDROGRAPH AT	SC2-9	158.	6.42	31.	10.	10.	0.21
3 COMBINED AT	DP35	5718.	6.25	2037.	701.	675.	12.64
ROUTED TO	RT-53	5663.	6.33	2037.	701.	675.	12.64
HYDROGRAPH AT	SC2-7	203.	6.17	29.	9.	9.	0.14
2 COMBINED AT	DP29	5840.	6.25	2065.	710.	683.	12.79
ROUTED TO	RT-54	5829.	6.33	2065.	709.	683.	12.79

HYDROGRAPH AT	SC2-6	271.	6.08	33.	10.	10.	0.15	
ROUTED TO	RT-55	261.	6.17	33.	10.	10.	0.15	
HYDROGRAPH AT	SC2-2	271.	6.17	36.	11.	11.	0.17	
3 COMBINED AT	DP28	6184.	6.33	2129.	730.	703.	13.10	
ROUTED TO	RT-56	6183.	6.33	2130.	730.	703.	13.10	
HYDROGRAPH AT	SC2-5	388.	6.08	51.	15.	15.	0.16	
ROUTED TO	RT-58	381.	6.08	51.	15.	15.	0.16	
HYDROGRAPH AT	SC2-0	162.	6.17	23.	7.	7.	0.15	
ROUTED TO	RT-57	158.	6.25	23.	7.	7.	0.15	
3 COMBINED AT	DP21	6586.	6.33	2199.	753.	725.	13.41	
ROUTED TO	RT-59	6584.	6.33	2199.	753.	725.	13.41	
HYDROGRAPH AT	SC2-4	651.	6.17	90.	27.	26.	0.28	
ROUTED TO	RT-61	646.	6.17	90.	27.	26.	0.28	
HYDROGRAPH AT	SC2-3	190.	6.08	23.	7.	6.	0.07	
2 COMBINED AT	DP22	807.	6.17	113.	34.	32.	0.36	
ROUTED TO	RT-60	805.	6.17	113.	34.	32.	0.36	
HYDROGRAPH AT	SC2-1	287.	6.17	38.	12.	11.	0.19	
3 COMBINED AT	DP20	7484.	6.25	2343.	798.	769.	13.96	
ROUTED TO	DBSC2	4063.	6.67	2312.	793.	764.	13.96	6510.13 6.67
ROUTED TO	RT-63	4062.	6.75	2310.	792.	763.	13.96	
HYDROGRAPH AT	SC1-10	348.	6.25	55.	17.	17.	0.29	
2 COMBINED AT	DP18	4208.	6.67	2362.	809.	779.	14.24	
ROUTED TO	RT-66	4206.	6.67	2362.	809.	779.	14.24	
HYDROGRAPH AT	SC1-13	273.	6.08	35.	11.	10.	0.13	
ROUTED TO	RT-64	269.	6.17	35.	11.	10.	0.13	
HYDROGRAPH AT	SC1-14	265.	6.08	35.	10.	10.	0.11	
2 COMBINED AT	DP19	533.	6.08	70.	21.	20.	0.24	
ROUTED TO	RT-65	530.	6.08	70.	21.	20.	0.24	
2 COMBINED AT	DP17	4321.	6.67	2419.	830.	799.	14.48	
ROUTED TO	RT-67	4321.	6.67	2419.	829.	799.	14.48	
HYDROGRAPH AT	SC1-9	354.	6.08	44.	14.	13.	0.24	
ROUTED TO	DBSR29	108.	6.50	43.	14.	13.	0.24	106.21 6.50
ROUTED TO	RT-70	108.	6.50	43.	14.	13.	0.24	
HYDROGRAPH AT	SC1-8	303.	6.17	43.	13.	13.	0.21	
ROUTED TO	RT-71	301.	6.17	43.	13.	13.	0.21	

2 COMBINED AT	DP14	374.	6.25	85.	27.	26.	0.45	
ROUTED TO	RT-69	373.	6.25	85.	27.	26.	0.45	
HYDROGRAPH AT	SC1-7	167.	6.08	20.	6.	6.	0.10	
2 COMBINED AT	DP12	519.	6.17	105.	33.	32.	0.55	
ROUTED TO	RT-68	517.	6.17	105.	33.	32.	0.55	
2 COMBINED AT	DP13	4565.	6.50	2520.	862.	831.	15.03	
ROUTED TO	RT-72	4555.	6.67	2518.	862.	830.	15.03	
HYDROGRAPH AT	SC1-6	288.	6.08	34.	10.	10.	0.16	
ROUTED TO	DBSR15	140.	6.33	34.	10.	10.	0.16	
							105.18	6.33
ROUTED TO	RT-74	139.	6.33	34.	10.	10.	0.16	
HYDROGRAPH AT	SC1-5	249.	6.17	34.	11.	10.	0.17	
2 COMBINED AT	DP11	378.	6.17	68.	21.	20.	0.33	
ROUTED TO	RT-73	377.	6.17	68.	21.	20.	0.33	
2 COMBINED AT	DP10	4768.	6.58	2584.	883.	850.	15.36	
ROUTED TO	RT-75	4758.	6.67	2583.	881.	849.	15.36	
HYDROGRAPH AT	SC1-2	192.	6.17	27.	8.	8.	0.14	
ROUTED TO	RT-76	191.	6.17	27.	8.	8.	0.14	
2 COMBINED AT	DP9	4817.	6.67	2607.	890.	857.	15.50	
ROUTED TO	RT-78	4817.	6.67	2607.	889.	856.	15.50	
HYDROGRAPH AT	SC1-12	392.	6.25	60.	18.	17.	0.25	
ROUTED TO	RT-81	391.	6.25	60.	18.	17.	0.25	
HYDROGRAPH AT	SC1-11	379.	6.08	51.	15.	15.	0.16	
2 COMBINED AT	DP8	744.	6.17	110.	33.	32.	0.41	
ROUTED TO	RT-77	736.	6.25	109.	33.	32.	0.41	
HYDROGRAPH AT	SC1-4	248.	6.08	32.	10.	9.	0.10	
ROUTED TO	RT-80	247.	6.08	32.	10.	9.	0.10	
HYDROGRAPH AT	SC1-1	164.	6.17	22.	7.	6.	0.11	
ROUTED TO	RT-79	164.	6.17	22.	7.	6.	0.11	
HYDROGRAPH AT	SC1-3	184.	6.33	36.	12.	12.	0.35	
5 COMBINED AT	DP4	5537.	6.50	2793.	950.	915.	16.47	
ROUTED TO	DBSC1	3815.	7.50	2721.	933.	899.	16.47	
							6408.12	7.50

10 YEAR OUTPUT SUMMARY

AREA UPSTREAM OF WOODMEN
10 YEAR 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			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	SB82	60.	6.20	9.	3.	3.	0.18		
ROUTED TO	RT-4	59.	6.27	9.	3.	3.	0.18		
HYDROGRAPH AT	SB74	56.	6.27	9.	4.	4.	0.19		
2 COMBINED AT	DP74	114.	6.27	18.	7.	7.	0.37		
ROUTED TO	RT-3	114.	6.33	18.	7.	7.	0.37		
HYDROGRAPH AT	SB80	60.	6.27	11.	4.	4.	0.23		
ROUTED TO	RT-2	60.	6.40	11.	4.	4.	0.23		
HYDROGRAPH AT	SB81	100.	6.33	20.	8.	8.	0.41		
ROUTED TO	RT-1	99.	6.47	20.	8.	8.	0.41		
HYDROGRAPH AT	SB73	44.	6.20	7.	3.	3.	0.14		
HYDROGRAPH AT	SB75	34.	6.27	6.	2.	2.	0.12		
HYDROGRAPH AT	SB76	36.	6.27	6.	3.	3.	0.13		
6 COMBINED AT	DP75	365.	6.33	67.	26.	26.	1.41		
ROUTED TO	RT-5	362.	6.40	67.	26.	26.	1.41		
HYDROGRAPH AT	SB79	91.	6.20	14.	6.	6.	0.29		
ROUTED TO	RT-7	89.	6.27	14.	5.	5.	0.29		
HYDROGRAPH AT	SB78	73.	6.20	12.	5.	5.	0.24		
2 COMBINED AT	DP78	162.	6.27	26.	10.	10.	0.54		
ROUTED TO	RT-6	159.	6.33	26.	10.	10.	0.54		
HYDROGRAPH AT	SB77	85.	6.27	14.	5.	5.	0.27		
HYDROGRAPH AT	SB88	41.	6.20	7.	3.	3.	0.14		
4 COMBINED AT	DP77	626.	6.33	113.	44.	44.	2.36		
ROUTED TO	RT-8	625.	6.47	113.	44.	44.	2.36		
HYDROGRAPH AT	SC3-20	111.	6.20	16.	6.	6.	0.31		
2 COMBINED AT	DP71	679.	6.47	127.	50.	50.	2.66		
ROUTED TO	RT-9	671.	6.47	127.	50.	50.	2.66		
HYDROGRAPH AT	SB3-18	195.	6.13	24.	9.	9.	0.27		
2 COMBINED AT	DP70	735.	6.47	149.	59.	59.	2.93		
ROUTED TO	RT-11	721.	6.47	149.	58.	58.	2.93		
HYDROGRAPH AT	SC3-19	235.	6.07	27.	10.	10.	0.30		
ROUTED TO	RT-10	232.	6.13	27.	10.	10.	0.30		
HYDROGRAPH AT	SC3-17	202.	6.07	22.	8.	8.	0.18		

3 COMBINED AT	DP69	827.	6.47	197.	76.	76.	3.41	
ROUTED TO	DBSRMN	571.	6.73	194.	75.	75.	3.41	99.96 6.73
ROUTED TO	RT-12	570.	6.80	194.	75.	75.	3.41	
HYDROGRAPH AT	SC3-15	261.	6.07	30.	11.	11.	0.21	
ROUTED TO	RT-10A	257.	6.13	30.	11.	11.	0.21	
2 COMBINED AT	DP87	600.	6.80	222.	86.	86.	3.62	
ROUTED TO	RT-13	600.	6.80	222.	85.	85.	3.62	
HYDROGRAPH AT	SC3-14	432.	6.07	52.	18.	18.	0.34	
HYDROGRAPH AT	SC3-16	354.	6.13	43.	15.	15.	0.30	
ROUTED TO	RT-13A	350.	6.33	43.	15.	15.	0.30	
3 COMBINED AT	DP68	1100.	6.27	315.	119.	119.	4.26	
ROUTED TO	DBSRMS	762.	6.80	312.	118.	118.	4.26	11.19 6.80
ROUTED TO	RT-17	761.	6.80	312.	118.	118.	4.26	
HYDROGRAPH AT	SC3-13	127.	6.13	18.	7.	7.	0.34	
ROUTED TO	RT-19	127.	6.20	18.	7.	7.	0.34	
HYDROGRAPH AT	SC3-12	246.	6.07	28.	10.	10.	0.21	
2 COMBINED AT	DP66	356.	6.13	46.	17.	17.	0.54	
ROUTED TO	RT-20	346.	6.47	45.	17.	17.	0.54	
HYDROGRAPH AT	SC3-11	332.	6.13	43.	15.	15.	0.28	
2 COMBINED AT	DP63A	507.	6.40	88.	32.	32.	0.83	
2 COMBINED AT	DP63	1183.	6.47	398.	150.	150.	5.09	
ROUTED TO	RT-17A	1176.	6.47	398.	149.	149.	5.09	
HYDROGRAPH AT	SC3-10	26.	6.13	3.	1.	1.	0.06	
HYDROGRAPH AT	SC3-9	169.	6.33	32.	12.	12.	0.50	
ROUTED TO	RT-14	168.	6.40	32.	12.	12.	0.50	
HYDROGRAPH AT	SC3-8	110.	6.27	19.	7.	7.	0.23	
2 COMBINED AT	DP65	272.	6.33	50.	19.	19.	0.73	
ROUTED TO	RT-15	269.	6.40	50.	19.	19.	0.73	
HYDROGRAPH AT	SC3-7	218.	6.07	24.	8.	8.	0.16	
ROUTED TO	RT-15A	214.	6.07	24.	8.	8.	0.16	
2 COMBINED AT	DP64	371.	6.20	74.	27.	27.	0.88	
ROUTED TO	RT-16	370.	6.20	74.	27.	27.	0.88	
HYDROGRAPH AT	SC3-6	300.	6.07	31.	11.	11.	0.21	
2 COMBINED AT	DP62	608.	6.07	105.	38.	38.	1.09	
ROUTED TO	DBSRW	148.	6.93	97.	38.	38.	1.09	76.12 6.93

3 COMBINED AT	DP61	1322.	6.47	498.	188.	188.	6.24	
ROUTED TO	RT-17B	1320.	6.53	498.	188.	188.	6.24	
HYDROGRAPH AT	SB61	35.	6.27	6.	2.	2.	0.12	
ROUTED TO	RT-20	35.	6.33	6.	2.	2.	0.12	
HYDROGRAPH AT	SC3-5	211.	6.07	21.	8.	8.	0.16	
3 COMBINED AT	DP60	1373.	6.53	522.	198.	198.	6.51	
ROUTED TO	RT-18	1361.	6.53	521.	197.	197.	6.51	
HYDROGRAPH AT	SC3-4	141.	6.00	14.	5.	5.	0.08	
ROUTED TO	RT-21	138.	6.00	14.	5.	5.	0.08	
HYDROGRAPH AT	SC3-1	174.	6.07	17.	6.	6.	0.17	
HYDROGRAPH AT	SC3-3	298.	6.07	33.	12.	12.	0.24	
ROUTED TO	DBSC33	146.	6.27	32.	11.	11.	0.24	4.92 6.27
ROUTED TO	RT-21B	144.	6.33	32.	11.	11.	0.24	
HYDROGRAPH AT	SC3-2	111.	6.07	12.	4.	4.	0.08	
5 COMBINED AT	DP53	1534.	6.53	593.	224.	224.	7.08	
ROUTED TO	DB-3	959.	7.73	399.	163.	163.	7.08	84.90 6.73
HYDROGRAPH AT	SC6-1	139.	6.13	17.	6.	6.	0.11	
ROUTED TO	DBSC61	50.	6.47	17.	6.	6.	0.11	3.32 6.47
ROUTED TO	RT-23A	50.	6.53	16.	6.	6.	0.11	
HYDROGRAPH AT	SC6-2	241.	6.07	28.	10.	10.	0.24	
HYDROGRAPH AT	SC6-3	205.	6.07	23.	8.	8.	0.17	
ROUTED TO	DBSC63	55.	6.40	21.	8.	8.	0.17	4.61 6.40
ROUTED TO	RT-23B	55.	6.47	21.	8.	8.	0.17	
3 COMBINED AT	DP54A	294.	6.13	66.	24.	24.	0.52	
ROUTED TO	RT-23C	291.	6.13	66.	24.	24.	0.52	
HYDROGRAPH AT	SC6-4	201.	6.00	22.	8.	8.	0.10	
ROUTED TO	DBSC64	36.	6.40	19.	7.	7.	0.10	3.95 6.40
ROUTED TO	RT-24	36.	6.40	19.	7.	7.	0.10	
HYDROGRAPH AT	SC6-5	337.	6.07	37.	13.	13.	0.28	
HYDROGRAPH AT	SC6-6	110.	6.00	12.	4.	4.	0.06	
4 COMBINED AT	DP54	740.	6.07	133.	48.	48.	0.96	
ROUTED TO	DB-6	206.	6.73	124.	48.	48.	0.96	71.90 6.13
HYDROGRAPH AT	SC2-29	67.	6.00	7.	3.	3.	0.03	

AREA DOWNSTREAM OF WOODMEN
10 YEAR 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			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	DP53	958.	7.75	398.	154.	148.	7.08		
ROUTED TO	RT-27	953.	7.83	399.	154.	148.	7.08		
HYDROGRAPH AT	SC2-24	106.	6.08	12.	4.	3.	0.07		
ROUTED TO	RT-29	106.	6.08	12.	4.	3.	0.07		
HYDROGRAPH AT	SC2-27	130.	6.08	15.	5.	4.	0.08		
3 COMBINED AT	DP50	964.	7.83	404.	162.	156.	7.23		
ROUTED TO	RT-31	946.	7.83	405.	162.	156.	7.23		
HYDROGRAPH AT	DP51	67.	6.00	7.	2.	2.	0.03		
ROUTED TO	RT-30	65.	6.08	7.	2.	2.	0.03		
2 COMBINED AT	DP49	949.	7.83	406.	164.	158.	7.26		
ROUTED TO	RT-32	916.	7.92	406.	163.	157.	7.26		
HYDROGRAPH AT	DP54	206.	6.75	124.	43.	42.	0.96		
ROUTED TO	RT-26	206.	6.83	124.	43.	41.	0.96		
HYDROGRAPH AT	SC2-26	104.	6.17	15.	5.	5.	0.15		
ROUTED TO	RT-34	103.	6.25	15.	5.	5.	0.15		
HYDROGRAPH AT	SC2-25	233.	6.33	41.	13.	13.	0.42		
3 COMBINED AT	DP47	482.	6.33	179.	61.	59.	1.53		
ROUTED TO	RT-33	478.	6.33	179.	61.	59.	1.53		
HYDROGRAPH AT	SC2-28	53.	6.42	12.	4.	4.	0.27		
HYDROGRAPH AT	SC2-21	117.	6.25	19.	6.	6.	0.19		
4 COMBINED AT	DP48	1141.	7.92	608.	235.	226.	9.26		
ROUTED TO	RT-37	1126.	7.92	608.	234.	226.	9.26		
HYDROGRAPH AT	SC2-23	130.	6.17	20.	6.	6.	0.20		
ROUTED TO	RT-35	130.	6.25	20.	6.	6.	0.20		
HYDROGRAPH AT	SC2-22	68.	6.08	8.	3.	2.	0.08		
2 COMBINED AT	DP46	192.	6.17	28.	9.	9.	0.28		
ROUTED TO	RT-36	187.	6.17	28.	9.	9.	0.28		
2 COMBINED AT	DP42	1141.	7.92	634.	243.	234.	9.53		
ROUTED TO	RT-38	1112.	7.92	634.	243.	234.	9.53		
HYDROGRAPH AT	SC2-20	200.	6.25	32.	10.	10.	0.32		
ROUTED TO	RT-41	198.	6.25	32.	10.	10.	0.32		
HYDROGRAPH AT	SC2-15	143.	6.08	18.	6.	6.	0.18		

ROUTED TO	RT-39	142.	6.17	18.	6.	6.	0.18
HYDROGRAPH AT	SC2-13	121.	6.17	16.	5.	5.	0.16
4 COMBINED AT	DP85	1437.	6.25	696.	264.	254.	10.20
ROUTED TO	RT-42	1425.	6.33	696.	263.	253.	10.20
HYDROGRAPH AT	SC2-14	120.	6.33	22.	7.	7.	0.26
HYDROGRAPH AT	SC2-16	123.	6.17	18.	6.	6.	0.21
3 COMBINED AT	DP37	1648.	6.33	734.	276.	266.	10.68
ROUTED TO	RT-43	1622.	6.33	732.	275.	265.	10.68
HYDROGRAPH AT	SC2-12	73.	6.17	11.	4.	3.	0.18
ROUTED TO	RT-46	72.	6.25	11.	4.	3.	0.18
HYDROGRAPH AT	SC2-8	194.	6.33	35.	11.	11.	0.35
2 COMBINED AT	DP33	260.	6.33	45.	15.	14.	0.53
ROUTED TO	RT-45	260.	6.33	45.	15.	14.	0.53
2 COMBINED AT	DP36	1883.	6.33	775.	290.	279.	11.21
ROUTED TO	RT-44	1858.	6.42	775.	289.	279.	11.21
HYDROGRAPH AT	SC2-11	165.	6.08	21.	7.	6.	0.21
ROUTED TO	RT-52	164.	6.25	21.	7.	6.	0.21
HYDROGRAPH AT	SC2-19	195.	6.17	26.	8.	8.	0.18
ROUTED TO	RT-51	192.	6.17	26.	8.	8.	0.18
HYDROGRAPH AT	SC2-18	238.	6.17	32.	10.	9.	0.20
3 COMBINED AT	DP39	592.	6.17	79.	25.	24.	0.59
ROUTED TO	RT-49	579.	6.17	79.	25.	24.	0.59
HYDROGRAPH AT	SC2-17	109.	6.17	16.	5.	5.	0.16
ROUTED TO	RT-50	108.	6.25	16.	5.	5.	0.16
HYDROGRAPH AT	SC2-29	210.	6.08	24.	7.	7.	0.15
3 COMBINED AT	DP34	863.	6.17	119.	37.	36.	0.90
ROUTED TO	RT-48	842.	6.17	119.	37.	36.	0.90
HYDROGRAPH AT	SC2-10	191.	6.25	32.	10.	10.	0.33
2 COMBINED AT	DP32	1016.	6.17	151.	47.	45.	1.23
ROUTED TO	RT-47	1014.	6.25	151.	47.	45.	1.23
HYDROGRAPH AT	SC2-9	66.	6.42	14.	5.	5.	0.21
3 COMBINED AT	DP35	2810.	6.33	927.	341.	329.	12.64
ROUTED TO	RT-53	2784.	6.33	927.	341.	329.	12.64
HYDROGRAPH AT	SC2-7	98.	6.17	14.	5.	4.	0.14
2 COMBINED AT	DP29	2868.	6.33	941.	346.	333.	12.79
ROUTED TO	RT-54	2815.	6.33	941.	345.	333.	12.79

HYDROGRAPH AT	SC2-6	139.	6.08	17.	5.	5.	0.15	
ROUTED TO	RT-55	137.	6.17	17.	5.	5.	0.15	
HYDROGRAPH AT	SC2-2	139.	6.17	18.	6.	6.	0.17	
3 COMBINED AT	DP28	3007.	6.33	974.	357.	344.	13.10	
ROUTED TO	RT-56	2960.	6.33	974.	356.	343.	13.10	
HYDROGRAPH AT	SC2-5	237.	6.08	31.	9.	9.	0.16	
ROUTED TO	RT-58	235.	6.17	31.	9.	9.	0.16	
HYDROGRAPH AT	SC2-0	69.	6.25	11.	4.	3.	0.15	
ROUTED TO	RT-57	69.	6.25	11.	4.	3.	0.15	
3 COMBINED AT	DP21	3189.	6.33	1012.	369.	356.	13.41	
ROUTED TO	RT-59	3147.	6.33	1011.	369.	356.	13.41	
HYDROGRAPH AT	SC2-4	399.	6.17	55.	17.	16.	0.28	
ROUTED TO	RT-61	393.	6.17	55.	17.	16.	0.28	
HYDROGRAPH AT	SC2-3	118.	6.08	14.	4.	4.	0.07	
2 COMBINED AT	DP22	495.	6.17	69.	21.	20.	0.36	
ROUTED TO	RT-60	492.	6.17	69.	21.	20.	0.36	
HYDROGRAPH AT	SC2-1	144.	6.17	20.	6.	6.	0.19	
3 COMBINED AT	DP20	3646.	6.33	1095.	396.	381.	13.96	
ROUTED TO	DBSC2	2327.	6.67	1075.	392.	378.	13.96	6504.10 6.67
ROUTED TO	RT-63	2319.	6.75	1074.	392.	377.	13.96	
HYDROGRAPH AT	SC1-10	165.	6.25	27.	9.	8.	0.29	
2 COMBINED AT	DP18	2396.	6.67	1099.	400.	386.	14.24	
ROUTED TO	RT-66	2393.	6.67	1099.	400.	386.	14.24	
HYDROGRAPH AT	SC1-13	154.	6.17	20.	6.	6.	0.13	
ROUTED TO	RT-64	154.	6.17	20.	6.	6.	0.13	
HYDROGRAPH AT	SC1-14	162.	6.08	21.	6.	6.	0.11	
2 COMBINED AT	DP19	315.	6.17	42.	13.	12.	0.24	
ROUTED TO	RT-65	314.	6.17	42.	13.	12.	0.24	
2 COMBINED AT	DP17	2465.	6.67	1131.	413.	398.	14.48	
ROUTED TO	RT-67	2459.	6.67	1130.	412.	397.	14.48	
HYDROGRAPH AT	SC1-9	166.	6.17	21.	7.	7.	0.24	
ROUTED TO	DBSR29	54.	6.50	21.	7.	7.	0.24	103.93 6.50
ROUTED TO	RT-70	54.	6.58	21.	7.	7.	0.24	
HYDROGRAPH AT	SC1-8	148.	6.17	22.	7.	7.	0.21	
ROUTED TO	RT-71	147.	6.17	22.	7.	7.	0.21	

2 COMBINED AT	DP14	189.	6.25	42.	14.	13.	0.45	
ROUTED TO	RT-69	188.	6.25	42.	14.	13.	0.45	
HYDROGRAPH AT	SC1-7	84.	6.08	10.	3.	3.	0.10	
2 COMBINED AT	DP12	258.	6.17	52.	17.	16.	0.55	
ROUTED TO	RT-68	257.	6.17	52.	17.	16.	0.55	
2 COMBINED AT	DP13	2581.	6.67	1180.	429.	414.	15.03	
ROUTED TO	RT-72	2573.	6.67	1180.	429.	413.	15.03	
HYDROGRAPH AT	SC1-6	147.	6.08	17.	6.	5.	0.16	
ROUTED TO	DBSR15	92.	6.25	17.	5.	5.	0.16	102.52 6.25
ROUTED TO	RT-74	91.	6.33	17.	6.	5.	0.16	
HYDROGRAPH AT	SC1-5	121.	6.17	17.	6.	5.	0.17	
2 COMBINED AT	DP11	207.	6.25	35.	11.	11.	0.33	
ROUTED TO	RT-73	207.	6.25	35.	11.	11.	0.33	
2 COMBINED AT	DP10	2672.	6.67	1213.	440.	424.	15.36	
ROUTED TO	RT-75	2658.	6.67	1212.	439.	423.	15.36	
HYDROGRAPH AT	SC1-2	93.	6.17	14.	4.	4.	0.14	
ROUTED TO	RT-76	92.	6.17	14.	4.	4.	0.14	
2 COMBINED AT	DP9	2689.	6.67	1223.	443.	427.	15.50	
ROUTED TO	RT-78	2683.	6.75	1223.	442.	426.	15.50	
HYDROGRAPH AT	SC1-12	210.	6.25	32.	10.	10.	0.25	
ROUTED TO	RT-81	207.	6.25	32.	10.	10.	0.25	
HYDROGRAPH AT	SC1-11	232.	6.17	31.	9.	9.	0.16	
2 COMBINED AT	DP8	418.	6.17	63.	19.	19.	0.41	
ROUTED TO	RT-77	411.	6.33	63.	19.	19.	0.41	
HYDROGRAPH AT	SC1-4	152.	6.08	20.	6.	6.	0.10	
ROUTED TO	RT-80	151.	6.08	20.	6.	6.	0.10	
HYDROGRAPH AT	SC1-1	81.	6.17	11.	3.	3.	0.11	
ROUTED TO	RT-79	80.	6.17	11.	3.	3.	0.11	
HYDROGRAPH AT	SC1-3	59.	6.42	13.	5.	5.	0.35	
5 COMBINED AT	DP4	2984.	6.67	1320.	476.	458.	16.47	
ROUTED TO	DBSC1	2358.	7.17	1266.	461.	444.	16.47	6402.80 7.17

2 YEAR OUTPUT SUMMARY

AREA UPSTREAM OF WOODMEN
2 YEAR 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			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	SB82	15.	6.27	3.	1.	1.	0.18		
ROUTED TO	RT-4	15.	6.33	3.	1.	1.	0.18		
HYDROGRAPH AT	SB74	14.	6.27	3.	1.	1.	0.19		
2 COMBINED AT	DP74	28.	6.33	6.	2.	2.	0.37		
ROUTED TO	RT-3	27.	6.40	6.	2.	2.	0.37		
HYDROGRAPH AT	SB80	15.	6.33	4.	2.	2.	0.23		
ROUTED TO	RT-2	15.	6.53	4.	1.	1.	0.23		
HYDROGRAPH AT	SB81	25.	6.40	6.	3.	3.	0.41		
ROUTED TO	RT-1	25.	6.53	6.	3.	3.	0.41		
HYDROGRAPH AT	SB73	11.	6.27	2.	1.	1.	0.14		
HYDROGRAPH AT	SB75	8.	6.33	2.	1.	1.	0.12		
HYDROGRAPH AT	SB76	9.	6.33	2.	1.	1.	0.13		
6 COMBINED AT	DP75	88.	6.47	21.	9.	9.	1.41		
ROUTED TO	RT-5	87.	6.53	21.	9.	9.	1.41		
HYDROGRAPH AT	SB79	23.	6.27	5.	2.	2.	0.29		
ROUTED TO	RT-7	22.	6.40	5.	2.	2.	0.29		
HYDROGRAPH AT	SB78	18.	6.27	4.	2.	2.	0.24		
2 COMBINED AT	DP78	40.	6.33	8.	4.	4.	0.54		
ROUTED TO	RT-6	39.	6.47	8.	3.	3.	0.54		
HYDROGRAPH AT	SB77	23.	6.27	5.	2.	2.	0.27		
HYDROGRAPH AT	SB88	10.	6.27	2.	1.	1.	0.14		
4 COMBINED AT	DP77	151.	6.47	36.	15.	15.	2.36		
ROUTED TO	RT-8	148.	6.67	36.	15.	15.	2.36		
HYDROGRAPH AT	SC3-20	30.	6.20	5.	2.	2.	0.31		
2 COMBINED AT	DP71	160.	6.67	40.	17.	17.	2.66		
ROUTED TO	RT-9	157.	6.73	40.	17.	17.	2.66		
HYDROGRAPH AT	SB3-18	81.	6.13	10.	4.	4.	0.27		
2 COMBINED AT	DP70	175.	6.67	50.	21.	21.	2.93		
ROUTED TO	RT-11	174.	6.73	50.	21.	21.	2.93		
HYDROGRAPH AT	SC3-19	100.	6.13	12.	5.	5.	0.30		
ROUTED TO	RT-10	99.	6.13	12.	5.	5.	0.30		
HYDROGRAPH AT	SC3-17	100.	6.07	11.	4.	4.	0.18		
3 COMBINED AT									

	DP69	284.	6.13	72.	30.	30.	3.41	
ROUTED TO	DBSRMN	164.	6.93	71.	30.	30.	3.41	96.52 6.93
ROUTED TO	RT-12	164.	7.00	71.	29.	29.	3.41	
HYDROGRAPH AT	SC3-15	138.	6.13	16.	6.	6.	0.21	
ROUTED TO	RT-10A	138.	6.13	16.	6.	6.	0.21	
2 COMBINED AT	DP87	205.	6.27	86.	35.	35.	3.62	
ROUTED TO	RT-13	203.	6.33	86.	35.	35.	3.62	
HYDROGRAPH AT	SC3-14	237.	6.13	28.	10.	10.	0.34	
HYDROGRAPH AT	SC3-16	189.	6.13	23.	8.	8.	0.30	
ROUTED TO	RT-13A	182.	6.40	23.	8.	8.	0.30	
3 COMBINED AT	DP68	473.	6.40	135.	53.	53.	4.26	
ROUTED TO	DBSRMS	358.	6.60	134.	53.	53.	4.26	8.34 6.60
ROUTED TO	RT-17	357.	6.67	134.	53.	53.	4.26	
HYDROGRAPH AT	SC3-13	35.	6.20	6.	2.	2.	0.34	
ROUTED TO	RT-19	34.	6.27	6.	2.	2.	0.34	
HYDROGRAPH AT	SC3-12	127.	6.13	15.	5.	5.	0.21	
2 COMBINED AT	DP66	153.	6.13	21.	8.	8.	0.54	
ROUTED TO	RT-20	148.	6.53	20.	8.	8.	0.54	
HYDROGRAPH AT	SC3-11	177.	6.13	24.	8.	8.	0.28	
2 COMBINED AT	DP63A	212.	6.53	43.	16.	16.	0.83	
2 COMBINED AT	DP63	560.	6.53	176.	69.	69.	5.09	
ROUTED TO	RT-17A	557.	6.60	176.	69.	69.	5.09	
HYDROGRAPH AT	SC3-10	7.	6.20	1.	0.	0.	0.06	
HYDROGRAPH AT	SC3-9	55.	6.40	12.	5.	5.	0.50	
ROUTED TO	RT-14	55.	6.47	12.	5.	5.	0.50	
HYDROGRAPH AT	SC3-8	43.	6.33	8.	3.	3.	0.23	
2 COMBINED AT	DP65	94.	6.40	20.	8.	8.	0.73	
ROUTED TO	RT-15	94.	6.40	20.	8.	8.	0.73	
HYDROGRAPH AT	SC3-7	119.	6.07	13.	5.	5.	0.16	
ROUTED TO	RT-15A	116.	6.07	13.	5.	5.	0.16	
2 COMBINED AT	DP64	149.	6.20	33.	13.	13.	0.88	
ROUTED TO	RT-16	149.	6.20	33.	13.	13.	0.88	
HYDROGRAPH AT	SC3-6	167.	6.07	17.	6.	6.	0.21	
2 COMBINED AT	DP62	301.	6.07	50.	19.	19.	1.09	
ROUTED TO	DBSRW	83.	6.80	47.	18.	18.	1.09	72.71 6.80

3 COMBINED AT	DP61	641.	6.60	224.	88.	88.	6.24	
ROUTED TO	RT-17B	636.	6.67	224.	87.	87.	6.24	
HYDROGRAPH AT	SB61	10.	6.33	2.	1.	1.	0.12	
ROUTED TO	RT-20	9.	6.40	2.	1.	1.	0.12	
HYDROGRAPH AT	SC3-5	114.	6.07	11.	4.	4.	0.16	
3 COMBINED AT	DP60	654.	6.67	235.	92.	92.	6.51	
ROUTED TO	RT-18	644.	6.67	235.	92.	92.	6.51	
HYDROGRAPH AT	SC3-4	82.	6.00	8.	3.	3.	0.08	
ROUTED TO	RT-21	81.	6.07	8.	3.	3.	0.08	
HYDROGRAPH AT	SC3-1	82.	6.07	8.	3.	3.	0.17	
HYDROGRAPH AT	SC3-3	156.	6.07	17.	6.	6.	0.24	
ROUTED TO	DBSC33	64.	6.33	17.	6.	6.	0.24	2.82 6.33
ROUTED TO	RT-21B	64.	6.33	17.	6.	6.	0.24	
HYDROGRAPH AT	SC3-2	60.	6.07	6.	2.	2.	0.08	
5 COMBINED AT	DP53	718.	6.67	272.	106.	106.	7.08	
ROUTED TO	DB-3	116.	10.20	99.	49.	49.	7.08	84.94 8.13
HYDROGRAPH AT	SC6-1	77.	6.13	10.	3.	3.	0.11	
ROUTED TO	DBSC61	24.	6.53	9.	3.	3.	0.11	2.04 6.53
ROUTED TO	RT-23A	24.	6.60	9.	3.	3.	0.11	
HYDROGRAPH AT	SC6-2	118.	6.13	14.	5.	5.	0.24	
HYDROGRAPH AT	SC6-3	104.	6.07	12.	4.	4.	0.17	
ROUTED TO	DBSC63	26.	6.47	11.	4.	4.	0.17	2.41 6.47
ROUTED TO	RT-23B	26.	6.47	11.	4.	4.	0.17	
3 COMBINED AT	DP54A	136.	6.13	34.	13.	13.	0.52	
ROUTED TO	RT-23C	134.	6.13	34.	13.	13.	0.52	
HYDROGRAPH AT	SC6-4	129.	6.00	14.	5.	5.	0.10	
ROUTED TO	DBSC64	22.	6.40	12.	5.	5.	0.10	2.56 6.40
ROUTED TO	RT-24	22.	6.47	12.	5.	5.	0.10	
HYDROGRAPH AT	SC6-5	172.	6.07	19.	7.	7.	0.28	
HYDROGRAPH AT	SC6-6	68.	6.07	7.	3.	3.	0.06	
4 COMBINED AT	DP54	375.	6.07	72.	27.	27.	0.96	
ROUTED TO	DB-6	93.	7.00	70.	27.	27.	0.96	71.19 7.00
HYDROGRAPH AT	SC2-29	43.	6.00	5.	2.	2.	0.03	

AREA DOWNSTREAM OF WOODMEN
2 YEAR RUNOFF SUMMARY

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			BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
				6-HOUR	24-HOUR	72-HOUR			
HYDROGRAPH AT	DP53	116.	10.25	99.	51.	49.	7.08		
ROUTED TO	RT-27	116.	10.25	99.	51.	49.	7.08		
HYDROGRAPH AT	SC2-24	64.	6.08	7.	2.	2.	0.07		
ROUTED TO	RT-29	64.	6.08	7.	2.	2.	0.07		
HYDROGRAPH AT	SC2-27	80.	6.08	9.	3.	3.	0.08		
3 COMBINED AT	DP50	150.	6.08	101.	56.	54.	7.23		
ROUTED TO	RT-31	146.	6.08	101.	56.	54.	7.23		
HYDROGRAPH AT	DP51	43.	6.00	5.	1.	1.	0.03		
ROUTED TO	RT-30	42.	6.08	5.	1.	1.	0.03		
2 COMBINED AT	DP49	188.	6.08	102.	57.	55.	7.26		
ROUTED TO	RT-32	183.	6.25	102.	57.	54.	7.26		
HYDROGRAPH AT	DP54	93.	7.00	70.	24.	23.	0.96		
ROUTED TO	RT-26	93.	7.17	70.	24.	23.	0.96		
HYDROGRAPH AT	SC2-26	46.	6.25	7.	2.	2.	0.15		
ROUTED TO	RT-34	46.	6.25	7.	2.	2.	0.15		
HYDROGRAPH AT	SC2-25	102.	6.33	19.	7.	6.	0.42		
3 COMBINED AT	DP47	220.	6.33	96.	33.	32.	1.53		
ROUTED TO	RT-33	219.	6.33	96.	33.	32.	1.53		
HYDROGRAPH AT	SC2-28	13.	6.50	4.	2.	1.	0.27		
HYDROGRAPH AT	SC2-21	51.	6.25	9.	3.	3.	0.19		
4 COMBINED AT	DP48	445.	6.25	193.	94.	90.	9.26		
ROUTED TO	RT-37	443.	6.33	193.	94.	90.	9.26		
HYDROGRAPH AT	SC2-23	58.	6.25	9.	3.	3.	0.20		
ROUTED TO	RT-35	58.	6.25	9.	3.	3.	0.20		
HYDROGRAPH AT	SC2-22	30.	6.08	4.	1.	1.	0.08		
2 COMBINED AT	DP46	84.	6.17	13.	4.	4.	0.28		
ROUTED TO	RT-36	83.	6.25	13.	4.	4.	0.28		
2 COMBINED AT	DP42	518.	6.33	205.	98.	94.	9.53		
ROUTED TO	RT-38	514.	6.33	205.	98.	94.	9.53		
HYDROGRAPH AT	SC2-20	87.	6.25	15.	5.	5.	0.32		
ROUTED TO	RT-41	86.	6.33	15.	5.	5.	0.32		
HYDROGRAPH AT	SC2-15	65.	6.17	9.	3.	3.	0.18		

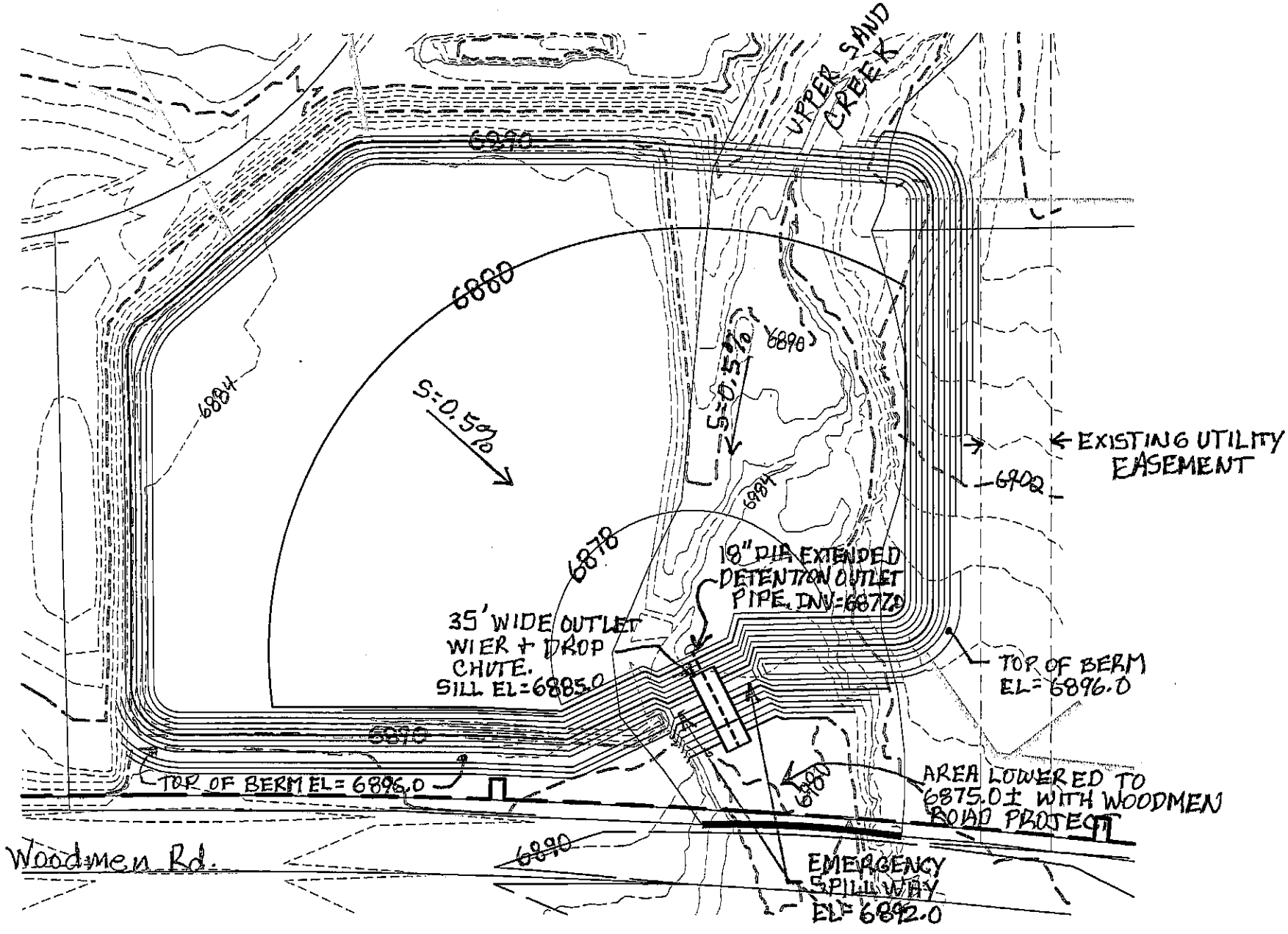
ROUTED TO	RT-39	65.	6.17	9.	3.	3.	0.18
HYDROGRAPH AT	SC2-13	54.	6.17	8.	3.	2.	0.16
4 COMBINED AT	DP85	684.	6.33	233.	108.	104.	10.20
ROUTED TO	RT-42	670.	6.42	233.	108.	104.	10.20
HYDROGRAPH AT	SC2-14	48.	6.33	10.	3.	3.	0.26
HYDROGRAPH AT	SC2-16	49.	6.25	8.	3.	3.	0.21
3 COMBINED AT	DP37	759.	6.33	249.	114.	109.	10.68
ROUTED TO	RT-43	757.	6.42	248.	113.	109.	10.68
HYDROGRAPH AT	SC2-12	22.	6.25	4.	1.	1.	0.18
ROUTED TO	RT-46	22.	6.33	4.	1.	1.	0.18
HYDROGRAPH AT	SC2-8	85.	6.33	16.	5.	5.	0.35
2 COMBINED AT	DP33	107.	6.33	20.	7.	7.	0.53
ROUTED TO	RT-45	105.	6.33	20.	7.	7.	0.53
2 COMBINED AT	DP36	861.	6.42	267.	120.	115.	11.21
ROUTED TO	RT-44	840.	6.50	266.	119.	115.	11.21
HYDROGRAPH AT	SC2-11	76.	6.17	10.	3.	3.	0.21
ROUTED TO	RT-52	74.	6.25	10.	3.	3.	0.21
HYDROGRAPH AT	SC2-19	104.	6.17	14.	5.	4.	0.18
ROUTED TO	RT-51	101.	6.17	14.	5.	4.	0.18
HYDROGRAPH AT	SC2-18	133.	6.17	18.	6.	5.	0.20
3 COMBINED AT	DP39	294.	6.25	42.	13.	13.	0.59
ROUTED TO	RT-49	293.	6.25	42.	13.	13.	0.59
HYDROGRAPH AT	SC2-17	48.	6.25	7.	3.	2.	0.16
ROUTED TO	RT-50	48.	6.25	7.	2.	2.	0.16
HYDROGRAPH AT	SC2-29	119.	6.08	14.	4.	4.	0.15
3 COMBINED AT	DP34	425.	6.17	63.	20.	19.	0.90
ROUTED TO	RT-48	421.	6.25	63.	20.	19.	0.90
HYDROGRAPH AT	SC2-10	82.	6.33	15.	5.	5.	0.33
2 COMBINED AT	DP32	503.	6.25	77.	25.	24.	1.23
ROUTED TO	RT-47	498.	6.25	77.	25.	24.	1.23
HYDROGRAPH AT	SC2-9	23.	6.50	6.	2.	2.	0.21
3 COMBINED AT	DP35	1259.	6.42	341.	146.	141.	12.64
ROUTED TO	RT-53	1239.	6.42	341.	146.	141.	12.64
HYDROGRAPH AT	SC2-7	43.	6.25	7.	2.	2.	0.14
2 COMBINED AT	DP29	1270.	6.42	348.	148.	143.	12.79
ROUTED TO	RT-54	1242.	6.50	347.	148.	143.	12.79

HYDROGRAPH AT	SC2-6	67.	6.17	9.	3.	3.	0.15	
ROUTED TO	RT-55	67.	6.17	9.	3.	3.	0.15	
HYDROGRAPH AT	SC2-2	65.	6.17	9.	3.	3.	0.17	
3 COMBINED AT	DP28	1296.	6.42	363.	154.	148.	13.10	
ROUTED TO	RT-56	1296.	6.50	363.	154.	148.	13.10	
HYDROGRAPH AT	SC2-5	143.	6.17	19.	6.	6.	0.16	
ROUTED TO	RT-58	143.	6.17	19.	6.	6.	0.16	
HYDROGRAPH AT	SC2-0	25.	6.25	4.	2.	1.	0.15	
ROUTED TO	RT-57	25.	6.25	4.	2.	1.	0.15	
3 COMBINED AT	DP21	1370.	6.50	383.	161.	155.	13.41	
ROUTED TO	RT-59	1367.	6.50	383.	161.	155.	13.41	
HYDROGRAPH AT	SC2-4	241.	6.17	34.	10.	10.	0.28	
ROUTED TO	RT-61	235.	6.17	33.	10.	10.	0.28	
HYDROGRAPH AT	SC2-3	72.	6.08	8.	3.	2.	0.07	
2 COMBINED AT	DP22	298.	6.17	42.	13.	12.	0.36	
ROUTED TO	RT-60	294.	6.17	42.	13.	12.	0.36	
HYDROGRAPH AT	SC2-1	66.	6.17	9.	3.	3.	0.19	
3 COMBINED AT	DP20	1557.	6.42	431.	177.	170.	13.96	
ROUTED TO	DBSC2	1110.	6.75	416.	176.	169.	13.96	6500.60 6.75
ROUTED TO	RT-63	1105.	6.75	415.	175.	169.	13.96	
HYDROGRAPH AT	SC1-10	70.	6.33	13.	4.	4.	0.29	
2 COMBINED AT	DP18	1136.	6.75	426.	180.	173.	14.24	
ROUTED TO	RT-66	1135.	6.75	426.	180.	173.	14.24	
HYDROGRAPH AT	SC1-13	86.	6.17	11.	4.	3.	0.13	
ROUTED TO	RT-64	85.	6.17	11.	4.	3.	0.13	
HYDROGRAPH AT	SC1-14	98.	6.17	13.	4.	4.	0.11	
2 COMBINED AT	DP19	183.	6.17	24.	7.	7.	0.24	
ROUTED TO	RT-65	183.	6.17	24.	7.	7.	0.24	
2 COMBINED AT	DP17	1170.	6.75	444.	187.	180.	14.48	
ROUTED TO	RT-67	1167.	6.75	444.	187.	180.	14.48	
HYDROGRAPH AT	SC1-9	71.	6.17	9.	3.	3.	0.24	
ROUTED TO	DBSR29	28.	6.50	9.	3.	3.	0.24	102.81 6.50
ROUTED TO	RT-70	27.	6.50	9.	3.	3.	0.24	
HYDROGRAPH AT	SC1-8	66.	6.25	10.	3.	3.	0.21	
ROUTED TO	RT-71	66.	6.25	10.	3.	3.	0.21	

2 COMBINED AT	DP14	86.	6.25	19.	7.	6.	0.45	
ROUTED TO	RT-69	85.	6.25	19.	7.	6.	0.45	
HYDROGRAPH AT	SC1-7	38.	6.17	5.	2.	2.	0.10	
2 COMBINED AT	DP12	116.	6.25	24.	8.	8.	0.55	
ROUTED TO	RT-68	116.	6.25	24.	8.	8.	0.55	
2 COMBINED AT	DP13	1222.	6.75	468.	195.	188.	15.03	
ROUTED TO	RT-72	1218.	6.75	467.	194.	187.	15.03	
HYDROGRAPH AT	SC1-6	68.	6.08	8.	3.	3.	0.16	
ROUTED TO	DBSR15	48.	6.25	8.	3.	3.	0.16	101.21 6.25
ROUTED TO	RT-74	47.	6.33	8.	3.	3.	0.16	
HYDROGRAPH AT	SC1-5	53.	6.17	8.	3.	3.	0.17	
2 COMBINED AT	DP11	100.	6.25	17.	5.	5.	0.33	
ROUTED TO	RT-73	99.	6.25	17.	5.	5.	0.33	
2 COMBINED AT	DP10	1257.	6.75	483.	200.	193.	15.36	
ROUTED TO	RT-75	1253.	6.83	482.	199.	192.	15.36	
HYDROGRAPH AT	SC1-2	41.	6.25	6.	2.	2.	0.14	
ROUTED TO	RT-76	41.	6.25	6.	2.	2.	0.14	
2 COMBINED AT	DP9	1264.	6.83	488.	201.	194.	15.50	
ROUTED TO	RT-78	1263.	6.83	487.	201.	193.	15.50	
HYDROGRAPH AT	SC1-12	106.	6.25	17.	5.	5.	0.25	
ROUTED TO	RT-81	104.	6.33	17.	5.	5.	0.25	
HYDROGRAPH AT	SC1-11	141.	6.17	19.	6.	5.	0.16	
2 COMBINED AT	DP8	227.	6.17	35.	11.	11.	0.41	
ROUTED TO	RT-77	227.	6.33	35.	11.	11.	0.41	
HYDROGRAPH AT	SC1-4	91.	6.08	12.	4.	3.	0.10	
ROUTED TO	RT-80	91.	6.17	12.	4.	3.	0.10	
HYDROGRAPH AT	SC1-1	36.	6.17	5.	2.	2.	0.11	
ROUTED TO	RT-79	36.	6.17	5.	2.	2.	0.11	
HYDROGRAPH AT	SC1-3	11.	6.50	4.	2.	1.	0.35	
5 COMBINED AT	DP4	1395.	6.75	535.	218.	210.	16.47	
ROUTED TO	DBSC1	1125.	7.25	489.	207.	199.	16.47	6400.33 7.25

APPENDIX D

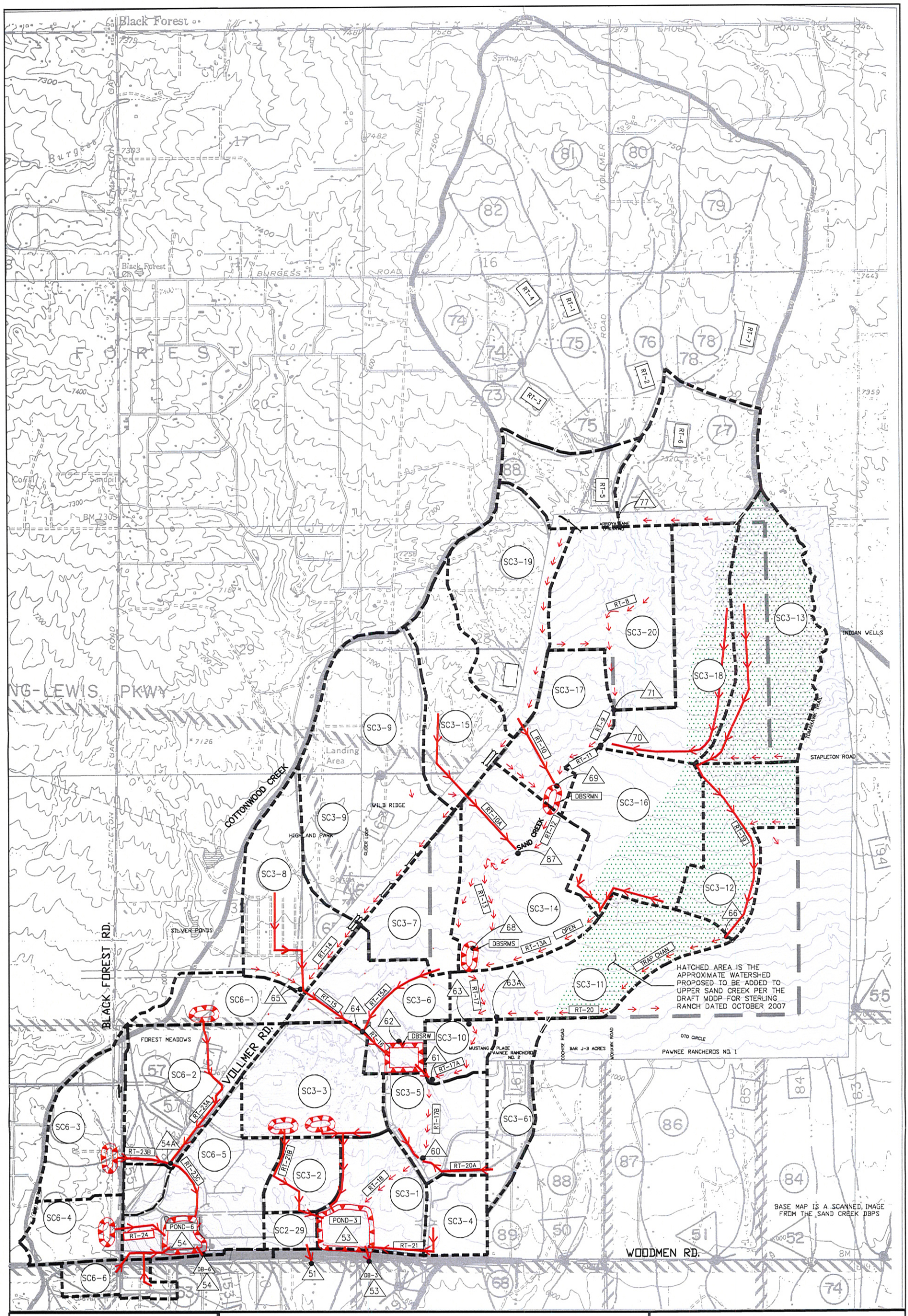
SAND CREEK REGIONAL POND NO. 3 CONCEPT PLAN



SAND CREEK POND 3
CONCEPT PLAN

APPENDIX E

WATERSHED MAP



REFER TO EXHIBIT 2 OF THE "DESIGN ANALYSIS REPORT FOR "SAND CREEK DETENTION BASIN No. 2" FOR AREA SOUTH OF WOODMEN ROAD

WILSON & COMPANY
Engineers & Architects

0 1000' 2000'

UPPER SAND CREEK BASIN DETENTION EVALUATION REPORT

JUNE 2009

LEGEND

- HEC 1 BASIN I.D. (XX)
- HEC 1 ANALYSIS POINT (XX)
- HEC 1 ROUTING ELEMENT I.D. (RT-XX)
- STORM SEWER
- DETENTION POND