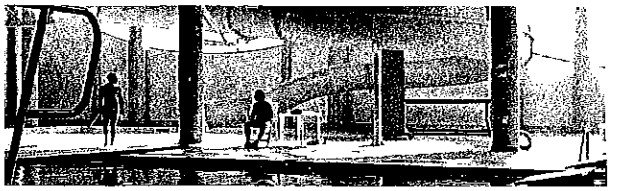

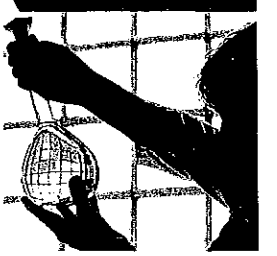

MASTER DEVELOPMENT DRAINAGE PLAN

FOR

BANNING LEWIS RANCH VILLAGE I FILINGS 1, 2, 5, 6, 7, 8, 9, & 10

Stantec

MASTER DEVELOPMENT DRAINAGE PLAN
FOR
BANNING LEWIS RANCH VILLAGE I FILINGS 1, 2, 5, 6, 7, 8, 9, & 10

Prepared For:

Banning Lewis Development I & II, LLC
90 S. Cascade Ave., Suite 950
Colorado Springs, Colorado 80903

Prepared By:

Stantec

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Prepared: December 9, 2005
Revised January 23, 2006
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CERTIFICATION

Engineer's Statement:

This attached drainage plan and report for "Village I" were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the City of Colorado Springs/El Paso County for drainage reports and said report is in conformity with the master plan of the Sand Creek Drainage Basin. I accept responsibility for any liability caused by any acts, errors or omissions on my part in preparing this report.

6-8-06

Thomas R. Brown, Professional Engineer No. 26614
For and on behalf of Stantec Consulting, Inc.

Developer's Statement:

The developer has read and will comply with all of the requirements specified in this report and plan.

Banning Lewis Ranch Development I & II
By: Mr. John Cassiani
Title: Owner Representative
Address: 90 S. Cascade Ave., Suite 950
Colorado Springs, CO 80903

City of Colorado Springs:

Filed in accordance with Section 7.7.906 of the Code of the City of Colorado Springs, 2001, as amended.

For the City Engineer — 21 July 06 Date

Conditions: Ponds 93 and 95 shall be substantially complete prior to the issuance of any building permits

GENERAL LOCATION AND DESCRIPTION

Location

The Banning Lewis Ranch, Village I property is located in a portion of the southwest quarter of Section 9, Township 13 South, Range 65 West of the 6th Principal Meridian, in the City of Colorado Springs, El Paso County. Village I includes Filings 1,2, 5, 6, 7, 8, 9, and 10.

The site is bordered by undeveloped parcels to the north and east, Marksheffel Road to the west and Dublin Road and the Toy Ranch subdivision to the south.

A vicinity map is located in Appendix A.

Description of Property

The site encompasses approximately 317 acres of undeveloped area. This master drainage report addresses the creation of residential development consisting of single family, duplex and multi-family units on this parcel, totaling 1055 total units. In addition, a school, recreation center and numerous parks will be created within the development. The site will be zoned PUD. Currently, the site is undeveloped and covered with native and non-native grasses. The existing topography slopes toward the south.

The FEMA Flood Insurance Rate Map (FIRM) shows the proposed development to be not located within a designated 100-year floodplain. A copy of the floodplain map has been included in Appendix B. Regulated wetlands have been designated within the existing drainage channel. A 404 permit has been obtained for the US Army Corps of Engineers.

According to the U.S. Department of Agriculture Soil Conservation Service Soil Survey of El Paso County, Colorado, the primary soil found in this area is Blakeland and Columbine. Blakeland soil is classified as Soil Conservation Service (SCS) hydrologic soil group A. Columbine soil is classified as Soil Conservation Service (SCS) hydrologic soil group A. For the purpose of this report, soil group B was used due to the disturbance of the natural ground. A copy of the soil map for the site can be found in Appendix D.

Construction activities will consist of clearing, grubbing, excavating and filling areas for roadways, parking areas, utilities, and home site preparation. The total size of the land disturbing activities for the construction of the development will be approximately 260 acres.

The site is not affected by any existing irrigation facilities. Additional irrigation facilities are not proposed for the development, with the exception of irrigation for lawns and landscaping.

There are no requested variances from the City of Colorado Springs Storm Drainage Design and Technical Criteria.

DRAINAGE BASINS AND SUB-BASINS

Major Basin Descriptions

This site is located within the Sand Creek Drainage Basin. This property is located in the upper portion of the Sand Creek drainage basin and is currently developed with large lot single family residential. Only a few small areas within this section of the basin are currently undeveloped. The upstream basin is within El Paso County and is part of the Sand Creek Drainage Basin Planning Study[8] prepared by Kiowa Engineering in 1996. The main Sand Creek drainage channel is located less than a quarter mile to west. Two tributaries of Sand Creek cross this site.

Sub-Basin Description

The existing topography for the site flows south via overland flow. Drainage from the site is divided into two major basins. The first basin drains into an existing drainage channel that flows through the western portion of the Toy Ranches subdivision. This existing area currently consists of approximately 65 acres but will increase after development of approximately 100 areas. This new area will include area in Filing 6, the western portions of Filings 7, 8, and 9, and future Filing 10. The proposed development is open space and 270 single family housing on lots ranging from 55'x 80' to 60'x 100'. Flow from this area will be routed through a new detention pond, Pond 93.

The second basin is larger and includes both on-site and off-site areas. The portion of this basin that is onsite consists of Filing 5 and the eastern portions of Filings 7, 8 and 9. This basin also includes approximately 600 acres of offsite drainage area. The total onsite area is approximately 158 acres. Regrading for the development will increase the historic area by 5 acres. This area historically flowed to the west into Sand Creek. The regarding will allow this area to flow to the east. This basin is routed in to Pond 95 and released into the existing channel through Toy Ranch. This area consists of parks, a school, and single family, duplex, and multi-family housing.

The proposed development will be designed to follow the existing drainage patterns without significant change. The discharge points from the site will be slightly altered

from the natural condition. The existing condition provides several channels that discharge to the south into Toy Ranch. The proposed changes will reduce the number of points to two controlled release points. The releases to Toy Ranch will be at or below pre-developments rates as defined in the Banning Lewis Ranch Phase I and II MDDP[7], November 2004.

Offsite Basin Description

The site receives offsite flows from a developed area to the north. The development in this area is typically large 5-acre single-family homesites and proposed commercial north of Filing No. 5. A new soccer complex has recently been completed between Wooden Road and the north boundary of this development. The complex has rerouted the main drainage and has added a detention facility along the north property line of Filing 5. Woodmen Road affects the historic drainage patterns entering this site. The road limits the natural crossing and redirects flow into existing culverts. The sizes of these culverts were not evaluated as part of this report.

DRAINAGE DESIGN CRITERIA

Development Criteria Reference

The analysis and design of the storm drainage system for this project was prepared in accordance with the criteria set forth in the City of Colorado Springs and El Paso County Drainage Criteria Manual (MANUAL) Volume 1 (October 1994) and Volume 2 (August 2002).

This area is part of Banning Lewis Ranch Master Drainage Development Plan dated November 2004[7]. The major drainage channels and the regional detention ponds were studied and designed as part of the Filing 2 drainage report approved January 2005.

Hydrologic Criteria

The minor design storm analyzed for this report was the 5-year recurrent storm event. The major design storm analyzed was the 100-year recurrent storm event. Since all basins within this project are less than 100 acres, the Rational Method was used to estimate the peak stormwater runoff discharge. Standard Form 2 (SF-2) was used to establish the basin hydrology. Standard Form 3 (SF-3) was used to calculate the excepted runoff using basin parameters. These forms provide the calculations for runoff from each subbasin used in the design of the storm sewer system. According to Table 5-1 of the MANUAL, the percent impervious of a neighborhood area is 65%. The runoff coefficients were determined based on Table 5-1 of the MANUAL.

Table 1 – Runoff Coefficients "C"

	Rational Method		SCS TR-20
Land Use	5-yr*	100-yr*	100-yr
Single Family Residential	0.65	0.70	86
Commercial	0.80	0.85	95
Park/Open space	0.30	0.50	75

*Soil Type B

The TR-20 model presented in the Banning Lewis Ranch Phase I and II MDDP has been updated to reflect changes in densities in Filing 6, correction in storm input values to conform to the MANUAL, and changes to routing based on the current design. An output summary is provided in Appendix F. Hydrology calculations are provided in Appendix C and hydraulic calculations can be found in Appendix D.

DRAINAGE FACILITY DESIGN

General Concept

The intent of the proposed drainage system design is to safely convey all storm runoff generated from the proposed development to two regional detention/ water quality ponds. The majority of the runoff generated as a result of this development will sheet flow into the roads and be collected by the proposed storm sewer system. All of the stormwater runoff collected by the storm sewer system will be discharged into two proposed detention/ water quality ponds before it is released into the natural downstream drainage channels. The detention ponds will discharge to the south into the Sand Creek Basin. Regional detention ponds (Ponds 93 & 95) will be to meet the requirements of Filings 5 through 10 plus offsite areas north of Filings No. 5 and 2. There will be no onsite detention within the limits of each filing. The area detention ponds are currently under construction and will be completed prior the issuance of any building permit.

The proposed streets and parking areas will have 6-inch Type 5 mountable curb and gutter. The curb and gutter for the proposed streets have been designed to collect and convey the 5-year design storm flow without exceeding the limits of the street. Runoff from the 100-year will be conveyed to the detention pond either by specific overland flow routes or captured by the storm drainage system

Offsite developed flows from the north will be collected by two large inlets and conveyed via the storm sewer system to the drainage channel along the east development bounty. The inlets will be located in or near the natural drainage swales. The inlets will be located in the private ten-foot tract along the north boundary of the property. An additional drainage easement will be required on the property to the north

of Filing 5 and would be within an existing Colorado Springs Utility electric easement. This easement would allow access to the inlets and provide additional flow area required during a major event. The tract and easement would be restricted in use and maintained by the BLR Metro District. The lots grading will be raised to provide a barrier to direct runoff into the inlets. The size and type of inlets and final grading will be designed as part of the Filing 5 drainage report. This system is designed to collect the proposed 100-year flows. In the event that the inlets cannot convey flow, drainage pathways will be established to allow overland flow to the ponds via the street system.

Specific Details

The proposed development was evaluated based on the Rational Method for storm sewer design and SCS TR-20 computer model for evaluation of the major basin. For the Rational Method analysis, the Village I area was divided into 12 drainage sub-basins in basin on the outfalls of the proposed storm sewer system to the major drainage channels. These basins range in size from 5.9 acres to 74.4 acres and have times of concentration that range from 10.8 minutes to 25.8 minutes. Four offsite basins directly impact the BLR development area. The total offsite area is about 71.3 acres.

Detailed analysis for the sizing, location and number of inlets will be provided in the Final Drainage Report for each filing.

Phasing

During grading operations and prior to the construction of the storm sewer system, temporary swales will be constructed to convey off-site runoff the to existing drainage channels and new detention ponds. The channels will follow the proposed street layout to reduce the impact to the lots. The drainage channels will include erosion control protection to prevent impacts to the wetland areas.

Pond 93

Detention Pond 93 has been designed and approved as part of Filing No. 2. Pond 93 is designed as a detention/water quality pond and has a total design capacity of approximately 24 acre-feet. The TR-20 model used for the design of this pond was updated to reflect current land uses and drainage patterns. The results of this revised model is provided in Appendix F of this report.

The discharge rate for the 100-year storm will be below the historic rate. The design discharge for the 100-year event is 60cfs. The historic discharge was calculated to be 80cfs in the TCB Final Drainage Report for Filing No. 2[6]. Tables 2 and 3 provide a breakdown of the design values for each of the design storms.

TABLE 2 – Pond 93 Data

	Q (cfs)				Pond[4]	
Storm Event	Existing[1]	Developed (outflow)	Allowable Release[2]	TCB MDDP Outfall Pond 93[3]	Design Depth[5] (ft)	Vol (ac-ft)
2	1	15	20	17.6	1.64	2.6
5	8	23	27	19.8	2.55	4.5
10	17	33	32	22.1	3.22	5.9
25	30	45	61	46.7	3.78	7.3
100	80	60	63	59.7	5.75	9.5

1 From Existing TR-20 model
2 From TCB MDDP XP-SWMM Model
3 Depth based on actual design contours
4 Detention storage only

Pond 95

Pond 95 is designed for detention of the BLR Village I area and does provide a forebay to collect sediment and trash. This pond is considered a regional detention facility and is designed to release flows generated from the upstream, offsite basins at or below historic rates.

The approved design volume according to the TCB design for Pond 95 is approximately 45 acre-feet. An analysis was performed to evaluate the size of this pond. The results of the TR-20 models are included in Appendix F of this report.

This volume for Village I includes runoff from a 3-acre area located in the northwest corner of Filing 5 that had originally been intended to drain to another basin. The TR-20 analysis is provided in Appendix F of this report.

TABLE 3 – Pond 95 Data

	Q (cfs)				Pond[4]	
Storm Event	Existing[1]	Developed (outflow)	Allowable Release[2]	TCB MDDP Outfall Pond 95[3]	Design Depth[3] (ft)	Vol (ac-ft)
2	3	9	9	9	3.58	17.2
5	25	17	22	13	4.78	30.2
10	58	27	44	21	5.54	38.5
25	105	87	106	105	5.92	44.2
100	302	295	328	307	7.09	72.6

1 From Existing TR-20 model
2 From TCB MDDP XP-SWMM Model
3 Depth based on actual design contours
4 Detention storage only

Inlets

Detailed analysis for inlet capacity and gutter capacity will be provided in the detailed drainage report for each filing.

Basins

Filings No. 1 and 3

Filings 1 and 3 were included in the TCB MDDP for Phases I and II (November 2004). No significant land use changes are proposed for the area within these filings. A new storm sewer system will replace the temporary swales shown on the Filing 1 and 2 construction plans except along the west portion of Dublin Road and along the east side of Marksheffel, north of Vista Cerro. The culvert under Vista del Pico at Station 82+00 will be modified and used as the new outfall pipe for the storm sewer from Filing 5.

Basin A is an isolated basin from the main portion of the development. Due to constraints of this area it is not anticipated that this lot will be developed. If this changes, detention and water quality will be required and a final drainage study will be required. The total area of this basin decreased from the initial MDDP. As a result, runoff from Basin A has deceased.

Filing No. 5 – 75 Total Acres

Filing 5 is made up of single-family homes on lots ranging from 5,500 SF to 7,500 SF (nominal sizes). This filing contains a 0.7-acre park and an extensive linear park/trail system. Landscaping, sidewalks, streets, driveways, and roofs generate runoff in this basin. Stormwater runoff will be collected by curb and gutter and then directed into the storm sewer system by a series of Type D-10-R inlets, either at grade or in sump conditions.

Future developed off-site flow from the north will be collected by an interceptor ditch along the north property boundary and conveyed to inlets. The ditch will be in a 10-foot private drainage tract the runs along the entire north boundary of the filing. An additional drainage easement will be required from the properties to the north. This easement should be a minimum of 10-foot to allow access for maintenance of the ditch and inlets. These inlets will be designed to collect and convey the developed 100-year storm event through this filing. As the north properties develop, their storm sewer system can be tied into the Filing 5 system.

The outfall for the storm sewer system will be to the south into an existing drainage channel (Designed Channel 67) via a 72-inch RCP constructed as part of the Filing 1 roads. Improvements to the section of Channel 68 in Filing 5 will consist of a series of drop structures the will reduce the velocity of flow and reduce the potential of channel degradation. The drop structure will be of the type approved in the Filing 2 channel design. Impacts to the channel will be limited to the areas of the drop structures to comply with the 404 permit. Table 4 presents drainage basin data and Table 5 presents the flows discharged from this basin. The design and construction of this section of channel will be included as part of Filing 5.

Filing No. 6, Western portion of Filing 7, and 10 – 95 Total Acres

Contained in this basin are landscaped areas, building roof, driveways, sidewalks, park areas, detention pond, and the existing Marksheffel Road and part of Vista Cerro Avenue. Area roof drains will discharge into landscaped areas. Discharge from these basin flows to the south into Pond 93 and is discharged to an unimproved tributary of Sand Creek flowing through Toy Ranches. There are 5 sub-basins associated with this area with 4 separate outfalls into Pond 93. The total inflow is provided in Tables 4 and 5 at the end of this section.

The temporary swale in Filing 10 will be used to convey flow from Filing 7 and Vista Pico to Pond 93. This swale was design to convey 211.8cfs according to the TCB Filing 1 Final Drainage Report but will only convey 186 cfs during the 100-year event after Filing 6 is developed. When Filing 10 is developed, an alternative alignment will be included in that design.

Filings No. 7 (Eastern portion), 8 and 9 – 104 Total Acres

Runoff in this basin is generated by landscaping, parks, sidewalks, streets, driveways, and roofs. Runoff will be collected by curb and gutter and then directed into the storm sewer system. Flow from these areas will be discharge from three outfall points into the main drainage channel along the eastern boundary of the filing. Flows are routed into Pond 95 and release under controlled conditions into an existing channel running through Toy Ranches. Flows from existing Basin 65A (not included in the TCB TR-20 model) have been counted for in the total runoff of this filing.

The 54" RCP in Dublin that discharges flows from Filing 7 to Pond 95 was evaluated and determined to be of adequate size for the calculated flow. The runoff for this area is 140cfs based on the Filing 1 Final Drainage Report and an actual flow of 113cfs for the 100-year and 58.9cfs for the 5-year is projected for based on current developed plans.

Basin Description

Basin A
Basin A includes a section of Marksheffel Road, a large gas line easement and a portion of 14 proposed lots. The only proposed development is the backyards of the 13 lots. Runoff from this area flows to the northeast into a tributary of Sand Creek. The peak runoff for 100-year is 82.7cfs and from the 5-year is 43.2cfs.

Basin B
Basin B is the largest basin at 63.48 acres and is made up of proposed single-family residence at a density of 3.9 DU/acre. Runoff from this basin [108.4cfs 5-year and 207.9cfs 100-year] flows to the southwest into Channel 67 via a proposed storm sewer system. This flow is combined with runoff flows from Offsite Basins O1, O2 and O3 for a total 100-year flow of 385cfs. The total flow is routed to the 72-inch RCP under Vista del Pico. Design modification will be needed to convey the total combined flow. An increase in the design slope to 1-percent or an increase in pipe size to 80-inch would allow for the conveyance of the total flow.

Basin C
Basin C is part of Filing 6 and is 15.97 acres in size and generates runoff of 34.0cfs in the 5-year storm and 65.2cfs in the 100-year storm. Runoff flows to the south and is routed into Pond 93 via a storm sewer system. Flow is discharged from a 36-inch pipe into the pond. Overflow is routed through open space into the pond.

Basin D
Basin D is a 34.86 acre single-family tract generating runoff of 66.7cfs in the 5-year and 127.9cfs in the 100-year event. Flow is conveyed to Pond 93 through a proposed storm sewer system. Overflows will enter the pond via overland flow channels.

Basin E
Basin E is a 16.05-acre multi-family tract. Runoff of 16.05cfs (5-yr) and 71.7cfs (100-yr) is routed to Pond 93 by swale TS-50. In addition, flow from Basins F and G are routed to this swale. The total flow in TS-50 for the 100-year is 183.5cfs. The Filing 1 design has the design capacity of this swale at 211cfs. There is a 66-inch RCP under the gas easement that TS-50 connects the swale to Pond 93. The design capacity of this pipe is 208cfs. This swale and pipe has the capacity to convey the 100-year flows.

Basin F
Basin F is comprised of a 13.97-acre section of Vista Pico and generates 24.3cfs (5-yr) and 46.6cfs (100-yr). These flows are captured by two sump inlet near the intersection of Vista del Pico and Dublin Road. This flow is discharged into swale TS-50. Overflow will also flow into this swale.

Basin G
Basin G is a 15.64-acre single-family tract. Runoff flows to the south into TS-50. The 5-year flow is 31.4 and the 100-year flow is 72.5. The outfall for this system will be designed to capture the 100-year event and convey it to the swale.

Basin H
Basin H is the school and park site. Total acreage is 17.28-acres and generates 37.9cfs (5-yr) and 72.5cfs (100-yr). Runoff for the school site, an 8-acrce area within the basin, flows to the west and passes through a proposed water quality pond before discharging into Channel 66 via a 24-inch pipe. Flow from other area within the basin is discharge directly into Channel 66 via a 36-inch outfall.

Basin I
Basin I is a 10.20-acres single-family tract discharging to the west into Channel 66 via a 36" pipe. This pipe is sized for the 100-year event. Flow from this area is 22.9cfs (5-yr) and 43.9cfs (100-yr).

Basin J
Basin J is a 33.84-acres mixed used tract (7.4 DU/acre) discharging to the south into a 54" pipe that flows into Pond 95. This pipe is sized for the 100-year event. Flow from this area is 58.9cfs (5-yr) and 113.0cfs (100-yr). The outfall section of storm sewer was designed as part of the Filing 1 project and has a design capacity of 140cfs. The 48" inlet will be adequate to convey flows.

Basin K
Basin K is a 16.15-acres single-family tract discharging to the west into Channel 66 via a 42" pipe. This pipe is sized for the 100-year event. Flow from this area is 34.4cfs (5-yr) and 66.0cfs (100-yr).

Basin L
Basin L is the area within Pond 93, totaling 5.87 acres. This area will generate 15.2cfs (5-yr) and 29.0cfs (100-yr). Flow will outfall as part of the releases from Pond 93.

Basin M
Basin M is a small basin of 5.67 acres and discharges to the west into Channel 66 via a 24-inch pipe. The flows are 14.6 for the 5-year and 28.0cfs for the 100-year event. The storm sewer will convey the 100-yr in this pipe.

Table 4 provides a summary of drainage basin data used in the determination of runoff. Calculations are provided in Appendix C and D of this report.

TABLE 4 – Drainage Basin Summary

Drainage Area	Filing	Design Point	Area (ac)	Q5 (cfs)	Q100 (cfs)	Accumulative 5 Year Flow (cfs)	Accumulative 100 Year Flow (cfs)
A	5	1	19.72	43.2	82.7		
B	5, 2	2	63.48	108.4	207.9	210.4[1]	385[1]
C	6	3	15.97	34.0	65.2		
D	6	4	34.86	66.7	127.9		
E	10	5	16.05	37.4	71.7	93.1[2]	183.5[2]
F	1, 8	6	13.97	24.3	46.6	55.7[4]	106.7[4]
G	7	7	14.72	31.4	60.1		
H	9	8	17.28	37.9	72.5		
I	7	9	10.20	22.9	43.9		
J	8	10	33.84	58.9	113.0		
K	7	11	16.15	34.4	66.0		
L	2	12	5.87	15.2	29.0		
M	8	17	5.67	14.6	28.0		
O1		13	4.54	12.2	23.2		
O2		14	23.25	55.6	105.6	67.8[3]	128.7[3]
O3		15	14.28	36.4	69.9		
O4		16	29.25	68.0	129.1		

1. Basins B and offsite basins O1, O2, & O3
2. Basins E, F, & G
3. Basins O1 & O2
4. Basins F & G

The following table provides a comparison of flows between the TR-20 model prepared for this report, values from the SF-3 spreadsheets, and the TCB MDDP.

TABLE 5 – Runoff Comparison[1]

			1	2	3	4
Design Basins	Storm Event (yr)	Filing	TCB TR-20 (cfs/smi)	Revised Stantec TR-20 Model (cfs/smi)	TCB FDR Filing 1 Rational Analysis (cfs/acre)	Stantec Rational Analysis (cfs/acre)
B	5	5	61/ .13 [2]	28/ .14	*	108/ 63.48
C,D,E	5	6 &10	197/.36 [2]	50/ .37	*	138/ 86.72
G,H,I,J,K, L,M	5	7, 8 & 9	126/.23 [2]	53/ .23	71.8/ 60.66	195/ 103.7
B	100	5	199/.13	160/ .14	*	208/ 63.48
C,D,E	100	6 &10	365/ .36	241/ .37	*	265/ 86.72
G,H,I,J,K, L,M	100	7, 8 & 9	299/ .23	266/ .23	217.9/ 60.66	402/ 103.7

1. Not including off-site flows
2. Represents 10-yr storm (5-yr not modeled)
* Values not included in TCB Final Drainage Reports

In Table 5, Column 1 represents the TR-20 model conducted by TCB as part of the initial MDDP. These results are based on assumed land uses and routing in the specified basins. Column 2 presents the results on the TR-20 that is included in this report. The model revised the TCB model by updating the land uses to reflect the land uses being proposed and corrected routing for the proposed layout. Column 3 is a summary of runoff values and areas used in the Filing 1 Final Drainage Report and used in the design of drainage facilities in the Fling 1 area. Column 4 is a summary of the Rational Method analysis of the development area based on the proposed uses.

Columns 2 and 4 present the updated values that are used for the conclusions presented in this report. The existing Filing 1 and 2 facilities were analyzed using updated land use values and configuration. Results and analyses are discussed in the Summary section of this report.

OFFSITE BASINS

There are four offsite basins that will have an impact on this project. The runoff from these basins is based on an assumption of developed flows from a mixed-use area. The "C" value used in the Rational Method analysis was C=0.80 for residential, C=0.85 for light commercial, and C=0.50 for open areas. In the TR-20 model, "Cn" values of 75 was used for ¼ acre residential areas, 85 for 1/8-

acre residential area and 92 for proposed commercial areas. All runoff curve numbers were based on Type B Soil Group.

Basin O1 is 4.5 acres of currently undeveloped pasture. Runoff from the area drains to the southeast and will be collected and conveyed through Basin O2 to Filing 5 via an open ditch. The proposed use of the land is limited retail. The southern 300' of the basin is within an electrical easement and will remain undeveloped. The predicted developed flow rate during the minor storm is 12.2cfs. The predicted flow rate during the major storm is 23.2cfs.

Basin O2 is a partial undeveloped area of 23.3 acres with proposed commercial development. A "turf" soccer complex has been constructed on a portion of the basin. A small detention pond has been constructed as part of a service road around the complex but was not anticipated in the design modeling. The remaining area is proposed to be developed as a commercial area. The southern 300' of the basin is within an electrical easement and will remain undeveloped.

Flows from this area will be collected and conveyed through the storm sewer system to the drainage along the east boundary of the development. The predicted developed flow rate during the minor storm is 55.6cfs. The predicted developed flow rate during the major storm is 105.6cfs.

Basin O3 is an undeveloped area of 14.3 acres with proposed commercial development. Flows from this area will be collected and conveyed through the storm sewer system to the drainage along the east boundary of the development. The predicted flow rate during the minor storm is 36.4.cfs. The predicted flow rate during the major storm is 68.9cfs.

Basin O4 is 29.3 acres of limited developed area. Runoff from the area drains to the east directly into the existing drainage channel and will not impact the developed area. The predicted flow rate during the minor storm is 68.0cfs. The predicted flow rate during the major storm is 129.1cfs.

Water Quality

Best Management Practices (BMPs) must be incorporated into the construction of any development within the study area in accordance with local, state, and Federal regulations. All stormwater quality improvements must be constructed per the requirements of Volume 2 of the Colorado Springs Drainage Criteria Manual[1] (DCMV2).

For detention ponds with a contributing drainage area of approximately one square mile or less, a water quality feature is required. Pond 95 water quality was not incorporated as part of the preliminary design. Areas tributary to Pond 93 will not require additional permanent water quality BMPs per DCMV2.

For this development, the stormwater quality will be controlled by the installation of a water quality pond that will be integrated into Pond 93. The pond will facilitate the removal of suspended solids from the stormwater runoff generated from Filings 2, 6 and 10. The outlet structure for the proposed water quality pond will be sized and configured for the water quality volume created by the area within the BLR development. Overflow from the 100-year storm event will flow into the pond via excess capacity in the storm sewer system and overland flow paths along developed streets. The pond has been designed to accommodate the 100-year storm while controlling releases to the downstream channel to below historic rates. The water quality pond was sized to contain the required water quality capture volume for the proposed Filings 6, 10 and a portion of Filing 7, a total area of 95 acres. The proposed ponds will be contained in drainage parcels.

Runoff from Filing 5, portion of 7 and 8 will not be treated directly for water quality in Pond 95. Pond 95 has a forebay to collect trash and debris

Filing 9 will be required to have water quality on site. A water quality pond is been designed as part of the outfall into Channel 68.

Wetland Mitigation

The Village I development has received an Army Corps of Engineers 404 permit for impacts to identified wetlands. A copy of the permit is included in Appendix G of this report.

The plan consists of construction of mitigated wetlands in the triangle formed by Vista Pico and Channels 66 and 67. The ground surface would be lowered to make contact with the hydraulic gradient of groundwater in the area. Supplemental water will be supplied to the wetlands from the interceptor drain and underdrains to be installed throughout Filing 5. Drains must daylight above the normal water levels. No submerged outfall will be permitted. The design will be required to evaluate the impact of the wetlands on the hydraulic characteristics of the drainage channels. Disturbance to the stream channel in this area will be limited to the construction of the proposed grade control structures. The final design of the wetland mitigation area will be required to obtain City approval.

SUMMARY

The original Sand Creek DBPS and previous updates provide a comprehensive plan for the City and County to manage drainage impacts in the Banning Lewis Ranch area. This MDDP updates the TCB MDDP and further defines proposed improvements for a specific portion of the basin.

Changes were made to the TCB MDDP to reflect site-specific design requirements. The following is a list of changes that have been incorporated into this MDDP.

1. The pond volumes for Ponds 93 and 95 have been updated to reflect actual design volumes.
2. The rainfall curve used in the TCB TR-20 model has been changed to the City of Colorado Springs Type IIA curve per the Manual.
3. Routing in the TR-20 model has changed to eliminate Pond 94 and includes Basin 65 into Pond 93 and Basin 65A in Pond 95.
4. The areas of Basins 64, 65, 65A, 67, and 21 were updated to reflect proposed grading.
5. The "C" value for Basin 64 was changed to be consistent with the change in land use for this basin.
6. Temporary swales designed as part of the Filing 1 and 2 plans have been replaced with storm sewer systems.
7. The RCP under Vista del Pico in Channel 67 has been Modified and used to discharge flows from Filing 5 to Channel 67 via a new storm sewer system.
8. Hydrology for Village I has been updated to reflect detail grading and land use.

Existing Facilities Evaluation

The capacities of existing facilities have been evaluated with respect to runoff values presented in this MDDP and it was determined that the existing sizes of each facility is adequate to convey the flows with only minor changes to the 72"RCP under Vista del Pico. The overall system will not be overloaded or cause additional damage to the downstream facilities.

It is expected that this MDDP will provide a framework for the development of the final drainage reports for each filing within Village I.

UPDATED SAND CREEK BASIN FEES

Colorado Springs Fees

Appendix E provides a summary of costs associated with the Sand Creek drainage basin fee, bridge fee and pond fee. These cost include all facilities, both reimbursable and non-reimbursable. The Final Drainage Reports will identify these facilities as reimbursable or non-reimbursable.

Current Colorado Springs policy limits reimbursement for drainage improvements to those listed in the original Sand Creek DBPS, and these facilities are shown in the TCB MDDP and approved amendments. Only those facilities identified in the TCB MDDP are eligible.

The following table provides the estimated Colorado Springs basin fees.

	2005 Fee per Acre ($/ac)	2006 Fee per Acre ($/ac)
Drainage Fee	$ 7,820	$ 8,133
Bridge Fee	$ 491	$ 511
Pond Land	$ 618	$ 734
Pond Facilities	$ 1,719	$ 1,788

CONCLUSIONS

Compliance with Standards

The proposed drainage facility design is in accordance with the City of Colorado Springs and El Paso County Drainage Criteria Manual. In general this development conformances with the approved drainage reports for Filings No. 1 & 2 of the Banning Lewis Ranch development.

This MDDP refines the assumptions made in the Phases I & II MDDP prepared by TCB. The runoff coefficients were adjusted to reflect the construction of single family and duplex units. This reduced the pervious area somewhat based on the model input. The TCB MDDP did not provide a detailed brake down of these factors.

Summary of Concept

No adverse effects to surrounding properties are anticipated from the development of this site. The design, if properly maintained and constructed, conveys, releases and protects the quality of the stormwater runoff up to, and including, the 100-year storm event, in a safe manner to protect life and property from damage.

REFERENCES

1. Drainage Criteria Manual. City of Colorado Springs and El Paso County. Volume 1 (October 1994) and Volume 2 (August 2002); latest revisions.

2. Urban Storm Drainage Criteria Manual. Urban Drainage and Flood Control District Volumes 1 and 2 (January 2001) and Volume 3 (September 1999).

3. Soil Survey of El Paso County, Colorado. Soil Conservation Service (June 1981).

4. Flood Insurance Rate Map, El Paso County, Colorado and Incorporated Areas. Map Number 08041C0512 F. Federal Emergency Management Agency (March 17, 1997).

5. Final Drainage Report for Banning Lewis Ranch Filing 1. TCB (November 2004).

6. Final Drainage Report for Banning Lewis Ranch Filing 2. TCB (February 2005).

7. Master Development Drainage Plan, Banning Lewis Ranch Phase I & II. TCB (November 2004).

8. Sand Creek Drainage Basin Planning Study, Preliminary Design Report, City of Colorado Springs and El Paso County, Colorado, Kiowa Engineering, (March 1996).

APPENDIX

Appendix A: VICINITY MAP

Appendix B: FLOOD PLAIN MAPS

Appendix C: HYDROLOGY

Appendix D: HYDRAULIC

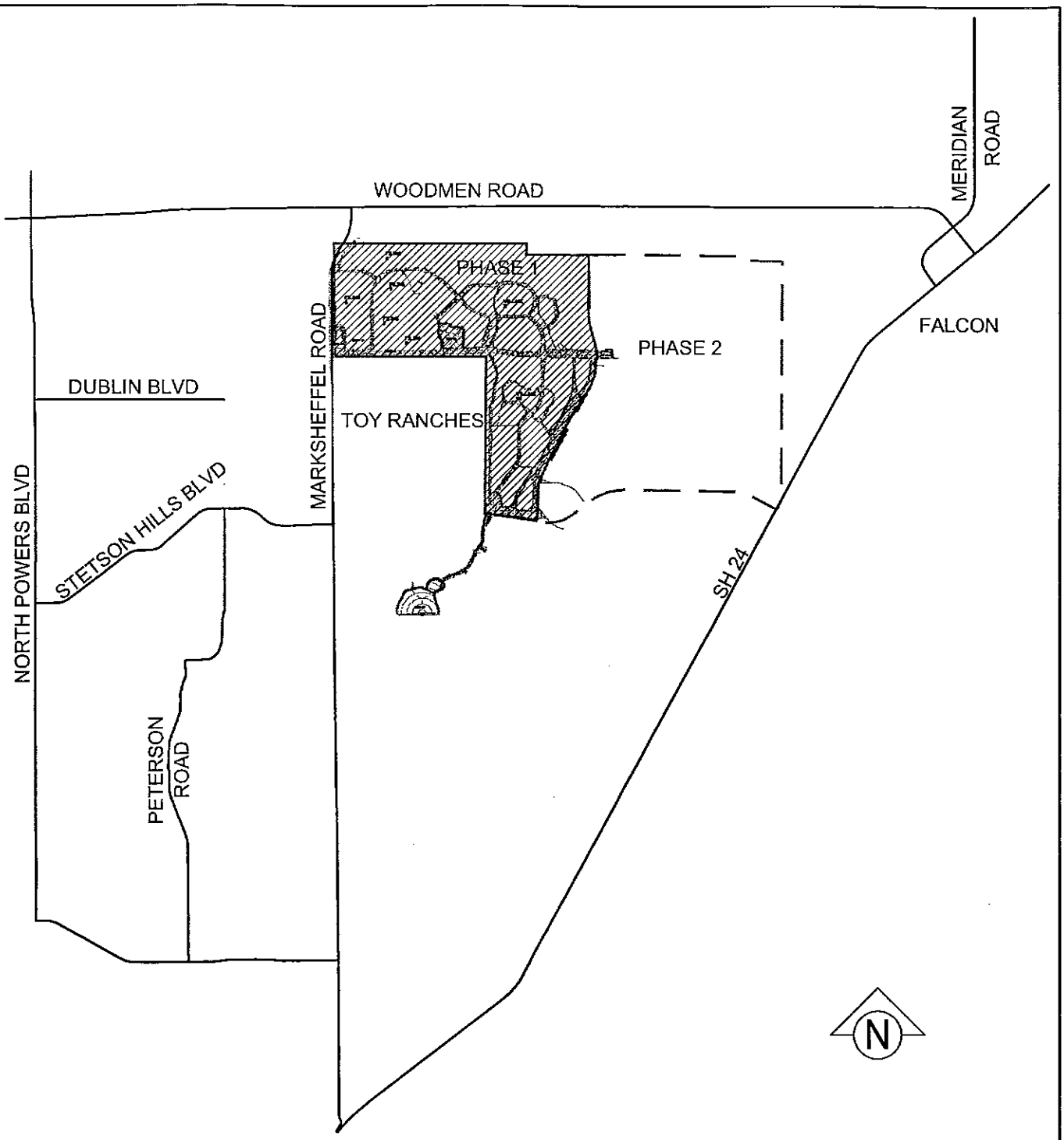
Appendix E: COST ESTIMATE

Appendix F: TR-20 MODEL OUTPUT

Appendix G: RELATED INFORMATION & MAPS

APPENDIX A

VICINITY MAP



SCALE 1"=1 MILE

THIS EXHIBIT DOES NOT REPRESENT A MONUMENTED SURVEY.
IT IS INTENDED ONLY TO DEPICT THE ATTACHED DESCRIPTION.

Stantec Consulting Inc.
2135 South Cherry St. Ste 310
Denver, CO
80222
Tel. 303.758.4058
Fax. 303.758.4828
www.stantec.com

VICINITY MAP

BANNING LEWIS RANCH

VILLAGE I

PROJECT NO.:	
187099000	
DATE:	
03/14/06	
CAD OPR.:	SHEET:
TRB	1

APPENDIX B:

FLOODPLAIN MAPS

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 545 OF 1300

(SEE MAP INDEX FOR PANELS NOT PRINTED)

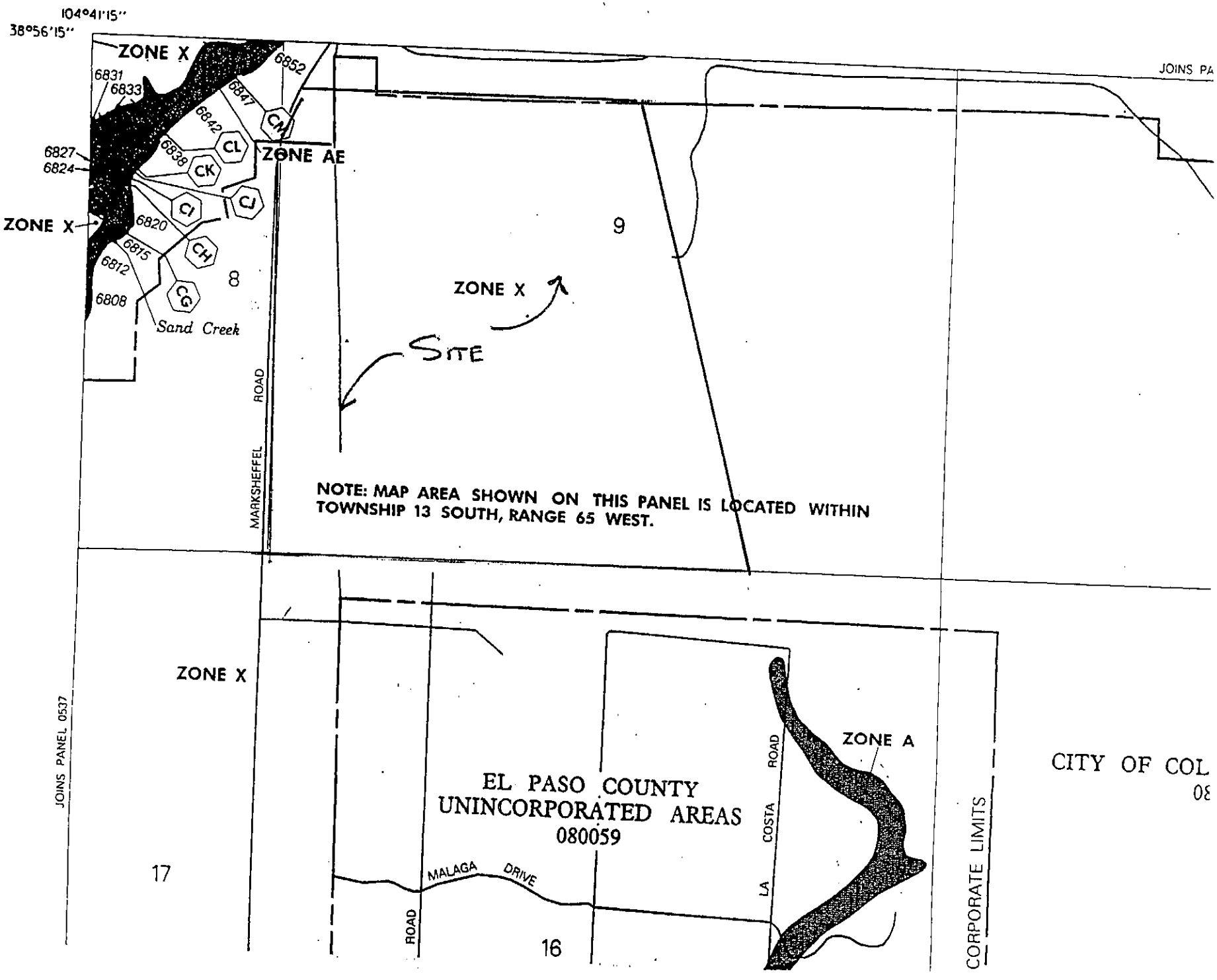
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0545	F
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0545	F

MAP NUMBER
08041C0545 F

EFFECTIVE DATE:
MARCH 17, 1997

Federal Emergency Management Agency


104°41'15"
38°56'15"
ZONE X
6831
6833
6852
6847
6842
CM
CL
6838
CK
ZONE AE
6827
6824
ZONE X
CI
CJ
6820
CH
6815
6812
6808
CG
Sand Creek
8
9
ZONE X
SITE
MARKSHEFFEL ROAD
NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 13 SOUTH, RANGE 65 WEST.
JOINS PA
JOINS PANEL 0537
ZONE X
EL PASO COUNTY
UNINCORPORATED AREAS
080059
ZONE A
COSTA ROAD
LA
MALAGA DRIVE
ROAD
17
16
CORPORATE LIMITS
CITY OF COL
08

APPENDIX C:

HYDROLOGY

STANDARD FORM SF-2
TIME OF CONCENTRATION

Subdivision Banning Lewis Ranch - Village I
Location Colorado Springs

Project Name: Village I
Project No. 187099000
Calculated By: TRB
Checked By: TRB
Date: 6/21/2006

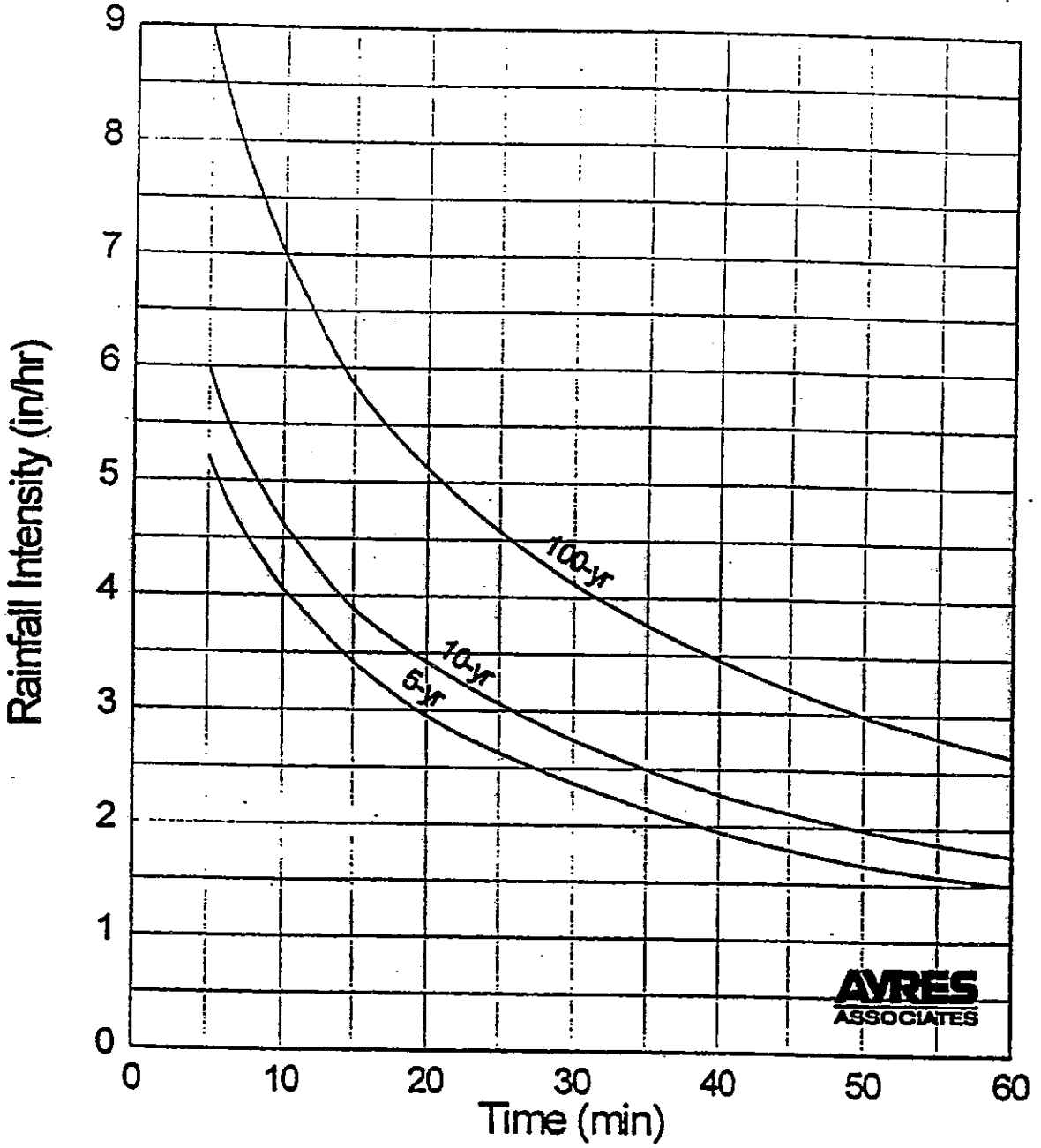
SUB-BASIN DATA			INITIAL/OVERLAND (T_i)			TRAVEL TIME (grass) (T_t)				TRAVEL TIME (paved) (T_t)				Tc CHECK (URBANIZED BASINS)			FINAL
BASIN ID	D.A. (AC)	Cs	L (FT)	S (%)	T_i (MIN)	L (FT)	S (%)	VEL. (FPS)	T_t (MIN)	L (FT)	S (%)	VEL. (FPS)	T_t (MIN)	COMP. T_c (MIN)	TOTAL LENGTH (FT)	MIN. T_c (MIN)	T_c (MIN)
A	19.72	0.65	125	2.0	7.5	100	1.0	0.7	2.4	1270	3.0	3.5	6.0	15.9	1495.0	18.3	15.9
B	63.48	0.65	125	2.0	7.5	100	1.0	0.7	2.4	3350	3.0	3.5	16.0	25.8	3575.0	29.9	25.8
C	15.97	0.65	125	2.0	7.5	100	1.0	0.7	2.4	1780	4.0	4.0	7.4	17.3	2005.0	21.1	17.3
D	34.86	0.65	125	2.0	7.5	100	1.0	0.7	2.4	2570	4.0	4.0	10.7	20.6	2795.0	25.5	20.6
E	16.05	0.65	125	2.0	7.5	100	1.0	0.7	2.4	1100	4.0	4.0	4.6	14.4	1325.0	17.4	14.4
F	13.97	0.65	125	2.0	7.5	100	1.0	0.7	2.4	3350	3.5	3.7	15.1	24.9	3575.0	29.9	24.9
G	14.72	0.65	125	2.0	7.5	100	1.0	0.7	2.4	1500	3.0	3.5	7.1	17.0	1725.0	19.6	17.0
H	17.28	0.65	125	2.0	7.5	100	1.0	0.7	2.4	1370	3.0	3.5	6.5	16.4	1595.0	18.9	16.4
I	10.20	0.65	125	2.0	7.5	100	1.0	0.7	2.4	1000	3.0	3.5	4.8	14.6	1225.0	16.8	14.6
J	33.84	0.65	125	2.0	7.5	100	1.0	0.7	2.4	3120	3.0	3.5	14.9	24.7	3345.0	28.6	24.7
K	16.15	0.65	125	2.0	7.5	100	1.0	0.7	2.4	1500	3.0	3.5	7.1	17.0	1725.0	19.6	17.0
L	5.87	0.65	125	2.0	7.5	100	1.0	0.7	2.4	350	10.0	6.4	0.9	10.8	575.0	13.2	10.8
M	5.67	0.65	125	2.0	7.5	100	1.0	0.7	2.4	200	5.0	4.5	0.7	10.6	425.0	12.4	10.6
	267.78																
EXISTING CONDITIONS																	
O1	4.54	0.65	150	1.0	10.3	0	2.5	1.2	0.0	700	2.0	2.8	4.2	14.5	850.0	14.7	14.5
O2	23.25	0.65	300	1.0	14.6	0	2.5	1.2	0.0	1100	2.0	2.8	6.5	21.1	1400.0	17.8	17.8
O3	14.28	0.65	300	1.0	14.6	0	2.5	1.2	0.0	1200	2.0	2.8	7.1	21.7	1500.0	18.3	18.3
O4	29.25	0.65	300	1.0	14.6	0	2.5	1.2	0.0	1300	2.0	2.8	7.7	22.3	1600.0	18.9	18.9
	71.3																

NOTES:

$T_i = (1.8*(1.1 - C_{10})*(L)^{0.5})(S^{-0.33})$

T_t=L/60V (Velocity From Fig. 3-2)

Tc Check = 10+L/180

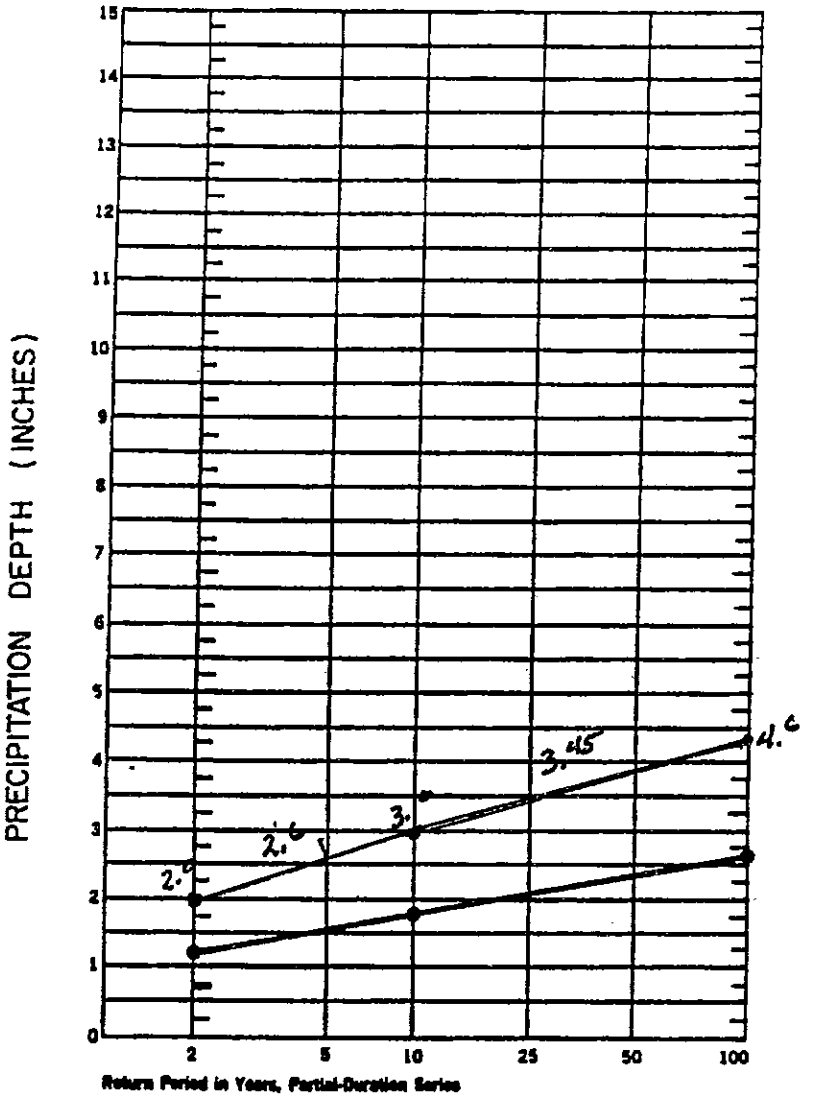


Interim Release October 12, 1994 , Rainfall Intensity Curves
City Of Colorado Springs Drainage Criteria Manual

El Paso County

Rainfall Intensity Curve Data

Time of Concentra	5-Year	10-Year	100-Year
5	5.10	5.96	9.07
6	4.90	5.73	8.71
7	4.70	5.49	8.36
8	4.50	5.26	8.00
9	4.30	5.02	7.65
10	4.10	4.79	7.29
11	3.97	4.64	7.06
12	3.84	4.49	6.83
13	3.72	4.34	6.61
14	3.59	4.19	6.38
15	3.46	4.04	6.15
16	3.37	3.94	5.99
17	3.28	3.83	5.83
18	3.19	3.73	5.68
19	3.10	3.62	5.52
20	3.01	3.52	5.36
21	2.94	3.44	5.24
22	2.88	3.36	5.12
23	2.81	3.29	5.01
24	2.75	3.21	4.89
25	2.68	3.13	4.77
26	2.63	3.07	4.68
27	2.58	3.01	4.59
28	2.52	2.95	4.49
29	2.47	2.89	4.40
30	2.42	2.83	4.31
31	2.38	2.78	4.24
32	2.34	2.73	4.16
33	2.29	2.68	4.09
34	2.25	2.63	4.01
35	2.21	2.58	3.94
36	2.18	2.54	3.88
37	2.14	2.50	3.82
38	2.11	2.47	3.75
39	2.07	2.43	3.69
40	2.04	2.39	3.63
41	2.01	2.36	3.58
42	1.98	2.32	3.53
43	1.96	2.29	3.48
44	1.93	2.25	3.43
45	1.90	2.22	3.38
46	1.88	2.19	3.34
47	1.85	2.16	3.29
48	1.83	2.14	3.25
49	1.80	2.11	3.20
50	1.78	2.08	3.16
51	1.76	2.05	3.12
52	1.74	2.03	3.09
53	1.71	2.00	3.05
54	1.69	1.98	3.02
55	1.67	1.95	2.98
56	1.65	1.93	2.95
57	1.63	1.91	2.91
58	1.62	1.89	2.88
59	1.60	1.87	2.84
60	1.58	1.85	2.81



EXAMPLE

2 yr. 1 hr rainfall (calculated) = 1.19"
100 yr. 1 hr rainfall (calculated) = 2.64"
10 yr. 1 hr rainfall (interpolated) = 1.78"

REFERENCE : NOAA Atlas 2, Volume 3 - Colorado

NOTE: This example is for Colorado Springs as indicated on the Isopluvials.

HDR Infrastructure, Inc.
A Centerra Company

The City of Colorado Springs / El Paso County
Drainage Criteria Manual

RAINFALL DEPTH - DURATION RELATIONSHIP

Date
OCT. 1987

Figure
5 - 6

TABLE 5-4
RUNOFF CURVE NUMBERS FOR HYDROLOGIC SOIL COVER COMPLEXES - RURAL CONDITIONS
(Antecedent Moisture Condition II, and Ia = 0.2 S)
(From: U.S. Dept. of Agriculture, Soil Conservation Service, 1977)

Land Use	Cover Treatment or Practice	Hydrologic Condition	Runoff Curve Number by Hydrologic Soil Group A	B	C	D
Fallow	Straight Row	----	77	86	91	94
Row Crops	Straight Row	Poor	72	81	88	91
	Straight Row	Good	67	78	85	89
	Contoured	Poor	70	79	84	88
	Contoured	Good	65	75	82	86
	Cont. & Terraced	Poor	66	74	80	82
	Cont. & Terraced	Good	62	71	78	81
Small Grain	Straight Row	Poor	65	76	84	88
	Straight Row	Good	63	75	83	87
	Contoured	Poor	63	74	82	85
	Contoured	Good	61	73	81	84
	Cont. & Terraced	Poor	61	72	79	82
	Cont. & Terraced	Good	59	70	78	81
Close-seeded legumes 1/ or rotation meadow	Straight Row	Poor	66	77	85	89
	Straight Row	Good	58	72	81	85
	Contoured	Poor	64	75	83	85
	Contoured	Good	55	69	78	83
	Cont. & Terraced	Poor	63	73	80	83
	Cont. & Terraced	Good	51	67	76	80
Pasture or range		Poor	68	79	86	89
		Fair	49	69	79	84
		Good	39	61	74	80
	Contoured	Poor	47	67	81	88
	Contoured	Fair	25	59	75	83
	Contoured	Good	6	35	70	79
Meadow		Good	30	58	71	78
Woods		Poor	45	66	77	83
		Fair	36	60	73	79
		Good	25	55	70	77
Farmsteads		----	59	74	82	86
Roads (dirt) 2/		----	72	82	87	89
(hard surface) 2/		----	74	84	90	92

1/ Close-drilled or broadcast
2/ Including right-of-way

TABLE 5-5
RUNOFF CURVE NUMBERS FOR HYDROLOGIC SOIL COVER COMPLEXES - URBAN AND SUBURBAN CONDITIONS 1/
(Antecedent Moisture Condition II)
(From: U.S. Dept. of Agriculture, Soil Conservation Service, 1977)

Land Use			Hydrologic Soil Group A	B	C	D
Open spaces, lawns, parks, golf courses, cemeteries, etc.						
	Good condition:	grass cover on 75% or more of the area	39*	61	74	80
	Fair condition:	grass cover on 50% to 75% of the area	49*	69	79	84
Commercial and Business areas (85% Impervious)			89*	92	94	95
Industrial Districts 72% Impervious)			81*	88	91	93
Residential: 2/						
Acres per Dwelling Unit		Average % Impervious 3/				
1/8 acre or less		65	77*	85	90	92
1/4 acre		38	61*	75	83	87
1/3 acre		30	57*	72	81	86
1/2 acre		25	54*	70	80	85
1 acre		20	51*	68	79	84
Paved parking lots, roofs, driveways, etc.			98	98	98	98
Streets and Roads:						
paved with curbs and storm sewers			98	98	98	98
gravel			76*	85	89	91
dirt			72*	82	87	89

1/ For a more detailed description of agricultural land use curve numbers, refer to the National Engineering Handbook (U.S. Dept. of Agriculture, Soil Conservation Service, 1972).
2/ Curve numbers are computed assuming the runoff from the house and driveway is directed towards the street with a minimum of roof water directed to lawns where additional infiltration could occur.
3/ The remaining pervious areas (lawn) are considered to be in good pasture condition for these curve numbers.

* Not to be used wherever overlot grading or filling is to occur.

TABLE 5-1

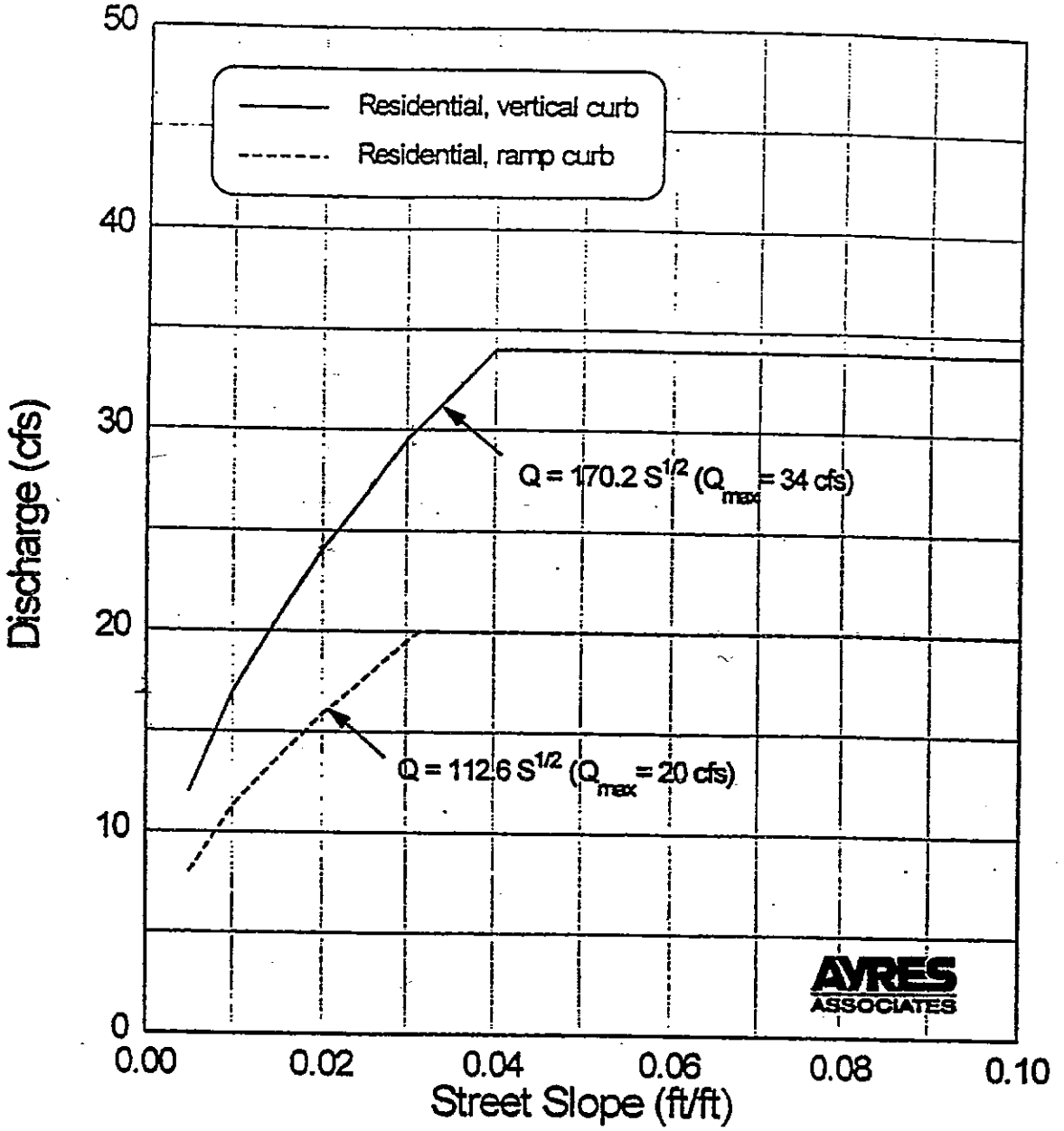
RECOMMENDED AVERAGE RUNOFF COEFFICIENTS AND PERCENT IMPERVIOUS

LAND USE OR SURFACE CHARACTERISTICS	PERCENT IMPERVIOUS	"C" FREQUENCY 10 A&B*	"C" FREQUENCY 10 C&D*	"C" FREQUENCY 100 A&B*	"C" FREQUENCY 100 C&D*
Business					
Commercial Areas	95	0.90	0.90	0.90	0.90
Neighborhood Areas	70	0.75	0.75	0.80	0.80
Residential					
1/8 Acre or less	65	0.60	0.70	0.70	0.80
1/4 Acre	40	0.50	0.60	0.60	0.70
1/3 Acre	30	0.40	0.50	0.55	0.60
1/2 Acre	25	0.35	0.45	0.45	0.55
1 Acre	20	0.30	0.40	0.40	0.50
Industrial					
Light Areas	80	0.70	0.70	0.80	0.80
Heavy Areas	90	0.80	0.80	0.90	0.90
Parks and Cemeteries	7	0.30	0.35	0.55	0.60
Playgrounds	13	0.30	0.35	0.60	0.65
Railroad Yard Areas	40	0.50	0.55	0.60	0.65
Undeveloped Areas					
Historic Flow Analysis- Greenbelts, Agricultural	2	0.15	0.25	0.20	0.30
Pasture/Meadow	0	0.25	0.30	0.35	0.45
Forest	0	0.10	0.15	0.15	0.20
Exposed Rock	100	0.90	0.90	0.95	0.95
Offsite Flow Analysis (when land use not defined)	45	0.55	0.60	0.65	0.70
Streets					
Paved	100	0.90	0.90	0.95	0.95
Gravel	80	0.80	0.80	0.85	0.85
Drive and Walks	100	0.90	0.90	0.95	0.95
Roofs	90	0.90	0.90	0.95	0.95
Lawns	0	0.25	0.30	0.35	0.45

* Hydrologic Soil Group

9/30/90

RESIDENTIAL STREET (34' Flowline to flowline)



Interim Release October 12, 1994
City of Colorado Springs

Use this graph to determine the allowable street capacity per side, initial storm, for the typical street section using a 2% crown.

APPENDIX D:

HYDRAULICS CALCULATIONS

Date 06/21/06
Calculated By TRB
Checked by TRB

STANDARD FORM SF-3

STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

Job No. 187099000
Project BLR-F05
Design Storm 5 Year Design

			DIRECT RUNOFF						TOTAL RUNOFF				STREET		TRAVEL TIME			
Filing	Drainage Area	Design Point	Area (AC)	Runoff Coeff	Tc (min)	C*A (ac)	I in/hr	Q (cfs)	Tc (min)	Sum (C*A) (AC)	I in/hr	Q (cfs)	Slope (%)	Street Flow (cfs)	Length (fT)	Velocity (fps)	tt (min)	Remarks
5*	A	1	19.72	0.65	15.9	12.82	3.37	43.2									8.43	Discharge Point 1
5	B	2	63.48	0.65	25.8	41.26	2.63	108.4				217.2					18.33	Basin O1, O2,O3 and 2 Discharge Pt.2
6	C	3	15.97	0.65	17.3	10.38	3.28	34.0									9.80	Discharge Point 3
6	D	4	34.86	0.65	20.6	22.66	2.94	66.7									13.09	Discharge Point 4
6	E	5	16.05	0.65	14.4	10.43	3.59	37.4				46.0					6.96	Basins C, E, & F Discharge Point 5
6	F	6	13.97	0.65	24.9	9.08	2.68	24.3									17.47	Discharge Point 6
7*	G	7	14.72	0.65	17.0	9.57	3.28	31.4									9.52	Discharge Point 7
7	H	8	17.28	0.65	16.4	11.23	3.37	37.9									8.90	Discharge Point 8
7	I	9	10.20	0.65	14.6	6.63	3.46	22.9									7.14	Discharge Point 9
7	J	10	33.84	0.65	24.7	22.00	2.68	58.9									17.24	Discharge Point 10
7	K	11	16.15	0.65	17.0	10.50	3.28	34.4									9.52	Discharge Point 11
6	L	12	5.87	0.65	10.8	3.82	3.97	15.2									3.29	Discharge Point 12
7	M	17	5.67	0.65	10.6	3.69	3.97	14.6									3.12	Discharge Point 17
			267.78					529.5										
	O1	13	4.54	0.80	14.5	3.63	3.59	13.0									4.17	Discharge Point 13
	O2	14	23.25	0.80	17.8	18.60	3.19	59.3				72.4					6.55	Discharge Point 14
	O3	15	14.28	0.80	18.3	11.42	3.19	36.4									7.14	Discharge Point 15
	O4	16	29.25	0.80	18.9	23.40	3.10	72.5									7.74	Discharge Point 16
			71.32					181.3										

* drains to different basin

Date 06/21/06
Calculated By TRB
Checked by TRB

STANDARD FORM SF-3

STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

Job No. 187099000
Project BLR-F07
Design Storm 100 Year Design

			DIRECT RUNOFF						TOTAL RUNOFF				STREET		TRAVEL TIME			
Filing	Drainage Area	Design Point	Area (AC)	Runoff Coeff	Tc (min)	C*A (ac)	I in/hr	Q (cfs)	Tc (min)	Sum (C*A) (AC)	I in/hr	Q (cfs)	Slope (%)	Street Flow (cfs)	Length (fT)	Velocity (fps)	tt (min)	Remarks
5*	A	1	19.72	0.70	15.9	13.80	5.99	82.7									21.81	Discharge Point 1
5	B	2	63.48	0.70	25.8	44.44	4.68	207.9	25.8	84.4	4.68	395.0					33.36	Basin O1, O2,O3 and 2 Discharge Pt.2
6	C	3	15.97	0.70	17.3	11.18	5.83	65.2									25.14	Discharge Point 3
6	D	4	34.86	0.70	20.6	24.40	5.24	127.9									29.53	Discharge Point 4
6	E	5	16.05	0.70	14.4	11.24	6.38	71.7	24.9	32.19	4.77	199.6					21.36	Basins C, E, & F Discharge Point 5
6	F	6	13.97	0.70	24.9	9.78	4.77	46.6									33.56	Discharge Point 6
7*	G	7	14.72	0.70	17.0	10.30	5.83	60.1									23.08	Discharge Point 7
7	H	8	17.28	0.70	16.4	12.10	5.99	72.5									22.36	Discharge Point 8
7	I	9	10.20	0.70	14.6	7.14	6.15	43.9									20.31	Discharge Point 9
7	J	10	33.84	0.70	24.7	23.69	4.77	113.0									32.08	Discharge Point 10
7	K	11	16.15	0.70	17.0	11.31	5.83	66.0									23.08	Discharge Point 11
6	L	12	5.87	0.70	10.8	4.11	7.06	29.0									19.59	Discharge Point 12
7	M	17	5.67	0.70	10.6	3.97	7.06	28.0									16.86	Discharge Point 17
			267.78					1014.5										
	O1	13	4.54	0.85	14.5	3.86	6.38	24.6									4.17	Discharge Point 13
	O2	14	23.25	0.85	17.8	19.76	5.68	112.2	18.3	26.27	5.68	149.1					6.55	Discharge Point 14
	O3	15	14.28	0.85	18.3	12.14	5.68	68.9									7.14	Discharge Point 15
	O4	16	29.25	0.85	18.9	24.86	5.52	137.2									7.74	Discharge Point 16
			71.32					342.9										

* drains to different basin

54" RCP - Pico/ Dublin Intersection

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Normal Depth	4.50	ft
Diameter	4.50	ft
Discharge	139.04	ft^3/s

Results

Discharge	139.04	ft^3/s
Normal Depth	4.50	ft
Flow Area	15.90	ft^2
Wetted Perimeter	14.14	ft
Top Width	0.00	ft
Critical Depth	3.47	ft
Percent Full	100.0	%
Critical Slope	0.00566	ft/ft
Velocity	8.74	ft/s
Velocity Head	1.19	ft
Specific Energy	5.69	ft
Froude Number	0.00	
Maximum Discharge	149.57	ft^3/s
Discharge Full	139.04	ft^3/s
Slope Full	0.00500	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

54" RCP - Pico/ Dublin Intersection

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.50	ft
Critical Depth	3.47	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00566	ft/ft

48" RCP - Inlet Pico/Dublin Intersection

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00600	ft/ft
Normal Depth	4.00	ft
Diameter	4.00	ft
Discharge	111.26	ft^3/s

Results

Discharge	111.26	ft^3/s
Normal Depth	4.00	ft
Flow Area	12.57	ft^2
Wetted Perimeter	12.57	ft
Top Width	0.00	ft
Critical Depth	3.19	ft
Percent Full	100.0	%
Critical Slope	0.00633	ft/ft
Velocity	8.85	ft/s
Velocity Head	1.22	ft
Specific Energy	5.22	ft
Froude Number	0.00	
Maximum Discharge	119.68	ft^3/s
Discharge Full	111.26	ft^3/s
Slope Full	0.00600	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

48" RCP - Inlet Pico/Dublin Intersection

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.00	ft
Critical Depth	3.19	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.00633	ft/ft

TS-50

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00500	ft/ft
Normal Depth	2.09	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	15.00	ft

Results

Discharge	210.80	ft^3/s
Flow Area	44.45	ft^2
Wetted Perimeter	28.22	ft
Top Width	27.54	ft
Critical Depth	1.63	ft
Critical Slope	0.01233	ft/ft
Velocity	4.74	ft/s
Velocity Head	0.35	ft
Specific Energy	2.44	ft
Froude Number	0.66	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.09	ft
Critical Depth	1.63	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.01233	ft/ft

TS-50

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00500	ft/ft
Normal Depth	2.09	ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Bottom Width	15.00	ft

Results

Discharge	210.80	ft^3/s
Flow Area	44.45	ft^2
Wetted Perimeter	28.22	ft
Top Width	27.54	ft
Critical Depth	1.63	ft
Critical Slope	0.01233	ft/ft
Velocity	4.74	ft/s
Velocity Head	0.35	ft
Specific Energy	2.44	ft
Froude Number	0.66	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.09	ft
Critical Depth	1.63	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.01233	ft/ft

66" RCP Outfall - TS-50

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Normal Depth	5.50	ft
Diameter	5.50	ft
Discharge	335.79	ft^3/s

Results

Discharge	335.79	ft^3/s
Normal Depth	5.50	ft
Flow Area	23.76	ft^2
Wetted Perimeter	17.28	ft
Top Width	0.00	ft
Critical Depth	4.96	ft
Percent Full	100.0	%
Critical Slope	0.00879	ft/ft
Velocity	14.13	ft/s
Velocity Head	3.10	ft
Specific Energy	8.60	ft
Froude Number	0.00	
Maximum Discharge	361.21	ft^3/s
Discharge Full	335.79	ft^3/s
Slope Full	0.01000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

66" RCP Outfall - TS-50

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.50	ft
Critical Depth	4.96	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00879	ft/ft

54" RCP - Dublin to Pond 95

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Normal Depth	4.50	ft
Diameter	4.50	ft
Discharge	139.04	ft^3/s

Results

Discharge	139.04	ft^3/s
Normal Depth	4.50	ft
Flow Area	15.90	ft^2
Wetted Perimeter	14.14	ft
Top Width	0.00	ft
Critical Depth	3.47	ft
Percent Full	100.0	%
Critical Slope	0.00566	ft/ft
Velocity	8.74	ft/s
Velocity Head	1.19	ft
Specific Energy	5.69	ft
Froude Number	0.00	
Maximum Discharge	149.57	ft^3/s
Discharge Full	139.04	ft^3/s
Slope Full	0.00500	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

54" RCP - Dublin to Pond 95

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.50	ft
Critical Depth	3.47	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00566	ft/ft

48" RCP -inlet to Dublin Storm Sewer

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01500	ft/ft
Normal Depth	4.00	ft
Diameter	4.00	ft
Discharge	175.92	ft^3/s

Results

Discharge	175.92	ft^3/s
Normal Depth	4.00	ft
Flow Area	12.57	ft^2
Wetted Perimeter	12.57	ft
Top Width	0.00	ft
Critical Depth	3.76	ft
Percent Full	100.0	%
Critical Slope	0.01296	ft/ft
Velocity	14.00	ft/s
Velocity Head	3.05	ft
Specific Energy	7.05	ft
Froude Number	0.00	
Maximum Discharge	189.23	ft^3/s
Discharge Full	175.92	ft^3/s
Slope Full	0.01500	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

48" RCP -inlet to Dublin Storm Sewer

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.00	ft
Critical Depth	3.76	ft
Channel Slope	0.01500	ft/ft
Critical Slope	0.01296	ft/ft

6'x6' Box Pipe - Pico Sta 81+98

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00120	ft/ft
Normal Depth	6.00	ft
Height	6.00	ft
Bottom Width	6.00	ft
Discharge	186.78	ft^3/s

Results

Flow Area	36.00	ft^2
Wetted Perimeter	24.00	ft
Top Width	6.00	ft
Critical Depth	3.11	ft
Percent Full	100.0	%
Critical Slope	0.00436	ft/ft
Velocity	5.19	ft/s
Velocity Head	0.42	ft
Specific Energy	6.42	ft
Froude Number	0.37	
Discharge Full	186.78	ft^3/s
Slope Full	0.00120	ft/ft
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

6'x6' Box Pipe - Pico Sta 81+98

GVF Output Data

Normal Depth	6.00	ft
Critical Depth	3.11	ft
Channel Slope	0.00120	ft/ft
Critical Slope	0.00436	ft/ft

72" RCP Existing Design

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00500	ft/ft
Normal Depth	6.00	ft
Diameter	6.00	ft
Discharge	299.45	ft^3/s

Results

Discharge	299.45	ft^3/s
Normal Depth	6.00	ft
Flow Area	28.27	ft^2
Wetted Perimeter	18.85	ft
Top Width	0.00	ft
Critical Depth	4.73	ft
Percent Full	100.0	%
Critical Slope	0.00539	ft/ft
Velocity	10.59	ft/s
Velocity Head	1.74	ft
Specific Energy	7.74	ft
Froude Number	0.00	
Maximum Discharge	322.12	ft^3/s
Discharge Full	299.45	ft^3/s
Slope Full	0.00500	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

72" RCP Existing Design

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.00	ft
Critical Depth	4.73	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00539	ft/ft

72"RCP - Modified Design

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Normal Depth	6.00	ft
Diameter	6.00	ft
Discharge	423.49	ft^3/s

Results

Discharge	423.49	ft^3/s
Normal Depth	6.00	ft
Flow Area	28.27	ft^2
Wetted Perimeter	18.85	ft
Top Width	0.00	ft
Critical Depth	5.44	ft
Percent Full	100.0	%
Critical Slope	0.00876	ft/ft
Velocity	14.98	ft/s
Velocity Head	3.49	ft
Specific Energy	9.49	ft
Froude Number	0.00	
Maximum Discharge	455.55	ft^3/s
Discharge Full	423.49	ft^3/s
Slope Full	0.01000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

72"RCP - Modified Design

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	6.00	ft
Critical Depth	5.44	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00876	ft/ft

North Flowline - V Ditch

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03000	ft/ft
Discharge	200.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	10.00
0+08	6.00
0+58	10.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 10.00)	(0+58, 10.00)	0.030

Results

Normal Depth		1.85	ft
Elevation Range	6.00 to 10.00		
Flow Area		24.85	ft²
Wetted Perimeter		27.36	ft
Top Width		26.85	ft
Normal Depth		1.85	ft
Critical Depth		2.16	ft
Critical Slope		0.01310	ft/ft
Velocity		8.05	ft/s
Velocity Head		1.01	ft
Specific Energy		2.86	ft
Froude Number		1.47	
Flow Type	Supercritical		

North Flowline - V Ditch

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.85	ft
Critical Depth	2.16	ft
Channel Slope	0.03000	ft/ft
Critical Slope	0.01310	ft/ft

Basin H discharge

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.05000	ft/ft
Normal Depth	2.29	ft
Diameter	2.29	ft
Discharge	72.50	ft^3/s

Results

Diameter	2.29	ft
Normal Depth	2.29	ft
Flow Area	4.12	ft^2
Wetted Perimeter	7.19	ft
Top Width	0.00	ft
Critical Depth	2.27	ft
Percent Full	100.0	%
Critical Slope	0.04628	ft/ft
Velocity	17.62	ft/s
Velocity Head	4.82	ft
Specific Energy	7.11	ft
Froude Number	0.00	
Maximum Discharge	77.99	ft^3/s
Discharge Full	72.50	ft^3/s
Slope Full	0.05000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Basin H discharge

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.29	ft
Critical Depth	2.27	ft
Channel Slope	0.05000	ft/ft
Critical Slope	0.04628	ft/ft

APPENDIX E:

COST ESTIMATE

BANNING LEWIS RANCH

VILLAGE I MDDP

CONCEPTUAL COST ESTIMATE

Prepared by Stantec

Date 12/23/05

Public Improvement Only

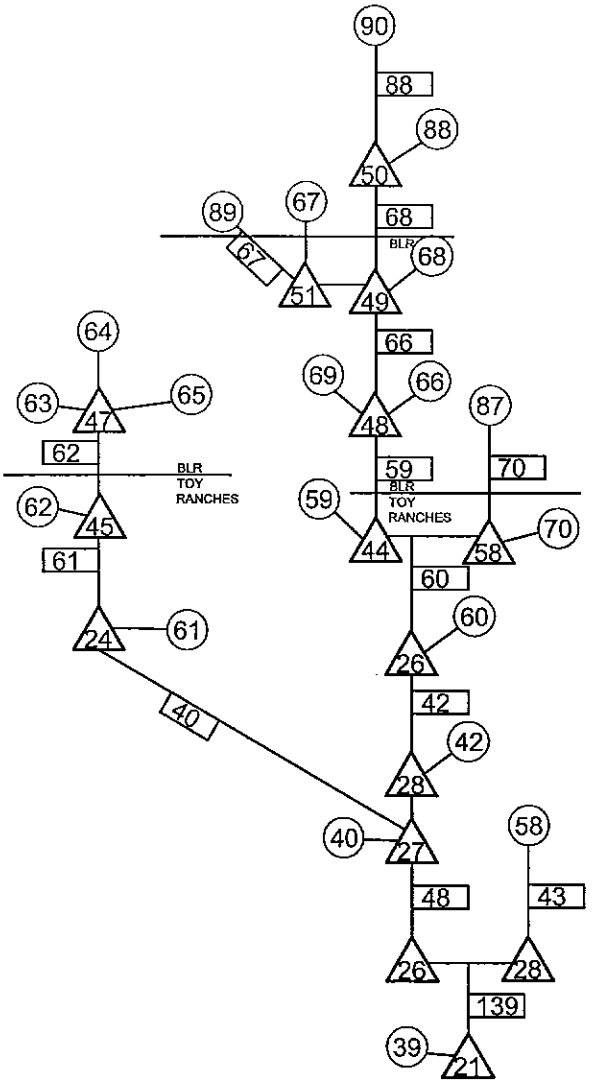
		Inlet (5')	Inlet (10')	Inlet (15')	Manhole	18" RCP	24" RCP	30" RCP	36" RCP	42" RCP	48" RCP	54" RCP	60" RCP	72" RCP	DETENTION POND	SUBTOTAL
	Units	EA	EA	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	AC-FT	
	Unit Price	$3,000	$5,500	$7,500	$3,750	$30	$40	$45	$50	$60	$75	$90	$110	$125	$15,000	
Filing No. 5	Quantity	20	6	5	26	700	2275	580	608	0	1193	1193	500	200	0	
	Total	$60,000	$33,000	$37,500	$97,500	$21,000	$91,000	$26,100	$30,400	$0	$89,475	$107,370	$55,000	$25,000	$0	$673,345
Filing No. 6	Quantity	25	10	5	70	2076	1081	661	1980	0	1272	750			24	
	Total	$75,000	$55,000	$37,500	$262,500	$62,280	$43,240	$29,745	$99,000	$0	$95,400	$67,500	$0	$0	$360,000	$1,187,165
Filing No. 7	Quantity	26	10	6	47	3127	1403	948	249	741	0	0	0	0	59	
	Total	$78,000	$55,000	$45,000	$176,250	$93,810	$56,120	$42,660	$12,450	$44,460	$0	$0	$0	$0	$885,000	$1,488,750
Filing No. 8	Quantity	25	10	5	40	1000	1580	500	1910	0	1000	0	0	0	0	
	Total	$75,000	$55,000	$37,500	$150,000	$30,000	$63,200	$22,500	$95,500	$0	$75,000	$0	$0	$0	$0	$603,700
Filing No. 9	Quantity	1	0	0	0	100	0	0	0	0	0	0	0	0	0.5	
	Total	$3,000	$0	$0	$0	$3,000	$0	$0	$0	$0	$0	$0	$0	$0	$7,500	$13,500

* Pipe Price inclusive of FES, RipRap, etc.

TOTAL $3,966,460

APPENDIX F:

TR-20 MODEL OUTPUT



LEGEND

- 90 — DESIGN POINT
- 90 — CONVEYANCE ELEMENT
- 93 — DETENTION POND
- DIVERSION ELEMENT
- 90 — BASIN ID

Stantec Consulting Inc.
2135 South Cherry St. Ste 310
Denver, CO
80222
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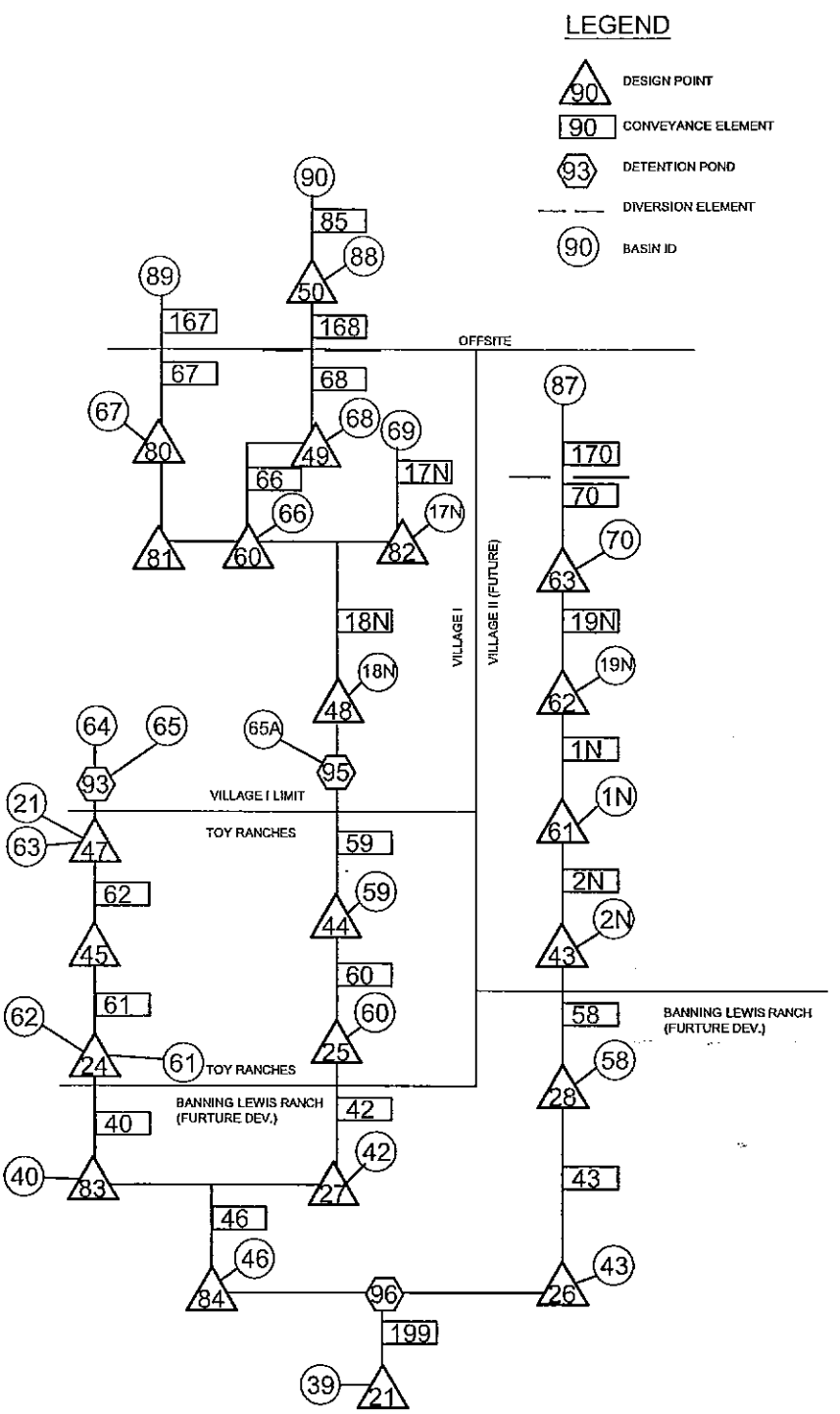
www.stantec.com

BANNING LEWIS RANCH

MDDP

EXISTING CONDITION FLOW
DIAGRAM FOR TR-20 MODEL

PROJECT NO.:	18700900
DATE:	01/20/06
CAD OPR.:	TRB
SHEET:	1



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BANNING LEWIS RANCH

MDDP

PROPOSED CONDITION FLOW DIAGRAM FOR TR-20 MODEL

PROJECT NO.:	18700900
DATE:	03/14/06
CAD OPR.:	TRB
SHEET:	2

```
******************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20                                                          NOPLOTS
TITLE 001 PROPOSED CONDITION - Revised Pond 93 Volumes - blrpropr4.dat
TITLE     24 HR TYPE IIA CURVE 02/14/2006
 5 RAINFL 1                .50
 8                0.000       .0015       .0045       .0080       .0120
 8                .0165       0.021       .0255       0.032       .0460
 8                0.060       0.100       0.700       0.750       0.780
 8                0.800       0.820       0.830       0.840       0.850
 8                0.860       .8675       0.875       .8825       0.890
 8                .8975       0.905       .9115       0.918       0.924
 8                0.930       0.935       0.940       0.945       0.950
 8                0.955       0.960       0.965       0.970       0.975
 8                0.980       .9825       0.985       .9875       0.990
 8                .9925       0.995       .9975       1.000       1.000
 9 ENDTBL
 3 STRUCT      89
 8                          0.          0.          0.
 8                         10.21      142.        120.
 8                         15.21      185.        269.
 8                         18.01      200.        363.
 8                         18.41      215.        378.
 8                         18.71      245.        390.
 8                         19.21      330.        409.
 8                         20.21      590.        450.
 8                         21.21      930.        493.
 8                         22.21     1340.        539.
 8                         23.55     1943.        603.
 9 ENDTBL
 3 STRUCT      79
 8                          0.          0.          0.
 8                          2.         163.         35.
 8                          4.         461.         70.0
 8                          6.         826.        105.0
 8                          8.        1152.        140.
 8                         10.        1363.        175.
 8                         12.        1574.        210.
 8                         14.        1805.        245.
 8                         16.        1978.        280.
 8                         18.        2170.        315.
 8                         20.        2304.        350.
 9 ENDTBL
 3 STRUCT      77
 8                          0.          0.          0.
 8                          2.          92.         30.
 8                          4.         259.         60.0
 8                          6.         464.         90.0
 8                          8.         648.        120.
 8                         10.         767.        150.
 8                         12.         886.        180.
 8                         14.        1015.        210.
 8                         16.        1112.        240.
 8                         18.        1220.        270.
 8                         20.        1296.        300.
 9 ENDTBL
 3 STRUCT      98
 8                          0.          0.          0.
```

```
 8                      0.88        15.         26.
 8                      2.15        57.         66.
 8                      3.13        98.        109.
 8                      3.99       140.        142.
 8                      4.77       181.        172.
 8                      5.50       222.        200.
 8                      6.19       264.        228.
 8                      6.84       305.        253.
 8                      8.10       347.        304.
 8                      9.03       388.        342.
 8                      9.97       429.        382.
 9 ENDTBL
 3 STRUCT       97
 8                       0.          0.          0.
 8                      0.23         8.        0.01
 8                      1.23        72.        0.05
 8                      2.23       160.        0.19
 8                      3.23       277.        0.51
 8                      4.23       410.        1.78
 8                      5.23       575.        5.66
 8                      6.23       755.       13.96
 8                      6.73       840.       20.95
 8                      7.23       930.       27.95
 8                      7.73      1012.       37.73
 8                      8.23      1092.        47.5
 8                      8.83      1185.       61.55
 8                      9.23      1250.       70.91
 8                      9.53      1271.       83.57
 8                     10.13      1275.       87.52
 8                     10.23      1283.       96.22
 8                     11.23      1383.      122.25
 8                     12.12      1470.      148.71
 8                     13.23      1570.       175.6
 9 ENDTBL
 3 STRUCT       96
 8                       0.          0.          0.
 8                       1.0         5.         0.8
 8                       2.0        13.          6.
 8                       3.0        24.         22.
 8                       4.0        38.         54.
 8                       5.0        52.        101.
 8                       6.0        69.        154.
 8                       7.0        86.        206.
 8                       8.0       106.        254.
 8                       9.0       126.        298.
 9 ENDTBL
 3 STRUCT       95
 8                       0.          0.          0.
 8                       1.0         7.3        0.5
 8                       2.0         7.5       2.94
 8                       3.0         7.6       11.8
 8                       4.0        10.1       21.1
 8                       4.5        15.0       26.5
 8                       5.0        19.5       32.8
 8                       5.5        20.0       39.0
 8                       6.0        101.       45.2
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
 8                        7.0          295.         58.1
 8                        8.0          300.         71.4
 8                        9.0          350.         85.3
 9 ENDTBL
 3 STRUCT      93
 8                         0.            0.          0.
 8                        1.0          5.00         1.3
 8                        2.0          20.0         3.4
 8                        3.0          27.5         5.4
 8                        4.0          50.0         7.8
 8                        5.0          55.0         10.1
 8                        6.0          61.0         12.5
 8                        7.0          63.0         13.6
 8                        8.1          68.0         15.3
 8                        8.5          75.0         17.0
 9 ENDTBL
 6 RUNOFF 1  80        1          0.08          81.0         0.41
 6 REACH  3  79   1    2        5690.7           1.7         1.25
 6 RUNOFF 1  79        1          0.27          65.0         1.15
 6 ADDHYD 4    38 1 2 3
 6 REACH  3  13   3    1        4848.9           1.1          1.4
 6 RUNOFF 1  13        2          0.18          87.0         0.67
 6 ADDHYD 4    35 1 2 3
 6 RUNOFF 1  78        1          0.31          87.0         1.06
 6 REACH  3  51   1    2        3804.2          0.39         1.67
 6 RUNOFF 1  51        1          0.13          81.4         0.67
 6 RUNOFF 1  49        4          0.27          69.0         0.76
 6 REACH  3  49   4    5        1380.0           1.0          1.4
 6 ADDHYD 4    88 1 2 4
 6 ADDHYD 4    35 3 5 6
 6 ADDHYD 4    35 4 6 1
 6 REACH  3  50   1    2        1361.3          0.18         1.67
 6 RUNOFF 1  50        3          0.19          81.3         1.83
 6 ADDHYD 4    34 2 3 4
 6 REACH  3  15   4    1        1184.6           1.1          1.4
 6 RUNOFF 1  15        2          0.06          85.0         0.91
 6 ADDHYD 4    37 1 2 3
 6 REACH  3  16   3    2        2040.3           1.1          1.4
 6 RUNOFF 1  16        1          0.12          84.0         0.98
 6 RUNOFF 1  48        3          0.56          66.0         0.98
 6 REACH  3  48   3    4        1466.0           1.1          1.4
 6 ADDHYD 4    33 1 2 3
 6 ADDHYD 4    89 3 4 5
 6 REACH  3  47   5    2        2201.7           0.2          1.7
 6 RUNOFF 1  47        3          0.19          82.0         0.91
 6 ADDHYD 4    32 2 3 1
 6 RUNOFF 1  96        2          0.14          65.0         0.88
 6 REACH  3  81   2    3        5193.0           1.4          1.3
 6 RUNOFF 1  81        4          0.35          66.0         0.39
 6 ADDHYD 4    54 3 4 2
 6 REACH  3  77   2    5        3245.1          0.39         1.67
 6 RUNOFF 1  76        6          0.14          87.0         1.08
 6 REACH  3  11   6    2        2203.4          0.86          1.5
 6 RUNOFF 1  11        3          0.10          85.1         0.88
 6 ADDHYD 4    39 2 3 4
 6 REACH  3  54   4    2        2419.5          0.31         1.67
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
 6 RUNOFF 1  54        3        0.15        90.0        0.92
 6 ADDHYD 4    36 2 3 6
 6 RUNOFF 1  77        2        0.19        85.0        1.21
 6 ADDHYD 4    70 2 5 4
 6 REACH  3  12   4    3     1478.8         0.37        1.67
 6 RUNOFF 1  12        4        0.10        85.4        1.21
 6 ADDHYD 4    71 3 4 5
 6 REACH  3  53   5    3     2579.0         0.27        1.67
 6 RUNOFF 1  53        2        0.15        85.1        1.02
 6 ADDHYD 4    87 2 3 4
 6 ADDHYD 4    87 4 6 3
 6 REACH  3  55   3    2     2276.1         0.37        1.67
 6 RUNOFF 1  55        3        0.22        87.3        1.47
 6 ADDHYD 4    30 2 3 4
 6 REACH  3  14   4    2     1057.7         0.37        1.67
 6 RUNOFF 1  14        3        0.04        92.0        1.47
 6 ADDHYD 4    72 2 3 5
 6 REACH  3  52   5    3     2987.0          0.3         1.6
 6 RUNOFF 1  52        2        0.27        90.0        1.47
 6 ADDHYD 4    90 2 3 4
 6 ADDHYD 4    90 1 4 2
 6 REACH  3 145   2    3     3325.0          0.1         1.7
 6 RUNOFF 1  45        2        0.32        88.0        0.78
 6 ADDHYD 4    29 3 2 1
 6 RUNOFF 1  98        2        0.14        69.0        0.43
 6 REACH  3 194   2    3     5914.0          1.8         1.3
 6 RUNOFF 1  97        2        0.07        69.0        0.43
 6 REACH  3  94   2    4     5914.0          1.7         1.3
 6 RUNOFF 1  93        2        0.24        69.0        1.12
 6 RUNOFF 1  94        5        0.43        65.0        0.30
 6 ADDHYD 4    55 3 5 6
 6 ADDHYD 4    55 2 4 3
 6 ADDHYD 4    55 3 6 2
 6 REACH  3  83   2    3     6124.0          1.9         1.3
 6 RUNOFF 1  83        5        0.35        67.0        1.52
 6 RUNOFF 1  95        2        0.11        65.0        1.38
 6 REACH  3  82   2    4     5808.0          1.4         1.3
 6 RUNOFF 1  82        2        0.24        65.0        0.31
 6 ADDHYD 4    53 3 5 6
 6 ADDHYD 4    53 2 4 5
 6 ADDHYD 4    53 5 6 2
 6 REACH  3  75   2    3     2699.2         0.25        1.67
 6 RUNOFF 1  75        4        0.13        87.0        0.88
 6 ADDHYD 4    69 3 4 5
 6 REACH  3   7   5    2     1618.0         0.21        1.67
 6 RUNOFF 1  99        6        0.44        69.0        1.14
 6 RUNOFF 1  92        5        0.42        83.0        0.28
 6 REACH  3  84   5    3     5491.0          2.0         1.3
 6 RUNOFF 1  84        4        0.19        89.0        0.97
 6 ADDHYD 4    52 3 4 5
 6 REACH  3  91   6    3     5491.0          2.0         1.3
 6 RUNOFF 1  91        4        0.41        89.0        1.14
 6 ADDHYD 4    52 3 4 6
 6 REACH  3  85   6    4     6178.0          1.4         1.3
 6 RUNOFF 1  85        6        0.27        89.0        1.12
 6 ADDHYD 4    52 4 6 3
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
 6 ADDHYD 4     52 3 5 4
 6 REACH  3  74    4    3        2793.4          0.25         1.67
 6 RUNOFF 1  74         4          0.15          90.0         0.82
 6 ADDHYD 4     42 3 4 5
 6 REACH  3 107    5    3        1455.4           0.2         1.67
 6 RUNOFF 1   7         4          0.06          71.8         0.82
 6 ADDHYD 4     73 2 4 5
 6 ADDHYD 4     73 3 5 4
 6 REACH  3  73    4    2         462.3           0.8          1.5
 6 RUNOFF 1  73         3          0.08          84.0         1.42
 6 ADDHYD 4     68 2 3 4
 6 REACH  3   5    4    2         717.2           0.8          1.5
 6 RUNOFF 1  86         3          0.33          77.0         1.48
 6 REACH  3  72    3    4        3305.2           1.7          1.3
 6 RUNOFF 1  72         3          0.25          89.0         0.46
 6 ADDHYD 4     85 3 4 5
 6 REACH  3  20    5    3        1186.8          0.33         1.67
 6 RUNOFF 1  20         4          0.06          91.5         0.54
 6 ADDHYD 4     43 3 4 5
 6 REACH  3   6    5    3        1460.6           1.7          1.3
 6 RUNOFF 1   5         4          0.05          93.8         1.49
 6 RUNOFF 1   6         5          0.04          94.0         1.49
 6 ADDHYD 4     66 2 4 6
 6 ADDHYD 4     67 3 5 4
 6 ADDHYD 4     67 4 6 2
 6 REACH  3   8    2    3         506.6           2.9          1.4
 6 RUNOFF 1   8         2          0.08          83.0         1.46
 6 ADDHYD 4     65 2 3 4
 6 RESVOR 2     97 4    3        0000.0
 6 RUNOFF 1   3         5          0.13          99.9         1.46
 6 REACH  3   4    5    6        1900.0           2.9          1.4
 6 ADDHYD 4     41 6 3 4
 6 REACH  3  57    4    2        1614.2           2.9          1.4
 6 RUNOFF 1  57         3          0.51          92.0         1.46
 6 ADDHYD 4     41 2 3 4
 6 REACH  3  56    4    2        2274.1           2.9          1.4
 6 RUNOFF 1   4         5          0.16          86.8         1.46
 6 REACH  3  71    5    3        1302.0           2.9          1.4
 6 RUNOFF 1  71         4          0.09          92.0         1.46
 6 ADDHYD 4     31 3 4 5
 6 REACH  3   9    5    3        1253.3           2.9          1.4
 6 RUNOFF 1   9         4          0.05          87.3         1.46
 6 RUNOFF 1  56         5          0.15          85.0         1.13
 6 ADDHYD 4     40 3 4 6
 6 ADDHYD 4     86 2 5 4
 6 ADDHYD 4     86 4 6 2
 6 REACH  3  10    2    3         711.1            .9          1.6
 6 RUNOFF 1  10         2          0.18          91.0         1.54
 6 ADDHYD 4     74 2 3 4
 6 REACH  3  44    4    2        6889.9           0.9          1.6
 6 RUNOFF 1  44         3          0.29          86.0         0.27
 6 ADDHYD 4     91 2 3 6
 6 ADDHYD 4     91 6 1 2
 6 RESVOR 2     89 2    6        0000.0
 6 REACH  3  28    6    2        3168.0           0.2          1.6
 6 RUNOFF 1  29         3          0.17          90.0         0.32
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
 6 REACH   3 128    3    1        3131.0          0.5          1.5
 6 RUNOFF  1  27         3          0.14         86.0         0.31
 6 RUNOFF  1  28         4          0.33         90.0         0.34
 6 ADDHYD  4    19 2 1 5
 6 ADDHYD  4    19 5 3 1
 6 ADDHYD  4    19 1 4 7
 6 REACH   3  26    7    1        3221.0          0.2          1.6
 6 RUNOFF  1  26         2          0.47         81.0         0.48
 6 ADDHYD  4    18 1 2 3
 6 REACH   3  25    3    1        2323.0          0.2          1.6
 6 RUNOFF  1  25         2          0.26         81.0         0.21
 6 ADDHYD  4    17 1 2 3
 6 REACH   3  24    3    1        2524.0          0.2          1.6
 6 RUNOFF  1  24         2          0.28         90.0         0.26
 6 ADDHYD  4    12 1 2 3
 6 RUNOFF  1  41         1          0.16         80.0         0.32
 6 REACH   3  31    1    2        3358.0          0.5          1.5
 6 RUNOFF  1  31         1          0.24         86.0         0.19
 6 ADDHYD  4    20 1 2 4
 6 REACH   3  30    4    1        2323.0          0.3          1.5
 6 RUNOFF  1  30         2          0.10         83.0         0.13
 6 ADDHYD  4    16 1 2 4
 6 REACH   3 124    4    1        4594.0          0.7          1.6
 6 RUNOFF  1  32         2          0.15         82.0         0.39
 6 REACH   3 198    2    4        5227.0          1.2          1.6
 6 ADDHYD  4    12 1 4 2
 6 ADDHYD  4    12 2 3 1
 6 REACH   3  18    1    2        3696.0          0.2          1.7
 6 RUNOFF  1  18         7          0.40         90.0         0.78
 6 ADDHYD  4    57 2 7 1
 6 RUNOFF  1  87         2          0.13         65.0         1.35
 6 REACH   3  70    2    3        2742.7          1.2          1.3
 6 RUNOFF  1  70         2          0.15         86.0         1.66
 6 ADDHYD  4    63 2 3 4
 6 REACH   3  19    4    3        1059.6         0.21         1.67
 6 RUNOFF  1  19         2          0.05         72.6         0.29
 6 ADDHYD  4    62 2 3 4
 6 REACH   3   1    4    3        1515.0          1.9          1.3
 6 RUNOFF  1   1         2          0.07         94.0         0.29
 6 ADDHYD  4    61 2 3 4
 6 REACH   3   2    4    3        4301.1          1.9          1.3
 6 RUNOFF  1   2         2          0.24         84.4         0.29
 6 ADDHYD  4    43 2 3 4
 6 REACH   3  58    4    3        1291.6          1.9          1.3
 6 RUNOFF  1  58         2          0.11         92.8         0.76
 6 ADDHYD  4    28 2 3 4
 6 REACH   3  43    4    3        4663.5          1.2          1.4
 6 RUNOFF  1  43         2          0.16         86.0         0.73
 6 ADDHYD  4    26 2 3 6
 6 RUNOFF  1  90         2          0.08         65.0         0.63
 6 REACH   3  88    2    3        5597.0          1.9          1.3
 6 RUNOFF  1  88         2          0.28         65.0         0.29
 6 ADDHYD  4    50 2 3 4
 6 REACH   3  68    4    2        3117.8         0.41         1.67
 6 RUNOFF  1  68         3          0.11         83.0         0.79
 6 ADDHYD  4    79 2 3 4                                          1
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
 6 RUNOFF 1  89        2        0.09        65.0        0.461          1
 6 REACH  3  67   2    3      3099.6         8.16        1.37
 6 RUNOFF 1  67        2        0.14        86.0        0.801          1
 6 ADDHYD 4    80 2 3 5                                    1          1
 6 ADDHYD 4    49 4 5 2                                    1          1
 6 REACH  3  66   2    3      2327.5        0.24        1.671
 6 RUNOFF 1  66        4        0.18        80.9        0.901          1
 6 ADDHYD 4    81 4 3 2
 6 RUNOFF 1  69        4        0.11        85.0         1.11
 6 REACH  3  17   4    5      1033.1        9.11         1.48
 6 RUNOFF 1  17        4        0.02        83.0        0.871          1
 6 ADDHYD 4    82 4 5 7
 6 REACH  3  18   7    3      1059.5         0.1          1.6
 6 RUNOFF 1  18        5        0.08        86.0        0.871          1
 6 ADDHYD 4    48 5 3 4
 6 ADDHYD 4    48 2 4 7
 6 RUNOFF 1 065        5        0.04        86.0        0.651          1
 6 ADDHYD 4 148   7 5 2                                    1          1
 6 RESVOR 2    95 2    3      0000.0                       1 1 1      1
 6 REACH  3  59   3    2      4945.6         0.6          1.61          1
 6 RUNOFF 1  59        3        0.34        69.0         0.95
 6 ADDHYD 4    44 2 3 4
 6 REACH  3  60   4    2      1413.0         0.8          1.5
 6 RUNOFF 1  60        3        0.08        69.0         0.53
 6 ADDHYD 4    25 2 3 4
 6 REACH  3  42   4    2      3704.7         0.3          1.5
 6 RUNOFF 1  42        3        0.20        84.0         0.26
 6 ADDHYD 4    27 2 3 5
 6 RUNOFF 1 021        2        0.01        86.0        0.181
 6 RUNOFF 1  64        3        0.12        83.0        0.751
 6 RUNOFF 1  65        4        0.05        83.0        0.621
 6 ADDHYD 4    47 2 3 7
 6 ADDHYD 4    47 4 7 2                                    1          1
 6 RESVOR 2    93 2    3      0000.0                       1 1 1      1
 6 ADDHYD 4    47 3 2 4
 6 REACH  3  62   4    7      3683.0         1.5         1.31 1         1
 6 RUNOFF 1  62        2        0.26        69.0         0.87
 6 ADDHYD 4    45 4 2 7                                    1          1
 6 RUNOFF 1  63        2        0.06        65.0         0.70
 6 ADDHYD 4    45 2 7 4
 6 REACH  3  61   4    3      2897.4         1.7          1.3
 6 RUNOFF 1  61        2        0.37        69.0         0.80
 6 ADDHYD 4    24 2 3 4
 6 REACH  3  40   4    2      2218.1         0.3          1.5
 6 RUNOFF 1  40        3        0.14        72.0         0.57
 6 ADDHYD 4    83 2 3 4
 6 ADDHYD 4    83 4 5 2
 6 REACH  3  46   2    3      1497.9         1.2          1.4
 6 RUNOFF 1  46        2        0.04        87.0         0.50
 6 ADDHYD 4    84 2 3 4
 6 ADDHYD 4    84 4 6 3
 6 RESVOR 2    96 3    4      0000.0
 6 REACH  3 199   4    2       890.0          .3          1.6
 6 RUNOFF 1  39        3        0.48        73.0         0.34
 6 ADDHYD 4    21 2 3 4
 6 REACH  3  33   4    2      7445.0         0.2          1.6
```

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
 6 RUNOFF 1  33        3        0.50        82.0        0.59
 6 RUNOFF 1  34        4        0.23        82.0        0.55
 6 ADDHYD 4    15 2 3 5
 6 ADDHYD 4    15 5 4 2
 6 RUNOFF 1  37        3        0.20        88.0        0.34
 6 RUNOFF 1  38        4        0.12        68.0        0.39
 6 ADDHYD 4    23 3 4 5
 6 REACH  3  35    5   3      3252.0         0.6         1.4
 6 RUNOFF 1  35        4        0.26        88.0        0.87
 6 ADDHYD 4    22 3 4 5
 6 REACH  3  34    5   3      1816.0         0.4         1.5
 6 ADDHYD 4    15 2 3 4
 6 RESVOR 2    77 4   7          0.
 6 REACH  3  22    7   2      3062.0          .2         1.6
 6 RUNOFF 1  21        3        0.10        88.0        0.23
 6 REACH  3 122    3   4      2503.0         0.6         1.4
 6 RUNOFF 1  22        3        0.13        91.0        0.12
 6 RUNOFF 1  23        5        0.20        92.0        0.39
 6 ADDHYD 4    13 2 4 6
 6 ADDHYD 4    13 6 3 2
 6 ADDHYD 4    13 2 5 3
 6 REACH  3  19    3   2      3802.0         0.2         1.6
 6 RUNOFF 1  19        6        0.29        89.0        0.33
 6 ADDHYD 4    11 2 6 7
 6 REACH  3  15    7   2      2571.0        0.20        1.60
 6 RUNOFF 1  16        3        0.38        84.0        0.36
 6 REACH  3  17    3   4      3274.0         0.6         1.4
 6 RUNOFF 1  17        3        0.13        87.0        0.19
 6 ADDHYD 4    10 3 4 5
 6 ADDHYD 4    10 5 1 7
 6 RUNOFF 1  15        4        0.25        88.0        0.22
 6 RESVOR 2    79 7   1          0.
 6 REACH  3 116    1   5      2260.0         0.2         1.6
 6 ADDHYD 4     9 5 2 3
 6 ADDHYD 4     9 3 4 1
 6 REACH  3  14    1   2      3448.0         0.1         1.6
 6 RUNOFF 1  14        1        0.35        81.0        0.53
 6 ADDHYD 4     7 1 2 3
 6 REACH  3   5    3   1      4910.0         0.1         1.6
 6 RUNOFF 1   5        2        0.18        70.0        0.17
 6 RUNOFF 1  36        3        0.39        78.0        0.44
 6 REACH  3  20    3   4      3960.0          .3         1.5
 6 RUNOFF 1  20        3        0.30        85.0        0.23
 6 ADDHYD 4    14 3 4 5
 6 REACH  3  12    5   3      3221.0         0.2         1.6
 6 RUNOFF 1  10        4        0.13        75.0        0.18
 6 REACH  3 112    4   5      2250.0         0.3         1.5
 6 RUNOFF 1  11        4        0.10        78.0        0.22
 6 REACH  3 195    4   6      2788.0         0.2         1.6
 6 RUNOFF 1  12        4        0.22        87.0        0.21
 6 ADDHYD 4     8 5 6 7
 6 ADDHYD 4     8 7 4 5
 6 ADDHYD 4     8 5 3 4
 6 REACH  3   6    4   3      8976.0         0.2         1.6
 6 RUNOFF 1   6        4        0.29        89.0        0.37
 6 RUNOFF 1  13        5        0.13        87.0        0.24
```

```
**********80-80 LIST OF INPUT DATA (CONTINUED)**********

 6 REACH  3   6    5    6        8976.0          0.2          1.6
 6 ADDHYD 4      5 1 2 5
 6 ADDHYD 4      5 5 3 1
 6 ADDHYD 4      5 1 6 2
 6 ADDHYD 4      5 2 4 1
 6 REACH  3   4    1    2        2851.0          0.1          1.6
 6 RUNOFF 1   9         1          0.14         75.0         0.17
 6 REACH  3   8    1    3        3907.0          0.6          1.4
 6 RUNOFF 1   8         1          0.19         75.0         0.18
 6 RUNOFF 1   7         4          0.38         83.0         0.50
 6 ADDHYD 4      6 3 1 5
 6 ADDHYD 4      6 5 4 1
 6 REACH  3 104    1    3        4066.0          0.8          1.5
 6 RUNOFF 1   4         1          0.59         75.0         0.31
 6 ADDHYD 4      4 3 1 4
 6 ADDHYD 4      4 4 2 1
 6 REACH  3   3    1    2        2482.0          0.1          1.6
 6 RUNOFF 1   3         1          0.16         84.0         0.27
 6 ADDHYD 4      3 1 2 3
 6 REACH  3   2    3    1        3432.0          0.1          1.6
 6 RUNOFF 1   2         2          0.36         87.0         1.11
 6 ADDHYD 4      2 1 2 3
 6 REACH  3   1    3    1        7234.0          0.1          1.6
 6 RUNOFF 1   1         2          0.48         79.0         0.95
 6 ADDHYD 4      1 1 2 3
   ENDATA
 7 INCREM 6                       .050
 7 COMPUT 7  80         1          0.0          4.5          1.01 2  01  01
   ENDCMP 1
 7 COMPUT 7  80         1          0.0          3.4          1.01 2  01  02
   ENDCMP 1
 7 COMPUT 7  80         1          0.0          3.0          1.01 2  01  03
   ENDCMP 1
 7 COMPUT 7  80         1          0.0          2.6          1.01 2  01  04
   ENDCMP 1
 7 COMPUT 7  80         1          0.0          2.0          1.01 2  01  05
   ENDCMP 1
   ENDJOB 2

**********END OF 80-80 LIST**********
```

-------- NOTE - TR-20 USER NOTE FILE (TR20NOTE.TEX) NOT FOUND. --------

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .050 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 80 TO STRUCTURE 1
STARTING TIME = .00 RAIN DEPTH = 4.50 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .050 HOURS
ALTERNATE NO. = 1 STORM NO. = 1 RAIN TABLE NO. = 1

OPERATION ADDHYD STRUCTURE 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.18	333.4	3.14
13.03	13.3	.16
19.98	9.3	.11
23.96	4.7	.06

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.66 WATERSHED INCHES; 502 CFS-HRS; 41.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 89

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.09	57.1	(RUNOFF)
12.98	2.3	(RUNOFF)
19.97	1.6	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.33 WATERSHED INCHES; 77 CFS-HRS; 6.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.28	209.7	(RUNOFF)
12.99	5.5	(RUNOFF)
19.95	3.7 *	(RUNOFF)
23.95	1.9 *	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.00 WATERSHED INCHES; 271 CFS-HRS; 22.4 ACRE-FEET.

OPERATION ADDHYD STRUCTURE 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.25	262.1	(NULL)
13.01	7.8	(NULL)
19.95	5.3 *	(NULL)
23.94	2.7	(NULL)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.35 WATERSHED INCHES; 348 CFS-HRS; 28.8 ACRE-FEET.

OPERATION ADDHYD STRUCTURE 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.21	590.6	(NULL)
13.03	21.1	(NULL)
19.98	14.6	(NULL)
23.96	7.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.88 WATERSHED INCHES; 850 CFS-HRS; 70.3 ACRE-FEET.

OPERATION REACH XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.30	575.4	(NULL)
13.09	21.1	(NULL)
20.04	14.6	(NULL)
24.03	7.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.88 WATERSHED INCHES; 850 CFS-HRS; 70.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.34	199.1	(RUNOFF)
13.00	6.6 *	(RUNOFF)
19.98	4.5	(RUNOFF)
23.93	2.3	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.54 WATERSHED INCHES; 295 CFS-HRS; 24.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.32	25.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.72 WATERSHED INCHES; 35 CFS-HRS; 2.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.32	113.6	(RUNOFF)
13.00	3.2 *	(RUNOFF)
19.95	2.1 *	(RUNOFF)
23.95	1.1 *	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.00 WATERSHED INCHES; 155 CFS-HRS; 12.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.19	67.2	(RUNOFF)
19.95	1.1 *	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.00 WATERSHED INCHES; 78 CFS-HRS; 6.4 ACRE-FEET.

OPERATION ADDHYD XSECTION 148

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.32	1057.7	(NULL)
13.05	37.5	(NULL)
19.99	25.7	(NULL)
23.96	12.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.22 WATERSHED INCHES; 1619 CFS-HRS; 133.8 ACRE-FEET.

OPERATION RESVOR STRUCTURE 95

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
7.21	296.5	7.30
20.05	25.7 *	5.54

* FIRST POINT OF FLAT PEAK

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 1
MAIN TIME INCREMENT = .050 hr, DRAINAGE AREA = 1.13 SQ.MI.

HRS								
5.15	CFS	.00	.01	.01	.03	.05	.08	.12	.17
5.15	ELEV	.00	.00	.00	.00	.01	.01	.02	.02
5.55	CFS	.28	.60	1.41	3.29	7.09	7.34	7.40	7.50
5.55	ELEV	.04	.08	.19	.45	.97	1.19	1.52	2.00
5.95	CFS	7.52	7.54	7.57	7.75	8.69	9.72	12.52	16.08
5.95	ELEV	2.19	2.43	2.72	3.06	3.43	3.85	4.25	4.62
6.35	CFS	19	20	40	89	136	179	216	247
6.35	ELEV	4.96	5.30	5.63	5.93	6.18	6.40	6.59	6.75
6.75	CFS	272	293	295	296	296	296	296	296
6.75	ELEV	6.88	6.99	7.07	7.14	7.19	7.24	7.27	7.29
7.15	CFS	296	297	297	296	296	296	296	296
7.15	ELEV	7.30	7.30	7.30	7.29	7.28	7.26	7.23	7.20
7.55	CFS	296	296	295	295	295	287	278	269
7.55	ELEV	7.17	7.13	7.09	7.05	7.00	6.96	6.91	6.87
7.95	CFS	260	252	244	237	229	222	215	208
7.95	ELEV	6.82	6.78	6.74	6.70	6.66	6.62	6.59	6.55
8.35	CFS	202	196	189	183	177	171	165	160
8.35	ELEV	6.52	6.49	6.46	6.42	6.39	6.36	6.33	6.30
8.75	CFS	154	149	144	139	134	130	126	121
8.75	ELEV	6.28	6.25	6.22	6.20	6.17	6.15	6.13	6.10
9.15	CFS	117	114	110	107	103	100	98	95
9.15	ELEV	6.08	6.07	6.05	6.03	6.01	6.00	5.98	5.97
9.55	CFS	93.00	90.77	88.65	86.63	84.71	82.88	81.14	79.49
9.55	ELEV	5.95	5.94	5.92	5.91	5.90	5.89	5.88	5.87
9.95	CFS	77.92	76.43	75.02	73.67	72.39	71.17	70.00	68.86
9.95	ELEV	5.86	5.85	5.84	5.83	5.82	5.82	5.81	5.80
10.35	CFS	67.75	66.67	65.59	64.53	63.48	62.44	61.42	60.41
10.35	ELEV	5.79	5.79	5.78	5.77	5.77	5.76	5.76	5.75
10.75	CFS	59.42	58.46	57.52	56.60	55.72	54.86	54.03	53.23
10.75	ELEV	5.74	5.74	5.73	5.73	5.72	5.72	5.71	5.71
11.15	CFS	52.46	51.73	51.02	50.34	49.69	49.07	48.48	47.91
11.15	ELEV	5.70	5.70	5.69	5.69	5.68	5.68	5.68	5.67
11.55	CFS	47.38	46.86	46.37	45.91	45.46	45.04	44.64	44.26
11.55	ELEV	5.67	5.67	5.66	5.66	5.66	5.65	5.65	5.65
11.95	CFS	43.90	43.56	43.24	42.93	42.64	42.36	42.10	41.85
11.95	ELEV	5.65	5.65	5.64	5.64	5.64	5.64	5.64	5.63
12.35	CFS	41.61	41.39	41.18	40.98	40.79	40.62	40.45	40.29
12.35	ELEV	5.63	5.63	5.63	5.63	5.63	5.63	5.63	5.63
12.75	CFS	40.14	40.00	39.86	39.74	39.62	39.51	39.40	39.30

12.75	ELEV	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62
13.15	CFS	39.20	39.11	39.02	38.92	38.81	38.70	38.57	38.44
13.15	ELEV	5.62	5.62	5.62	5.62	5.62	5.62	5.61	5.61
13.55	CFS	38.29	38.14	37.97	37.80	37.63	37.45	37.27	37.10
13.55	ELEV	5.61	5.61	5.61	5.61	5.61	5.61	5.61	5.61
13.95	CFS	36.92	36.75	36.58	36.41	36.24	36.08	35.93	35.77
13.95	ELEV	5.60	5.60	5.60	5.60	5.60	5.60	5.60	5.60
14.35	CFS	35.61	35.45	35.29	35.12	34.96	34.79	34.62	34.46
14.35	ELEV	5.60	5.60	5.59	5.59	5.59	5.59	5.59	5.59
14.75	CFS	34.29	34.13	33.97	33.81	33.66	33.51	33.36	33.22
14.75	ELEV	5.59	5.59	5.59	5.59	5.58	5.58	5.58	5.58
15.15	CFS	33.09	32.95	32.82	32.68	32.53	32.38	32.21	32.03
15.15	ELEV	5.58	5.58	5.58	5.58	5.58	5.58	5.58	5.57
15.55	CFS	31.85	31.65	31.45	31.25	31.04	30.83	30.62	30.41
15.55	ELEV	5.57	5.57	5.57	5.57	5.57	5.57	5.57	5.56
15.95	CFS	30.20	30.00	29.80	29.61	29.42	29.23	29.06	28.88
15.95	ELEV	5.56	5.56	5.56	5.56	5.56	5.56	5.56	5.55
16.35	CFS	28.72	28.56	28.41	28.26	28.12	27.99	27.86	27.74
16.35	ELEV	5.55	5.55	5.55	5.55	5.55	5.55	5.55	5.55
16.75	CFS	27.62	27.51	27.41	27.31	27.21	27.12	27.03	26.95
16.75	ELEV	5.55	5.55	5.55	5.55	5.54	5.54	5.54	5.54
17.15	CFS	26.87	26.80	26.73	26.67	26.60	26.54	26.49	26.44
17.15	ELEV	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54
17.55	CFS	26.39	26.34	26.29	26.25	26.21	26.18	26.14	26.11
17.55	ELEV	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54
17.95	CFS	26.08	26.05	26.02	25.99	25.97	25.95	25.92	25.90
17.95	ELEV	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54
18.35	CFS	25.89	25.87	25.85	25.84	25.82	25.81	25.80	25.78
18.35	ELEV	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54
18.75	CFS	25.77	25.76	25.75	25.75	25.74	25.73	25.72	25.72
18.75	ELEV	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54
19.15	CFS	25.71	25.71	25.70	25.70	25.70	25.69	25.69	25.69
19.15	ELEV	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54
19.55	CFS	25.69	25.68	25.68	25.68	25.68	25.68	25.68	25.68
19.55	ELEV	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54
19.95	CFS	25.68	25.68	25.68	25.68	25.68	25.66	25.64	25.59
19.95	ELEV	5.54	5.54	5.54	5.54	5.54	5.53	5.53	5.53
20.35	CFS	25.52	25.40	25.25	25.06	24.83	24.57	24.28	23.97
20.35	ELEV	5.53	5.53	5.53	5.53	5.53	5.53	5.53	5.52
20.75	CFS	23.64	23.29	22.94	22.58	22.21	21.85	21.49	21.14
20.75	ELEV	5.52	5.52	5.52	5.52	5.51	5.51	5.51	5.51
21.15	CFS	20.79	20.44	20.11	20.00	20.00	19.99	19.99	19.99
21.15	ELEV	5.50	5.50	5.50	5.50	5.50	5.49	5.49	5.49
21.55	CFS	19.99	19.99	19.98	19.98	19.98	19.98	19.97	19.97
21.55	ELEV	5.49	5.49	5.48	5.48	5.48	5.48	5.47	5.47
21.95	CFS	19.97	19.97	19.97	19.96	19.96	19.96	19.96	19.95
21.95	ELEV	5.47	5.47	5.47	5.46	5.46	5.46	5.46	5.45
22.35	CFS	19.95	19.95	19.95	19.94	19.94	19.94	19.94	19.93
22.35	ELEV	5.45	5.45	5.45	5.44	5.44	5.44	5.44	5.43

22.75 CFS	19.93	19.93	19.93	19.93	19.92	19.92	19.92	19.92
22.75 ELEV	5.43	5.43	5.43	5.43	5.42	5.42	5.42	5.42
23.15 CFS	19.91	19.91	19.91	19.91	19.90	19.90	19.90	19.90
23.15 ELEV	5.41	5.41	5.41	5.41	5.40	5.40	5.40	5.40
23.55 CFS	19.90	19.89	19.89	19.89	19.89	19.88	19.88	19.88
23.55 ELEV	5.40	5.39	5.39	5.39	5.39	5.38	5.38	5.38
23.95 CFS	19.88	19.87	19.87	19.87	19.87	19.87	19.86	19.86
23.95 ELEV	5.38	5.37	5.37	5.37	5.37	5.37	5.36	5.36
24.35 CFS	19.86	19.85	19.85	19.85	19.84	19.84	19.83	19.83
24.35 ELEV	5.36	5.35	5.35	5.35	5.34	5.34	5.33	5.33
24.75 CFS	19.82	19.82	19.81	19.81				
24.75 ELEV	5.32	5.32	5.31	5.31				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.61 WATERSHED INCHES; 1176 CFS-HRS; 97.2 ACRE-FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
7.59	295.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.61 WATERSHED INCHES; 1172 CFS-HRS; 96.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
5.98	23.1	(RUNOFF)
7.98	1.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
3.00 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.25	164.6	(RUNOFF)
13.00	4.5	(RUNOFF)
19.95	3.1	(RUNOFF)
23.95	1.5 *	(RUNOFF)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.72 WATERSHED INCHES; 211 CFS-HRS; 17.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.17	75.8	(RUNOFF)
9.98	2.5	(RUNOFF)
19.95	1.3 *	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.72 WATERSHED INCHES; 88 CFS-HRS; 7.3 ACRE-FEET.

OPERATION ADDHYD STRUCTURE 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.21	244.0	(NULL)
12.98	6.8	(NULL)
19.94	4.6	(NULL)
23.93	2.3	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.74 WATERSHED INCHES; 318 CFS-HRS; 26.3 ACRE-FEET.

OPERATION RESVOR STRUCTURE 93

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.96	59.8	5.79

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 1
MAIN TIME INCREMENT = .050 hr, DRAINAGE AREA = .18 SQ.MI.

HRS								
5.25	CFS	.00	.01	.01	.01	.01	.02	.05	.17
5.25	ELEV	.00	.00	.00	.00	.00	.00	.01	.03
5.65	CFS	.48	1.00	1.80	2.90	4.38	7.33	11.54	16.44
5.65	ELEV	.10	.20	.36	.58	.88	1.16	1.44	1.76
6.05	CFS	21.02	24.15	27.41	35.43	43.31	50.16	51.74	53.17
6.05	ELEV	2.14	2.55	2.99	3.35	3.70	4.03	4.35	4.63
6.45	CFS	54.44	55.60	56.65	57.51	58.19	58.72	59.12	59.40
6.45	ELEV	4.89	5.10	5.27	5.42	5.53	5.62	5.69	5.73
6.85	CFS	59.59	59.71	59.75	59.73	59.67	59.55	59.40	59.21
6.85	ELEV	5.77	5.78	5.79	5.79	5.78	5.76	5.73	5.70
7.25	CFS	59.00	58.76	58.50	58.22	57.92	57.61	57.29	56.95
7.25	ELEV	5.67	5.63	5.58	5.54	5.49	5.43	5.38	5.33
7.65	CFS	56.61	56.26	55.90	55.54	55.18	54.85	54.53	54.21
7.65	ELEV	5.27	5.21	5.15	5.09	5.03	4.97	4.91	4.84
8.05	CFS	53.90	53.58	53.27	52.95	52.62	52.30	51.97	51.64
8.05	ELEV	4.78	4.72	4.65	4.59	4.52	4.46	4.39	4.33
8.45	CFS	51.31	50.97	50.63	50.29	49.77	48.31	46.89	45.51

8.45	ELEV	4.26	4.19	4.13	4.06	3.99	3.92	3.86	3.80
8.85	CFS	44.17	42.88	41.62	40.41	39.24	38.11	37.02	35.97
8.85	ELEV	3.74	3.68	3.63	3.57	3.52	3.47	3.42	3.38
9.25	CFS	34.95	33.98	33.04	32.13	31.25	30.41	29.60	28.82
9.25	ELEV	3.33	3.29	3.25	3.21	3.17	3.13	3.09	3.06
9.65	CFS	28.07	27.44	27.16	26.88	26.60	26.33	26.07	25.80
9.65	ELEV	3.03	2.99	2.95	2.92	2.88	2.84	2.81	2.77
10.05	CFS	25.54	25.29	25.04	24.79	24.54	24.30	24.05	23.81
10.05	ELEV	2.74	2.71	2.67	2.64	2.61	2.57	2.54	2.51
10.45	CFS	23.57	23.33	23.09	22.85	22.61	22.38	22.15	21.92
10.45	ELEV	2.48	2.44	2.41	2.38	2.35	2.32	2.29	2.26
10.85	CFS	21.69	21.46	21.24	21.02	20.81	20.59	20.38	20.17
10.85	ELEV	2.23	2.20	2.17	2.14	2.11	2.08	2.05	2.02
11.25	CFS	19.94	19.56	19.19	18.83	18.48	18.15	17.82	17.50
11.25	ELEV	2.00	1.97	1.95	1.92	1.90	1.88	1.85	1.83
11.65	CFS	17.19	16.88	16.59	16.31	16.03	15.76	15.50	15.25
11.65	ELEV	1.81	1.79	1.77	1.75	1.74	1.72	1.70	1.68
12.05	CFS	15.00	14.77	14.53	14.31	14.09	13.88	13.68	13.48
12.05	ELEV	1.67	1.65	1.64	1.62	1.61	1.59	1.58	1.57
12.45	CFS	13.28	13.09	12.91	12.73	12.56	12.40	12.23	12.08
12.45	ELEV	1.55	1.54	1.53	1.52	1.50	1.49	1.48	1.47
12.85	CFS	11.92	11.78	11.63	11.49	11.36	11.22	11.10	10.97
12.85	ELEV	1.46	1.45	1.44	1.43	1.42	1.41	1.41	1.40
13.25	CFS	10.85	10.72	10.60	10.49	10.37	10.25	10.14	10.03
13.25	ELEV	1.39	1.38	1.37	1.37	1.36	1.35	1.34	1.34
13.65	CFS	9.92	9.81	9.70	9.60	9.49	9.39	9.30	9.20
13.65	ELEV	1.33	1.32	1.31	1.31	1.30	1.29	1.29	1.28
14.05	CFS	9.11	9.02	8.93	8.84	8.76	8.67	8.59	8.51
14.05	ELEV	1.27	1.27	1.26	1.26	1.25	1.24	1.24	1.23
14.45	CFS	8.43	8.35	8.28	8.20	8.13	8.05	7.98	7.91
14.45	ELEV	1.23	1.22	1.22	1.21	1.21	1.20	1.20	1.19
14.85	CFS	7.84	7.78	7.71	7.65	7.59	7.53	7.47	7.41
14.85	ELEV	1.19	1.19	1.18	1.18	1.17	1.17	1.16	1.16
15.25	CFS	7.35	7.29	7.23	7.17	7.11	7.06	7.00	6.94
15.25	ELEV	1.16	1.15	1.15	1.14	1.14	1.14	1.13	1.13
15.65	CFS	6.88	6.82	6.76	6.70	6.64	6.59	6.53	6.48
15.65	ELEV	1.13	1.12	1.12	1.11	1.11	1.11	1.10	1.10
16.05	CFS	6.42	6.37	6.32	6.27	6.23	6.18	6.13	6.09
16.05	ELEV	1.09	1.09	1.09	1.08	1.08	1.08	1.08	1.07
16.45	CFS	6.05	6.00	5.96	5.92	5.89	5.85	5.81	5.78
16.45	ELEV	1.07	1.07	1.06	1.06	1.06	1.06	1.05	1.05
16.85	CFS	5.74	5.71	5.68	5.65	5.62	5.59	5.56	5.53
16.85	ELEV	1.05	1.05	1.05	1.04	1.04	1.04	1.04	1.04
17.25	CFS	5.50	5.48	5.45	5.43	5.40	5.38	5.36	5.34
17.25	ELEV	1.03	1.03	1.03	1.03	1.03	1.03	1.02	1.02
17.65	CFS	5.32	5.30	5.28	5.26	5.24	5.22	5.20	5.18
17.65	ELEV	1.02	1.02	1.02	1.02	1.02	1.01	1.01	1.01
18.05	CFS	5.17	5.15	5.14	5.12	5.11	5.09	5.08	5.07
18.05	ELEV	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.00

18.45 CFS	5.05	5.04	5.03	5.02	5.00	5.00	4.99	4.98
18.45 ELEV	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
18.85 CFS	4.98	4.97	4.97	4.96	4.96	4.95	4.95	4.94
18.85 ELEV	1.00	.99	.99	.99	.99	.99	.99	.99
19.25 CFS	4.94	4.93	4.93	4.92	4.92	4.91	4.91	4.90
19.25 ELEV	.99	.99	.99	.98	.98	.98	.98	.98
19.65 CFS	4.90	4.89	4.89	4.89	4.88	4.88	4.87	4.87
19.65 ELEV	.98	.98	.98	.98	.98	.98	.97	.97
20.05 CFS	4.87	4.86	4.86	4.85	4.84	4.83	4.82	4.80
20.05 ELEV	.97	.97	.97	.97	.97	.97	.96	.96
20.45 CFS	4.79	4.77	4.74	4.72	4.69	4.66	4.64	4.61
20.45 ELEV	.96	.95	.95	.94	.94	.93	.93	.92
20.85 CFS	4.57	4.54	4.51	4.48	4.45	4.42	4.39	4.36
20.85 ELEV	.91	.91	.90	.90	.89	.88	.88	.87
21.25 CFS	4.33	4.30	4.26	4.23	4.21	4.18	4.15	4.12
21.25 ELEV	.87	.86	.85	.85	.84	.84	.83	.82
21.65 CFS	4.09	4.06	4.04	4.01	3.98	3.96	3.93	3.91
21.65 ELEV	.82	.81	.81	.80	.80	.79	.79	.78
22.05 CFS	3.88	3.86	3.83	3.81	3.78	3.76	3.74	3.72
22.05 ELEV	.78	.77	.77	.76	.76	.75	.75	.74
22.45 CFS	3.69	3.67	3.65	3.63	3.61	3.59	3.57	3.55
22.45 ELEV	.74	.73	.73	.73	.72	.72	.71	.71
22.85 CFS	3.53	3.51	3.49	3.47	3.46	3.44	3.42	3.40
22.85 ELEV	.71	.70	.70	.69	.69	.69	.68	.68
23.25 CFS	3.39	3.37	3.35	3.34	3.32	3.31	3.29	3.27
23.25 ELEV	.68	.67	.67	.67	.66	.66	.66	.65
23.65 CFS	3.26	3.25	3.23	3.22	3.20	3.19	3.17	3.16
23.65 ELEV	.65	.65	.65	.64	.64	.64	.63	.63
24.05 CFS	3.15	3.13	3.12	3.10	3.09	3.07	3.05	3.02
24.05 ELEV	.63	.63	.62	.62	.62	.61	.61	.60
24.45 CFS	3.00	2.97	2.94	2.91	2.87	2.83	2.80	2.76
24.45 ELEV	.60	.59	.59	.58	.57	.57	.56	.55
24.85 CFS	2.72	2.68						
24.85 ELEV	.54	.54						

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.67 WATERSHED INCHES; 310 CFS-HRS; 25.6 ACRE-FEET.

OPERATION REACH XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
7.32	58.8	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 1

HRS	MAIN TIME INCREMENT = .050 hr,			DRAINAGE AREA =			.18 SQ.MI.
5.75 CFS	.30	.60	1.06	1.73	2.85	4.59	6.97	9.79
6.15 CFS	12.67	15.63	19.60	24.36	29.54	33.99	37.84	41.17
6.55 CFS	44.06	46.59	48.78	50.67	52.28	53.65	54.81	55.77
6.95 CFS	56.56	57.20	57.71	58.10	58.39	58.59	58.72	58.77
7.35 CFS	58.77	58.72	58.62	58.47	58.30	58.10	57.87	57.61

7.75 CFS	57.34	57.05	56.75	56.44	56.12	55.80	55.48	55.16
8.15 CFS	54.84	54.53	54.21	53.89	53.57	53.25	52.93	52.60
8.55 CFS	52.28	51.94	51.61	51.24	50.65	49.90	49.02	48.04
8.95 CFS	47.01	45.92	44.82	43.70	42.58	41.46	40.36	39.27
9.35 CFS	38.21	37.17	36.16	35.17	34.22	33.29	32.39	31.53
9.75 CFS	30.70	29.99	29.37	28.81	28.31	27.86	27.45	27.07
10.15 CFS	26.71	26.37	26.06	25.75	25.46	25.18	24.90	24.63
10.55 CFS	24.37	24.11	23.86	23.61	23.36	23.12	22.88	22.64
10.95 CFS	22.40	22.17	21.94	21.71	21.49	21.26	21.04	20.82
11.35 CFS	20.57	20.29	20.00	19.69	19.38	19.07	18.75	18.44
11.75 CFS	18.13	17.82	17.51	17.22	16.92	16.64	16.36	16.09
12.15 CFS	15.82	15.56	15.31	15.06	14.83	14.60	14.37	14.15
12.55 CFS	13.94	13.73	13.53	13.34	13.15	12.96	12.78	12.61
12.95 CFS	12.44	12.28	12.12	11.97	11.82	11.67	11.53	11.39
13.35 CFS	11.26	11.13	11.00	10.87	10.75	10.63	10.51	10.39
13.75 CFS	10.27	10.15	10.04	9.93	9.82	9.72	9.61	9.51
14.15 CFS	9.41	9.31	9.22	9.13	9.03	8.94	8.86	8.77
14.55 CFS	8.69	8.60	8.52	8.44	8.36	8.29	8.21	8.14
14.95 CFS	8.06	7.99	7.92	7.86	7.79	7.72	7.66	7.60
15.35 CFS	7.53	7.47	7.41	7.35	7.29	7.23	7.17	7.11
15.75 CFS	7.05	6.99	6.93	6.88	6.82	6.76	6.70	6.64
16.15 CFS	6.59	6.54	6.48	6.43	6.38	6.33	6.28	6.23
16.55 CFS	6.19	6.14	6.10	6.05	6.01	5.97	5.93	5.89
16.95 CFS	5.86	5.82	5.79	5.75	5.72	5.69	5.65	5.62
17.35 CFS	5.59	5.57	5.54	5.51	5.48	5.46	5.43	5.41
17.75 CFS	5.39	5.36	5.34	5.32	5.30	5.28	5.26	5.24
18.15 CFS	5.22	5.20	5.19	5.17	5.16	5.14	5.12	5.11
18.55 CFS	5.09	5.08	5.07	5.05	5.04	5.03	5.02	5.01
18.95 CFS	5.00	5.00	4.99	4.98	4.97	4.97	4.96	4.96
19.35 CFS	4.95	4.95	4.94	4.94	4.93	4.93	4.92	4.92
19.75 CFS	4.91	4.91	4.90	4.90	4.89			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.49 WATERSHED INCHES; 290 CFS-HRS; 23.9 ACRE-FEET.

OPERATION ADDHYD STRUCTURE 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.33	157.5	(NULL)
13.04	7.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.52 WATERSHED INCHES; 255 CFS-HRS; 21.0 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 80 TO STRUCTURE 1
STARTING TIME = .00 RAIN DEPTH = 3.40 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .050 HOURS
ALTERNATE NO. = 1 STORM NO. = 2 RAIN TABLE NO. = 1

OPERATION ADDHYD STRUCTURE 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)		PEAK ELEVATION(FEET)
6.24	171.2		2.05
13.08	8.4		.10
20.00	5.9		.07
23.95	3.0	*	.04

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.95 WATERSHED INCHES; 288 CFS-HRS; 23.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 89

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)		PEAK ELEVATION(FEET)
6.10	25.2		(RUNOFF)
14.95	1.1	*	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.70 WATERSHED INCHES; 41 CFS-HRS; 3.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)		PEAK ELEVATION(FEET)
6.28	134.8		(RUNOFF)
13.00	4.0	*	(RUNOFF)
19.95	2.7	*	(RUNOFF)
23.95	1.4	*	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.01 WATERSHED INCHES; 182 CFS-HRS; 15.0 ACRE-FEET.

OPERATION ADDHYD STRUCTURE 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)		PEAK ELEVATION(FEET)
6.26	158.2		(NULL)
13.03	5.3		(NULL)
19.95	3.7	*	(NULL)
23.95	1.9	*	(NULL)
	* FIRST POINT OF FLAT PEAK		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.50 WATERSHED INCHES; 222 CFS-HRS; 18.4 ACRE-FEET.

OPERATION ADDHYD STRUCTURE 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.25	329.0	(NULL)
13.05	13.8	(NULL)
19.99	9.6	(NULL)
23.94	4.9	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.13 WATERSHED INCHES; 510 CFS-HRS; 42.2 ACRE-FEET.

OPERATION REACH XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)		PEAK ELEVATION(FEET)
6.36	315.9		(NULL)
13.13	13.8		(NULL)
20.08	9.6		(NULL)
24.00	4.9	*	(NULL)
	* FIRST POINT OF FLAT PEAK		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.13 WATERSHED INCHES; 510 CFS-HRS; 42.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)		PEAK ELEVATION(FEET)
6.34	119.7		(RUNOFF)
13.03	4.6		(RUNOFF)
19.98	3.1		(RUNOFF)
23.95	1.6	*	(RUNOFF)
	* FIRST POINT OF FLAT PEAK		

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.62 WATERSHED INCHES; 188 CFS-HRS; 15.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.32	15.5	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.77 WATERSHED INCHES; 23 CFS-HRS; 1.9 ACRE-FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.32	73.1	(RUNOFF)
13.00	2.3 *	(RUNOFF)
19.95	1.5 *	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.01 WATERSHED INCHES; 104 CFS-HRS; 8.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.19	43.2	(RUNOFF)
13.00	1.1 *	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.01 WATERSHED INCHES; 52 CFS-HRS; 4.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 148

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.36	616.4	(NULL)
13.08	25.3	(NULL)
20.00	17.5	(NULL)
23.97	8.8	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.39 WATERSHED INCHES; 1013 CFS-HRS; 83.8 ACRE-FEET.

OPERATION RESVOR STRUCTURE 95

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
7.70	104.6	6.02

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2
MAIN TIME INCREMENT = .050 hr, DRAINAGE AREA = 1.13 SQ.MI.

HRS								
5.50	CFS	.00	.03	.18	.60	1.55	3.38	6.59	7.33
5.50	ELEV	.00	.00	.02	.08	.21	.46	.90	1.13
5.90	CFS	7.37	7.44	7.50	7.52	7.54	7.56	7.58	7.76
5.90	ELEV	1.36	1.68	2.03	2.18	2.36	2.58	2.81	3.07
6.30	CFS	8.41	9.08	9.75	11.15	13.30	15.26	16.76	18.16
6.30	ELEV	3.32	3.59	3.86	4.11	4.33	4.53	4.70	4.85
6.70	CFS	19.45	19.63	19.75	19.87	19.97	29.85	42.96	54.24
6.70	ELEV	4.99	5.13	5.25	5.37	5.47	5.56	5.64	5.71
7.10	CFS	63.90	72.12	79.08	84.91	89.76	93.73	96.92	99.42
7.10	ELEV	5.77	5.82	5.86	5.90	5.93	5.96	5.97	5.99
7.50	CFS	101	103	104	104	105	104	104	103
7.50	ELEV	6.00	6.01	6.02	6.02	6.02	6.02	6.02	6.01
7.90	CFS	102	101	100	99	98	97	96	95
7.90	ELEV	6.01	6.00	6.00	5.99	5.98	5.98	5.97	5.96
8.30	CFS	93.55	92.23	90.85	89.40	87.88	86.29	84.64	82.95
8.30	ELEV	5.95	5.95	5.94	5.93	5.92	5.91	5.90	5.89
8.70	CFS	81.23	79.48	77.73	75.98	74.24	72.53	70.85	69.20
8.70	ELEV	5.88	5.87	5.86	5.85	5.83	5.82	5.81	5.80
9.10	CFS	67.60	66.03	64.52	63.05	61.63	60.27	58.95	57.69
9.10	ELEV	5.79	5.78	5.77	5.77	5.76	5.75	5.74	5.73
9.50	CFS	56.48	55.32	54.21	53.15	52.13	51.17	50.24	49.36
9.50	ELEV	5.73	5.72	5.71	5.70	5.70	5.69	5.69	5.68
9.90	CFS	48.52	47.73	46.97	46.25	45.56	44.91	44.29	43.69
9.90	ELEV	5.68	5.67	5.67	5.66	5.66	5.65	5.65	5.65
10.30	CFS	43.11	42.54	41.98	41.43	40.88	40.32	39.77	39.22
10.30	ELEV	5.64	5.64	5.64	5.63	5.63	5.63	5.62	5.62
10.70	CFS	38.67	38.13	37.59	37.06	36.54	36.04	35.54	35.07
10.70	ELEV	5.62	5.61	5.61	5.61	5.60	5.60	5.60	5.59
11.10	CFS	34.61	34.16	33.73	33.31	32.92	32.53	32.17	31.82
11.10	ELEV	5.59	5.59	5.58	5.58	5.58	5.58	5.58	5.57
11.50	CFS	31.48	31.16	30.86	30.57	30.29	30.02	29.77	29.53
11.50	ELEV	5.57	5.57	5.57	5.57	5.56	5.56	5.56	5.56
11.90	CFS	29.31	29.09	28.88	28.69	28.51	28.33	28.16	28.01
11.90	ELEV	5.56	5.56	5.55	5.55	5.55	5.55	5.55	5.55
12.30	CFS	27.86	27.72	27.58	27.46	27.34	27.23	27.12	27.02
12.30	ELEV	5.55	5.55	5.55	5.55	5.55	5.54	5.54	5.54
12.70	CFS	26.93	26.84	26.75	26.67	26.60	26.53	26.46	26.40
12.70	ELEV	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54
13.10	CFS	26.34	26.29	26.23	26.18	26.13	26.07	26.00	25.94
13.10	ELEV	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54
13.50	CFS	25.86	25.77	25.68	25.58	25.48	25.37	25.26	25.15
13.50	ELEV	5.54	5.54	5.54	5.53	5.53	5.53	5.53	5.53

13.90	CFS	25.04	24.93	24.81	24.70	24.59	24.49	24.38	24.28
13.90	ELEV	5.53	5.53	5.53	5.53	5.53	5.53	5.53	5.53
14.30	CFS	24.18	24.08	23.97	23.87	23.77	23.66	23.55	23.44
14.30	ELEV	5.53	5.53	5.52	5.52	5.52	5.52	5.52	5.52
14.70	CFS	23.34	23.23	23.12	23.01	22.91	22.81	22.71	22.61
14.70	ELEV	5.52	5.52	5.52	5.52	5.52	5.52	5.52	5.52
15.10	CFS	22.52	22.42	22.33	22.24	22.15	22.06	21.96	21.86
15.10	ELEV	5.52	5.51	5.51	5.51	5.51	5.51	5.51	5.51
15.50	CFS	21.75	21.63	21.51	21.38	21.25	21.11	20.97	20.83
15.50	ELEV	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.51
15.90	CFS	20.69	20.55	20.41	20.28	20.15	20.02	20.00	20.00
15.90	ELEV	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
16.30	CFS	20.00	20.00	20.00	20.00	19.99	19.99	19.99	19.99
16.30	ELEV	5.50	5.50	5.50	5.50	5.49	5.49	5.49	5.49
16.70	CFS	19.99	19.99	19.99	19.99	19.99	19.99	19.99	19.98
16.70	ELEV	5.49	5.49	5.49	5.49	5.49	5.49	5.49	5.48
17.10	CFS	19.98	19.98	19.98	19.98	19.98	19.98	19.98	19.98
17.10	ELEV	5.48	5.48	5.48	5.48	5.48	5.48	5.48	5.48
17.50	CFS	19.98	19.98	19.97	19.97	19.97	19.97	19.97	19.97
17.50	ELEV	5.48	5.48	5.47	5.47	5.47	5.47	5.47	5.47
17.90	CFS	19.97	19.97	19.97	19.97	19.97	19.97	19.96	19.96
17.90	ELEV	5.47	5.47	5.47	5.47	5.47	5.47	5.46	5.46
18.30	CFS	19.96	19.96	19.96	19.96	19.96	19.96	19.96	19.96
18.30	ELEV	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46
18.70	CFS	19.96	19.95	19.95	19.95	19.95	19.95	19.95	19.95
18.70	ELEV	5.46	5.45	5.45	5.45	5.45	5.45	5.45	5.45
19.10	CFS	19.95	19.95	19.95	19.95	19.95	19.94	19.94	19.94
19.10	ELEV	5.45	5.45	5.45	5.45	5.45	5.44	5.44	5.44
19.50	CFS	19.94	19.94	19.94	19.94	19.94	19.94	19.94	19.94
19.50	ELEV	5.44	5.44	5.44	5.44	5.44	5.44	5.44	5.44
19.90	CFS	19.94	19.93	19.93	19.93	19.93	19.93	19.93	19.93
19.90	ELEV	5.44	5.43	5.43	5.43	5.43	5.43	5.43	5.43
20.30	CFS	19.93	19.93	19.93	19.93	19.92	19.92	19.92	19.92
20.30	ELEV	5.43	5.43	5.43	5.43	5.42	5.42	5.42	5.42
20.70	CFS	19.92	19.91	19.91	19.91	19.90	19.90	19.90	19.90
20.70	ELEV	5.42	5.41	5.41	5.41	5.40	5.40	5.40	5.40
21.10	CFS	19.89	19.89	19.89	19.88	19.88	19.88	19.87	19.87
21.10	ELEV	5.39	5.39	5.39	5.38	5.38	5.38	5.37	5.37
21.50	CFS	19.86	19.86	19.86	19.85	19.85	19.85	19.84	19.84
21.50	ELEV	5.36	5.36	5.36	5.35	5.35	5.35	5.34	5.34
21.90	CFS	19.84	19.83	19.83	19.83	19.82	19.82	19.81	19.81
21.90	ELEV	5.34	5.33	5.33	5.33	5.32	5.32	5.31	5.31
22.30	CFS	19.81	19.80	19.80	19.80	19.79	19.79	19.78	19.78
22.30	ELEV	5.31	5.30	5.30	5.30	5.29	5.29	5.28	5.28
22.70	CFS	19.78	19.77	19.77	19.77	19.76	19.76	19.76	19.75
22.70	ELEV	5.28	5.27	5.27	5.27	5.26	5.26	5.26	5.25
23.10	CFS	19.75	19.74	19.74	19.74	19.73	19.73	19.73	19.72
23.10	ELEV	5.25	5.24	5.24	5.24	5.23	5.23	5.23	5.22
23.50	CFS	19.72	19.72	19.71	19.71	19.70	19.70	19.70	19.69

23.50 ELEV	5.22	5.22	5.21	5.21	5.20	5.20	5.20	5.19
23.90 CFS	19.69	19.69	19.68	19.68	19.68	19.67	19.67	19.66
23.90 ELEV	5.19	5.19	5.18	5.18	5.18	5.17	5.17	5.16
24.30 CFS	19.66	19.66	19.65	19.65	19.64	19.64	19.64	19.63
24.30 ELEV	5.16	5.16	5.15	5.15	5.14	5.14	5.14	5.13
24.70 CFS	19.63	19.62	19.61	19.61	19.60			
24.70 ELEV	5.13	5.12	5.11	5.11	5.10			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.82 WATERSHED INCHES; 601 CFS-HRS; 49.7 ACRE-FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
7.99	101.2	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.82 WATERSHED INCHES; 596 CFS-HRS; 49.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
5.98	14.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
2.01 WATERSHED INCHES; 13 CFS-HRS; 1.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.25	101.8	(RUNOFF)
13.00	3.2 *	(RUNOFF)
19.98	2.2	(RUNOFF)
23.95	1.1 *	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.77 WATERSHED INCHES; 137 CFS-HRS; 11.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.17	46.8	(RUNOFF)
13.00	1.3 *	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.77 WATERSHED INCHES; 57 CFS-HRS; 4.7 ACRE-FEET.

OPERATION ADDHYD STRUCTURE 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.21	151.1	(NULL)
12.98	4.8	(NULL)
19.96	3.3	(NULL)
23.93	1.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.79 WATERSHED INCHES; 208 CFS-HRS; 17.2 ACRE-FEET.

OPERATION RESVOR STRUCTURE 93

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.88	45.5	3.80

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2
MAIN TIME INCREMENT = .050 hr, DRAINAGE AREA = .18 SQ.MI.

HRS								
5.50	CFS	.00	.01	.09	.27	.60	1.09	1.78	2.70
5.50	ELEV	.00	.00	.02	.05	.12	.22	.36	.54
5.90	CFS	3.86	5.53	8.62	12.06	15.75	19.55	21.76	23.74
5.90	ELEV	.77	1.04	1.24	1.47	1.72	1.97	2.24	2.50
6.30	CFS	25.64	27.41	31.25	34.67	37.53	39.87	41.71	43.11
6.30	ELEV	2.75	2.99	3.17	3.32	3.45	3.55	3.63	3.69
6.70	CFS	44.13	44.83	45.25	45.46	45.48	45.33	45.06	44.68
6.70	ELEV	3.74	3.77	3.79	3.80	3.80	3.79	3.78	3.76
7.10	CFS	44.21	43.66	43.05	42.39	41.69	40.96	40.20	39.43
7.10	ELEV	3.74	3.72	3.69	3.66	3.63	3.60	3.56	3.53
7.50	CFS	38.64	37.85	37.05	36.26	35.47	34.69	33.92	33.17
7.50	ELEV	3.50	3.46	3.42	3.39	3.35	3.32	3.29	3.25
7.90	CFS	32.44	31.72	31.02	30.34	29.68	29.03	28.39	27.76
7.90	ELEV	3.22	3.19	3.16	3.13	3.10	3.07	3.04	3.01
8.30	CFS	27.35	27.10	26.85	26.59	26.32	26.06	25.79	25.52
8.30	ELEV	2.98	2.95	2.91	2.88	2.84	2.81	2.77	2.74
8.70	CFS	25.25	24.98	24.71	24.44	24.17	23.90	23.64	23.38
8.70	ELEV	2.70	2.66	2.63	2.59	2.56	2.52	2.49	2.45
9.10	CFS	23.12	22.87	22.62	22.37	22.12	21.88	21.64	21.41
9.10	ELEV	2.42	2.38	2.35	2.32	2.28	2.25	2.22	2.19
9.50	CFS	21.18	20.95	20.73	20.50	20.29	20.07	19.74	19.35
9.50	ELEV	2.16	2.13	2.10	2.07	2.04	2.01	1.98	1.96
9.90	CFS	18.97	18.60	18.24	17.89	17.56	17.23	16.91	16.59
9.90	ELEV	1.93	1.91	1.88	1.86	1.84	1.82	1.79	1.77
10.30	CFS	16.28	15.98	15.69	15.39	15.11	14.83	14.55	14.28

10.30 ELEV	1.75	1.73	1.71	1.69	1.67	1.66	1.64	1.62
10.70 CFS	14.01	13.75	13.50	13.25	13.01	12.78	12.55	12.32
10.70 ELEV	1.60	1.58	1.57	1.55	1.53	1.52	1.50	1.49
11.10 CFS	12.11	11.90	11.69	11.49	11.30	11.11	10.92	10.75
11.10 ELEV	1.47	1.46	1.45	1.43	1.42	1.41	1.39	1.38
11.50 CFS	10.57	10.40	10.24	10.08	9.93	9.78	9.63	9.49
11.50 ELEV	1.37	1.36	1.35	1.34	1.33	1.32	1.31	1.30
11.90 CFS	9.36	9.22	9.09	8.97	8.85	8.73	8.61	8.50
11.90 ELEV	1.29	1.28	1.27	1.26	1.26	1.25	1.24	1.23
12.30 CFS	8.39	8.29	8.19	8.09	7.99	7.90	7.81	7.72
12.30 ELEV	1.23	1.22	1.21	1.21	1.20	1.19	1.19	1.18
12.70 CFS	7.64	7.56	7.48	7.40	7.32	7.25	7.18	7.11
12.70 ELEV	1.18	1.17	1.17	1.16	1.15	1.15	1.15	1.14
13.10 CFS	7.04	6.98	6.91	6.85	6.79	6.72	6.66	6.60
13.10 ELEV	1.14	1.13	1.13	1.12	1.12	1.11	1.11	1.11
13.50 CFS	6.54	6.48	6.42	6.36	6.30	6.24	6.19	6.13
13.50 ELEV	1.10	1.10	1.09	1.09	1.09	1.08	1.08	1.08
13.90 CFS	6.08	6.02	5.97	5.92	5.87	5.82	5.78	5.73
13.90 ELEV	1.07	1.07	1.06	1.06	1.06	1.05	1.05	1.05
14.30 CFS	5.68	5.64	5.59	5.55	5.51	5.46	5.42	5.38
14.30 ELEV	1.05	1.04	1.04	1.04	1.03	1.03	1.03	1.03
14.70 CFS	5.34	5.30	5.26	5.22	5.18	5.14	5.11	5.07
14.70 ELEV	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.00
15.10 CFS	5.04	5.00	4.98	4.97	4.95	4.93	4.91	4.89
15.10 ELEV	1.00	1.00	1.00	.99	.99	.99	.98	.98
15.50 CFS	4.87	4.85	4.82	4.80	4.78	4.76	4.74	4.71
15.50 ELEV	.97	.97	.96	.96	.96	.95	.95	.94
15.90 CFS	4.69	4.67	4.65	4.63	4.61	4.59	4.57	4.54
15.90 ELEV	.94	.93	.93	.93	.92	.92	.91	.91
16.30 CFS	4.52	4.50	4.49	4.47	4.45	4.43	4.41	4.39
16.30 ELEV	.90	.90	.90	.89	.89	.89	.88	.88
16.70 CFS	4.37	4.36	4.34	4.32	4.30	4.29	4.27	4.26
16.70 ELEV	.87	.87	.87	.86	.86	.86	.85	.85
17.10 CFS	4.24	4.22	4.21	4.19	4.18	4.16	4.15	4.14
17.10 ELEV	.85	.84	.84	.84	.84	.83	.83	.83
17.50 CFS	4.12	4.11	4.10	4.08	4.07	4.06	4.04	4.03
17.50 ELEV	.82	.82	.82	.82	.81	.81	.81	.81
17.90 CFS	4.02	4.01	4.00	3.98	3.97	3.96	3.95	3.94
17.90 ELEV	.80	.80	.80	.80	.79	.79	.79	.79
18.30 CFS	3.93	3.92	3.91	3.90	3.89	3.88	3.87	3.86
18.30 ELEV	.79	.78	.78	.78	.78	.78	.77	.77
18.70 CFS	3.85	3.84	3.83	3.82	3.82	3.81	3.80	3.79
18.70 ELEV	.77	.77	.77	.76	.76	.76	.76	.76
19.10 CFS	3.78	3.77	3.77	3.76	3.75	3.74	3.74	3.73
19.10 ELEV	.76	.75	.75	.75	.75	.75	.75	.75
19.50 CFS	3.72	3.71	3.71	3.70	3.69	3.69	3.68	3.68
19.50 ELEV	.74	.74	.74	.74	.74	.74	.74	.74
19.90 CFS	3.67	3.66	3.66	3.65	3.64	3.64	3.63	3.62
19.90 ELEV	.73	.73	.73	.73	.73	.73	.73	.72

20.30 CFS	3.61	3.60	3.59	3.57	3.55	3.53	3.51	3.49
20.30 ELEV	.72	.72	.72	.71	.71	.71	.70	.70
20.70 CFS	3.47	3.45	3.42	3.40	3.37	3.35	3.33	3.30
20.70 ELEV	.69	.69	.68	.68	.67	.67	.67	.66
21.10 CFS	3.28	3.25	3.23	3.20	3.18	3.16	3.13	3.11
21.10 ELEV	.66	.65	.65	.64	.64	.63	.63	.62
21.50 CFS	3.09	3.06	3.04	3.02	3.00	2.98	2.96	2.94
21.50 ELEV	.62	.61	.61	.60	.60	.60	.59	.59
21.90 CFS	2.92	2.90	2.88	2.86	2.84	2.82	2.80	2.78
21.90 ELEV	.58	.58	.58	.57	.57	.56	.56	.56
22.30 CFS	2.77	2.75	2.73	2.71	2.70	2.68	2.66	2.65
22.30 ELEV	.55	.55	.55	.54	.54	.54	.53	.53
22.70 CFS	2.63	2.62	2.60	2.59	2.57	2.56	2.54	2.53
22.70 ELEV	.53	.52	.52	.52	.51	.51	.51	.51
23.10 CFS	2.51	2.50	2.49	2.47	2.46	2.45	2.44	2.42
23.10 ELEV	.50	.50	.50	.49	.49	.49	.49	.48
23.50 CFS	2.41	2.40	2.39	2.38	2.36	2.35	2.34	2.33
23.50 ELEV	.48	.48	.48	.48	.47	.47	.47	.47
23.90 CFS	2.32	2.31	2.30	2.29	2.28	2.27	2.26	2.24
23.90 ELEV	.46	.46	.46	.46	.46	.45	.45	.45
24.30 CFS	2.23	2.21	2.19	2.18	2.15	2.13	2.11	2.08
24.30 ELEV	.45	.44	.44	.44	.43	.43	.42	.42
24.70 CFS	2.06	2.03	2.00	1.97	1.95			
24.70 ELEV	.41	.41	.40	.39	.39			

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.73 WATERSHED INCHES; 201 CFS-HRS; 16.7 ACRE-FEET.

OPERATION REACH XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
7.21	43.2	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2
MAIN TIME INCREMENT = .050 hr, DRAINAGE AREA = .18 SQ.MI.

HRS								
5.80 CFS	.34	.61	1.01	1.55	2.30	3.50	5.12	7.14
6.20 CFS	9.49	11.82	14.08	16.27	18.38	20.82	23.44	26.11
6.60 CFS	28.72	31.18	33.44	35.47	37.24	38.76	40.03	41.06
7.00 CFS	41.87	42.47	42.89	43.14	43.24	43.20	43.05	42.79
7.40 CFS	42.44	42.02	41.53	40.98	40.38	39.75	39.09	38.40
7.80 CFS	37.70	36.98	36.26	35.53	34.81	34.09	33.38	32.68
8.20 CFS	31.98	31.30	30.63	30.01	29.46	28.96	28.51	28.09
8.60 CFS	27.71	27.34	27.00	26.67	26.34	26.03	25.73	25.43
9.00 CFS	25.14	24.86	24.58	24.30	24.03	23.76	23.50	23.24
9.40 CFS	22.98	22.73	22.48	22.23	21.99	21.75	21.51	21.28
9.80 CFS	21.05	20.80	20.52	20.23	19.92	19.60	19.28	18.95
10.20 CFS	18.62	18.30	17.97	17.65	17.33	17.02	16.71	16.41
10.60 CFS	16.11	15.81	15.52	15.23	14.95	14.68	14.41	14.14
11.00 CFS	13.88	13.63	13.38	13.14	12.90	12.67	12.45	12.23
11.40 CFS	12.02	11.81	11.61	11.41	11.22	11.03	10.85	10.68

11.80 CFS	10.51	10.34	10.18	10.02	9.87	9.72	9.58	9.44
12.20 CFS	9.31	9.17	9.05	8.92	8.80	8.69	8.57	8.46
12.60 CFS	8.35	8.25	8.15	8.05	7.96	7.86	7.78	7.69
13.00 CFS	7.61	7.52	7.45	7.37	7.29	7.22	7.15	7.08
13.40 CFS	7.01	6.95	6.88	6.81	6.75	6.69	6.62	6.56
13.80 CFS	6.50	6.44	6.38	6.32	6.27	6.21	6.16	6.10
14.20 CFS	6.05	6.00	5.95	5.90	5.85	5.80	5.75	5.70
14.60 CFS	5.66	5.61	5.57	5.52	5.48	5.44	5.39	5.35
15.00 CFS	5.31	5.27	5.24	5.20	5.16	5.13	5.09	5.07
15.40 CFS	5.04	5.01	4.99	4.97	4.94	4.92	4.90	4.87
15.80 CFS	4.85	4.83	4.81	4.79	4.76	4.74	4.72	4.70
16.20 CFS	4.68	4.65	4.63	4.61	4.59	4.57	4.55	4.53
16.60 CFS	4.51	4.49	4.47	4.45	4.43	4.41	4.40	4.38
17.00 CFS	4.36	4.34	4.33	4.31	4.29	4.28	4.26	4.24
17.40 CFS	4.23	4.21	4.20	4.18	4.17	4.16	4.14	4.13
17.80 CFS	4.11	4.10	4.09	4.07	4.06	4.05	4.04	4.02
18.20 CFS	4.01	4.00	3.99	3.98	3.97	3.95	3.94	3.93
18.60 CFS	3.92	3.91	3.90	3.89	3.88	3.87	3.86	3.85
19.00 CFS	3.84	3.84	3.83	3.82	3.81	3.80	3.79	3.78
19.40 CFS	3.78	3.77	3.76	3.75	3.74	3.74	3.73	3.72
19.80 CFS	3.72	3.71	3.70	3.69				

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.61 WATERSHED INCHES; 187 CFS-HRS; 15.4 ACRE-FEET.

OPERATION ADDHYD STRUCTURE 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.34	77.6	(NULL)
13.06	4.6	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.84 WATERSHED INCHES; 141 CFS-HRS; 11.7 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 80 TO STRUCTURE 1
STARTING TIME = .00 RAIN DEPTH = 3.00 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .050 HOURS
ALTERNATE NO. = 1 STORM NO. = 3 RAIN TABLE NO. = 1

OPERATION ADDHYD STRUCTURE 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)		PEAK ELEVATION(FEET)
6.27	122.7		1.51
13.10	6.7		.08
20.02	4.8		.06
23.95	2.4	*	.03

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.73 WATERSHED INCHES; 220 CFS-HRS; 18.2 ACRE-FEET.

OPERATION RUNOFF XSECTION 89

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)		PEAK ELEVATION(FEET)
6.10	16.3		(RUNOFF)
7.94	2.5		(RUNOFF)
13.00	1.1	*	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.51 WATERSHED INCHES; 29 CFS-HRS; 2.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)		PEAK ELEVATION(FEET)
6.28	109.2		(RUNOFF)
13.00	3.4	*	(RUNOFF)
19.98	2.3		(RUNOFF)
23.95	1.2	*	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.66 WATERSHED INCHES; 150 CFS-HRS; 12.4 ACRE-FEET.

OPERATION ADDHYD STRUCTURE 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)		PEAK ELEVATION(FEET)
6.27	124.4		(NULL)
13.03	4.5		(NULL)
19.99	3.1		(NULL)
23.95	1.6	*	(NULL)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.21 WATERSHED INCHES; 180 CFS-HRS; 14.8 ACRE-FEET.

OPERATION ADDHYD STRUCTURE 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)		PEAK ELEVATION(FEET)
6.27	247.0		(NULL)
13.06	11.2		(NULL)
20.00	7.9		(NULL)
23.95	4.0	*	(NULL)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.88 WATERSHED INCHES; 400 CFS-HRS; 33.0 ACRE-FEET.

OPERATION REACH XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)		PEAK ELEVATION(FEET)
6.39	235.0		(NULL)
13.15	11.2		(NULL)
20.08	7.9		(NULL)
24.00	4.0	*	(NULL)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.88 WATERSHED INCHES; 399 CFS-HRS; 33.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)		PEAK ELEVATION(FEET)
6.35	93.5		(RUNOFF)
13.03	3.8		(RUNOFF)
19.98	2.6		(RUNOFF)
23.95	1.3	*	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.31 WATERSHED INCHES; 152 CFS-HRS; 12.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.32	12.2	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.45 WATERSHED INCHES; 19 CFS-HRS; 1.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 18

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.32	59.1	(RUNOFF)
19.95	1.3 *	(RUNOFF)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.66 WATERSHED INCHES; 86 CFS-HRS; 7.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.19	34.8	(RUNOFF)
9.95	1.3 *	(RUNOFF)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.66 WATERSHED INCHES; 43 CFS-HRS; 3.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 148

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.38	472.6	(NULL)
13.08	21.0	(NULL)
20.01	14.6	(NULL)
23.98	7.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.11 WATERSHED INCHES; 811 CFS-HRS; 67.0 ACRE-FEET.

OPERATION RESVOR STRUCTURE 95

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
8.70	41.3	5.63

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 3

HRS		MAIN TIME INCREMENT = .050 hr,				DRAINAGE AREA = 1.13 SQ.MI.			
5.50	CFS	.00	.02	.13	.44	1.16	2.52	4.86	7.31
5.50	ELEV	.00	.00	.02	.06	.16	.35	.67	1.04
5.90	CFS	7.34	7.39	7.45	7.50	7.52	7.53	7.55	7.57
5.90	ELEV	1.20	1.43	1.74	2.04	2.17	2.32	2.50	2.69
6.30	CFS	7.59	7.85	8.37	8.88	9.37	9.85	10.77	12.19
6.30	ELEV	2.89	3.10	3.31	3.51	3.71	3.90	4.07	4.21
6.70	CFS	13.51	14.72	15.66	16.46	17.20	17.87	18.49	19.05
6.70	ELEV	4.35	4.47	4.57	4.66	4.74	4.82	4.89	4.95
7.10	CFS	19.51	19.56	19.61	19.66	19.70	19.74	19.77	19.80
7.10	ELEV	5.01	5.06	5.11	5.16	5.20	5.24	5.27	5.30
7.50	CFS	19.84	19.86	19.89	19.91	19.94	19.96	19.98	20.00
7.50	ELEV	5.34	5.36	5.39	5.41	5.44	5.46	5.48	5.50
7.90	CFS	22.59	25.15	27.46	29.54	31.41	33.10	34.61	35.97
7.90	ELEV	5.52	5.53	5.55	5.56	5.57	5.58	5.59	5.60
8.30	CFS	37.16	38.20	39.09	39.82	40.39	40.82	41.11	41.28
8.30	ELEV	5.61	5.61	5.62	5.62	5.63	5.63	5.63	5.63
8.70	CFS	41.33	41.29	41.16	40.96	40.70	40.40	40.06	39.69
8.70	ELEV	5.63	5.63	5.63	5.63	5.63	5.63	5.62	5.62
9.10	CFS	39.30	38.90	38.48	38.06	37.64	37.22	36.81	36.40
9.10	ELEV	5.62	5.62	5.61	5.61	5.61	5.61	5.60	5.60
9.50	CFS	36.00	35.61	35.23	34.86	34.50	34.16	33.83	33.51
9.50	ELEV	5.60	5.60	5.59	5.59	5.59	5.59	5.59	5.58
9.90	CFS	33.20	32.91	32.63	32.36	32.10	31.85	31.62	31.38
9.90	ELEV	5.58	5.58	5.58	5.58	5.57	5.57	5.57	5.57
10.30	CFS	31.16	30.93	30.70	30.46	30.21	29.96	29.69	29.41
10.30	ELEV	5.57	5.57	5.57	5.56	5.56	5.56	5.56	5.56
10.70	CFS	29.13	28.84	28.55	28.25	27.96	27.66	27.37	27.09
10.70	ELEV	5.56	5.55	5.55	5.55	5.55	5.55	5.55	5.54
11.10	CFS	26.81	26.54	26.28	26.03	25.78	25.55	25.32	25.10
11.10	ELEV	5.54	5.54	5.54	5.54	5.54	5.53	5.53	5.53
11.50	CFS	24.89	24.69	24.49	24.31	24.13	23.96	23.80	23.65
11.50	ELEV	5.53	5.53	5.53	5.53	5.53	5.52	5.52	5.52
11.90	CFS	23.50	23.37	23.23	23.11	22.99	22.88	22.77	22.67
11.90	ELEV	5.52	5.52	5.52	5.52	5.52	5.52	5.52	5.52
12.30	CFS	22.58	22.49	22.40	22.32	22.24	22.17	22.10	22.04
12.30	ELEV	5.52	5.52	5.51	5.51	5.51	5.51	5.51	5.51
12.70	CFS	21.98	21.92	21.87	21.82	21.77	21.73	21.69	21.65
12.70	ELEV	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.51
13.10	CFS	21.61	21.58	21.54	21.51	21.48	21.44	21.40	21.35
13.10	ELEV	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.51
13.50	CFS	21.30	21.25	21.18	21.11	21.04	20.96	20.87	20.79
13.50	ELEV	5.51	5.51	5.51	5.51	5.51	5.51	5.51	5.50
13.90	CFS	20.70	20.61	20.53	20.44	20.36	20.27	20.19	20.11
13.90	ELEV	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
14.30	CFS	20.03	20.00	20.00	20.00	20.00	20.00	20.00	20.00
14.30	ELEV	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
14.70	CFS	20.00	19.99	19.99	19.99	19.99	19.99	19.99	19.99
14.70	ELEV	5.50	5.49	5.49	5.49	5.49	5.49	5.49	5.49

15.10	CFS	19.99	19.99	19.99	19.99	19.98	19.98	19.98	19.98
15.10	ELEV	5.49	5.49	5.49	5.49	5.48	5.48	5.48	5.48
15.50	CFS	19.98	19.98	19.98	19.98	19.98	19.97	19.97	19.97
15.50	ELEV	5.48	5.48	5.48	5.48	5.48	5.47	5.47	5.47
15.90	CFS	19.97	19.97	19.97	19.96	19.96	19.96	19.96	19.96
15.90	ELEV	5.47	5.47	5.47	5.46	5.46	5.46	5.46	5.46
16.30	CFS	19.96	19.95	19.95	19.95	19.95	19.95	19.94	19.94
16.30	ELEV	5.46	5.45	5.45	5.45	5.45	5.45	5.44	5.44
16.70	CFS	19.94	19.94	19.94	19.94	19.93	19.93	19.93	19.93
16.70	ELEV	5.44	5.44	5.44	5.44	5.43	5.43	5.43	5.43
17.10	CFS	19.93	19.92	19.92	19.92	19.92	19.92	19.92	19.91
17.10	ELEV	5.43	5.42	5.42	5.42	5.42	5.42	5.42	5.41
17.50	CFS	19.91	19.91	19.91	19.91	19.90	19.90	19.90	19.90
17.50	ELEV	5.41	5.41	5.41	5.41	5.40	5.40	5.40	5.40
17.90	CFS	19.90	19.89	19.89	19.89	19.89	19.89	19.89	19.88
17.90	ELEV	5.40	5.39	5.39	5.39	5.39	5.39	5.39	5.38
18.30	CFS	19.88	19.88	19.88	19.88	19.87	19.87	19.87	19.87
18.30	ELEV	5.38	5.38	5.38	5.38	5.37	5.37	5.37	5.37
18.70	CFS	19.87	19.87	19.86	19.86	19.86	19.86	19.86	19.86
18.70	ELEV	5.37	5.37	5.36	5.36	5.36	5.36	5.36	5.36
19.10	CFS	19.85	19.85	19.85	19.85	19.85	19.84	19.84	19.84
19.10	ELEV	5.35	5.35	5.35	5.35	5.35	5.34	5.34	5.34
19.50	CFS	19.84	19.84	19.84	19.83	19.83	19.83	19.83	19.83
19.50	ELEV	5.34	5.34	5.34	5.33	5.33	5.33	5.33	5.33
19.90	CFS	19.83	19.82	19.82	19.82	19.82	19.82	19.81	19.81
19.90	ELEV	5.33	5.32	5.32	5.32	5.32	5.32	5.31	5.31
20.30	CFS	19.81	19.81	19.81	19.80	19.80	19.80	19.80	19.79
20.30	ELEV	5.31	5.31	5.31	5.30	5.30	5.30	5.30	5.29
20.70	CFS	19.79	19.79	19.79	19.78	19.78	19.78	19.77	19.77
20.70	ELEV	5.29	5.29	5.29	5.28	5.28	5.28	5.27	5.27
21.10	CFS	19.76	19.76	19.76	19.75	19.75	19.75	19.74	19.74
21.10	ELEV	5.26	5.26	5.26	5.25	5.25	5.25	5.24	5.24
21.50	CFS	19.73	19.73	19.73	19.72	19.72	19.71	19.71	19.70
21.50	ELEV	5.23	5.23	5.23	5.22	5.22	5.21	5.21	5.20
21.90	CFS	19.70	19.70	19.69	19.69	19.68	19.68	19.68	19.67
21.90	ELEV	5.20	5.20	5.19	5.19	5.18	5.18	5.18	5.17
22.30	CFS	19.67	19.66	19.66	19.66	19.65	19.65	19.64	19.64
22.30	ELEV	5.17	5.16	5.16	5.16	5.15	5.15	5.14	5.14
22.70	CFS	19.64	19.63	19.63	19.62	19.62	19.62	19.61	19.61
22.70	ELEV	5.14	5.13	5.13	5.12	5.12	5.12	5.11	5.11
23.10	CFS	19.60	19.60	19.59	19.59	19.59	19.58	19.58	19.57
23.10	ELEV	5.10	5.10	5.09	5.09	5.09	5.08	5.08	5.07
23.50	CFS	19.57	19.57	19.56	19.56	19.55	19.55	19.55	19.54
23.50	ELEV	5.07	5.07	5.06	5.06	5.05	5.05	5.05	5.04
23.90	CFS	19.54	19.53	19.53	19.53	19.52	19.52	19.51	19.51
23.90	ELEV	5.04	5.03	5.03	5.03	5.02	5.02	5.01	5.01
24.30	CFS	19.51	19.50	19.47	19.43	19.39	19.35	19.30	19.26
24.30	ELEV	5.01	5.00	5.00	4.99	4.99	4.98	4.98	4.97
24.70	CFS	19.21	19.17	19.12	19.07	19.02	18.97	18.92	18.87

24.70 ELEV	4.97	4.96	4.96	4.95	4.95	4.94	4.94	4.93
25.10 CFS	18.82	18.76	18.71	18.66	18.61	18.55	18.50	
25.10 ELEV	4.92	4.92	4.91	4.91	4.90	4.89	4.89	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.59 WATERSHED INCHES; 431 CFS-HRS; 35.6 ACRE-FEET.

OPERATION REACH XSECTION 59

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
9.08	39.7	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.58 WATERSHED INCHES; 425 CFS-HRS; 35.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 21

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
5.98	12.0	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.66 WATERSHED INCHES; 11 CFS-HRS; .9 ACRE-FEET.

OPERATION RUNOFF XSECTION 64

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.25	80.6	(RUNOFF)
13.00	2.7 *	(RUNOFF)
19.98	1.9	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.45 WATERSHED INCHES; 112 CFS-HRS; 9.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 65

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.18	37.1	(RUNOFF)
13.00	1.1 *	(RUNOFF)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.45 WATERSHED INCHES; 47 CFS-HRS; 3.9 ACRE-FEET.

OPERATION ADDHYD STRUCTURE 47

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.21	119.7	(NULL)
12.98	4.1	(NULL)
19.95	2.8	(NULL)
23.93	1.4	(NULL)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.46 WATERSHED INCHES; 169 CFS-HRS; 14.0 ACRE-FEET.

OPERATION RESVOR STRUCTURE 93

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.95	32.9	3.24

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 3
MAIN TIME INCREMENT = .050 hr, DRAINAGE AREA = .18 SQ.MI.

HRS								
5.50	CFS	.00	.01	.07	.22	.48	.87	1.42	2.15
5.50	ELEV	.00	.00	.01	.04	.10	.17	.28	.43
5.90	CFS	3.08	4.21	5.99	8.75	11.69	14.72	17.75	20.37
5.90	ELEV	.62	.84	1.07	1.25	1.45	1.65	1.85	2.05
6.30	CFS	21.85	23.24	24.49	25.60	26.55	27.36	28.80	30.10
6.30	ELEV	2.25	2.43	2.60	2.75	2.87	2.98	3.06	3.12
6.70	CFS	31.10	31.83	32.35	32.68	32.86	32.90	32.84	32.68
6.70	ELEV	3.16	3.19	3.22	3.23	3.24	3.24	3.24	3.23
7.10	CFS	32.44	32.14	31.78	31.38	30.94	30.48	29.98	29.47
7.10	ELEV	3.22	3.21	3.19	3.17	3.15	3.13	3.11	3.09
7.50	CFS	28.94	28.41	27.86	27.43	27.20	26.98	26.75	26.52
7.50	ELEV	3.06	3.04	3.02	2.99	2.96	2.93	2.90	2.87
7.90	CFS	26.29	26.06	25.83	25.61	25.38	25.15	24.92	24.69
7.90	ELEV	2.84	2.81	2.78	2.75	2.72	2.69	2.66	2.63
8.30	CFS	24.46	24.23	23.99	23.75	23.51	23.26	23.02	22.77
8.30	ELEV	2.59	2.56	2.53	2.50	2.47	2.44	2.40	2.37
8.70	CFS	22.52	22.27	22.03	21.78	21.54	21.30	21.06	20.82
8.70	ELEV	2.34	2.30	2.27	2.24	2.20	2.17	2.14	2.11
9.10	CFS	20.59	20.35	20.13	19.81	19.39	18.99	18.59	18.21
9.10	ELEV	2.08	2.05	2.02	1.99	1.96	1.93	1.91	1.88
9.50	CFS	17.83	17.47	17.12	16.78	16.44	16.12	15.81	15.50
9.50	ELEV	1.86	1.83	1.81	1.79	1.76	1.74	1.72	1.70
9.90	CFS	15.21	14.92	14.64	14.37	14.11	13.85	13.60	13.35
9.90	ELEV	1.68	1.66	1.64	1.62	1.61	1.59	1.57	1.56
10.30	CFS	13.11	12.88	12.64	12.41	12.19	11.97	11.75	11.54
10.30	ELEV	1.54	1.53	1.51	1.49	1.48	1.46	1.45	1.44
10.70	CFS	11.33	11.13	10.93	10.73	10.54	10.35	10.17	10.00
10.70	ELEV	1.42	1.41	1.40	1.38	1.37	1.36	1.34	1.33
11.10	CFS	9.83	9.66	9.50	9.34	9.19	9.04	8.89	8.75
11.10	ELEV	1.32	1.31	1.30	1.29	1.28	1.27	1.26	1.25

11.50	CFS	8.62	8.48	8.35	8.23	8.11	7.99	7.87	7.76
11.50	ELEV	1.24	1.23	1.22	1.22	1.21	1.20	1.19	1.18
11.90	CFS	7.66	7.55	7.45	7.35	7.25	7.16	7.07	6.98
11.90	ELEV	1.18	1.17	1.16	1.16	1.15	1.14	1.14	1.13
12.30	CFS	6.90	6.81	6.73	6.66	6.58	6.51	6.44	6.37
12.30	ELEV	1.13	1.12	1.12	1.11	1.11	1.10	1.10	1.09
12.70	CFS	6.30	6.24	6.17	6.11	6.05	5.99	5.94	5.88
12.70	ELEV	1.09	1.08	1.08	1.07	1.07	1.07	1.06	1.06
13.10	CFS	5.83	5.78	5.73	5.68	5.63	5.58	5.53	5.48
13.10	ELEV	1.06	1.05	1.05	1.05	1.04	1.04	1.04	1.03
13.50	CFS	5.43	5.39	5.34	5.29	5.24	5.20	5.15	5.11
13.50	ELEV	1.03	1.03	1.02	1.02	1.02	1.01	1.01	1.01
13.90	CFS	5.06	5.02	4.99	4.97	4.95	4.92	4.90	4.88
13.90	ELEV	1.00	1.00	1.00	.99	.99	.98	.98	.98
14.30	CFS	4.86	4.84	4.82	4.79	4.77	4.75	4.73	4.71
14.30	ELEV	.97	.97	.96	.96	.95	.95	.95	.94
14.70	CFS	4.69	4.67	4.65	4.62	4.60	4.58	4.56	4.54
14.70	ELEV	.94	.93	.93	.92	.92	.92	.91	.91
15.10	CFS	4.52	4.51	4.49	4.47	4.45	4.43	4.40	4.38
15.10	ELEV	.90	.90	.90	.89	.89	.89	.88	.88
15.50	CFS	4.36	4.34	4.32	4.30	4.27	4.25	4.23	4.21
15.50	ELEV	.87	.87	.86	.86	.85	.85	.85	.84
15.90	CFS	4.19	4.17	4.14	4.12	4.10	4.08	4.06	4.04
15.90	ELEV	.84	.83	.83	.82	.82	.82	.81	.81
16.30	CFS	4.02	4.00	3.98	3.96	3.94	3.92	3.91	3.89
16.30	ELEV	.80	.80	.80	.79	.79	.78	.78	.78
16.70	CFS	3.87	3.85	3.84	3.82	3.80	3.79	3.77	3.75
16.70	ELEV	.77	.77	.77	.76	.76	.76	.75	.75
17.10	CFS	3.74	3.72	3.71	3.69	3.68	3.66	3.65	3.64
17.10	ELEV	.75	.74	.74	.74	.74	.73	.73	.73
17.50	CFS	3.62	3.61	3.60	3.58	3.57	3.56	3.54	3.53
17.50	ELEV	.72	.72	.72	.72	.71	.71	.71	.71
17.90	CFS	3.52	3.51	3.50	3.49	3.47	3.46	3.45	3.44
17.90	ELEV	.70	.70	.70	.70	.69	.69	.69	.69
18.30	CFS	3.43	3.42	3.41	3.40	3.39	3.38	3.37	3.36
18.30	ELEV	.69	.68	.68	.68	.68	.68	.67	.67
18.70	CFS	3.35	3.34	3.34	3.33	3.32	3.31	3.30	3.29
18.70	ELEV	.67	.67	.67	.67	.66	.66	.66	.66
19.10	CFS	3.29	3.28	3.27	3.26	3.25	3.25	3.24	3.23
19.10	ELEV	.66	.66	.65	.65	.65	.65	.65	.65
19.50	CFS	3.23	3.22	3.21	3.21	3.20	3.19	3.19	3.18
19.50	ELEV	.65	.64	.64	.64	.64	.64	.64	.64
19.90	CFS	3.17	3.17	3.16	3.16	3.15	3.14	3.14	3.13
19.90	ELEV	.63	.63	.63	.63	.63	.63	.63	.63
20.30	CFS	3.12	3.11	3.09	3.08	3.07	3.05	3.03	3.01
20.30	ELEV	.62	.62	.62	.62	.61	.61	.61	.60
20.70	CFS	2.99	2.97	2.95	2.93	2.91	2.89	2.87	2.84
20.70	ELEV	.60	.59	.59	.59	.58	.58	.57	.57
21.10	CFS	2.82	2.80	2.78	2.76	2.74	2.72	2.70	2.68

21.10 ELEV	.56	.56	.56	.55	.55	.54	.54	.54
21.50 CFS	2.66	2.64	2.62	2.60	2.58	2.56	2.54	2.53
21.50 ELEV	.53	.53	.52	.52	.52	.51	.51	.51
21.90 CFS	2.51	2.49	2.47	2.46	2.44	2.42	2.41	2.39
21.90 ELEV	.50	.50	.49	.49	.49	.48	.48	.48
22.30 CFS	2.38	2.36	2.35	2.33	2.32	2.30	2.29	2.27
22.30 ELEV	.48	.47	.47	.47	.46	.46	.46	.45
22.70 CFS	2.26	2.25	2.23	2.22	2.21	2.19	2.18	2.17
22.70 ELEV	.45	.45	.45	.44	.44	.44	.44	.43
23.10 CFS	2.16	2.15	2.13	2.12	2.11	2.10	2.09	2.08
23.10 ELEV	.43	.43	.43	.42	.42	.42	.42	.42
23.50 CFS	2.07	2.06	2.05	2.04	2.03	2.02	2.01	2.00
23.50 ELEV	.41	.41	.41	.41	.41	.40	.40	.40
23.90 CFS	1.99	1.98	1.97	1.96	1.95	1.94	1.93	1.92
23.90 ELEV	.40	.40	.39	.39	.39	.39	.39	.38
24.30 CFS	1.91	1.89	1.88	1.86	1.85	1.83	1.81	1.78
24.30 ELEV	.38	.38	.38	.37	.37	.37	.36	.36
24.70 CFS	1.76	1.74	1.71	1.69	1.67	1.64	1.62	1.60
24.70 ELEV	.35	.35	.34	.34	.33	.33	.32	.32
25.10 CFS	1.57	1.55	1.52	1.50	1.48	1.46	1.43	
25.10 ELEV	.31	.31	.30	.30	.30	.29	.29	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.42 WATERSHED INCHES; 165 CFS-HRS; 13.6 ACRE-FEET.

OPERATION REACH XSECTION 62

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
7.28	31.3	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 3
MAIN TIME INCREMENT = .050 hr, DRAINAGE AREA = .18 SQ.MI.

HRS								
5.85 CFS	.46	.76	1.17	1.71	2.46	3.58	5.01	6.73
6.25 CFS	8.69	10.76	12.72	14.58	16.34	17.98	19.50	20.89
6.65 CFS	22.29	23.67	24.99	26.20	27.29	28.24	29.06	29.74
7.05 CFS	30.29	30.71	31.02	31.22	31.32	31.33	31.26	31.12
7.45 CFS	30.92	30.66	30.36	30.01	29.63	29.24	28.88	28.54
7.85 CFS	28.22	27.92	27.63	27.35	27.08	26.82	26.56	26.31
8.25 CFS	26.07	25.82	25.58	25.34	25.10	24.86	24.62	24.38
8.65 CFS	24.14	23.89	23.65	23.41	23.16	22.92	22.67	22.43
9.05 CFS	22.18	21.94	21.70	21.46	21.23	20.97	20.69	20.39
9.45 CFS	20.07	19.74	19.40	19.06	18.72	18.37	18.03	17.69
9.85 CFS	17.36	17.03	16.70	16.39	16.08	15.77	15.48	15.19
10.25 CFS	14.91	14.63	14.36	14.10	13.84	13.59	13.34	13.10
10.65 CFS	12.86	12.62	12.39	12.17	11.95	11.73	11.52	11.31
11.05 CFS	11.11	10.91	10.72	10.53	10.35	10.17	9.99	9.82
11.45 CFS	9.66	9.50	9.34	9.19	9.04	8.90	8.76	8.62
11.85 CFS	8.49	8.36	8.23	8.11	7.99	7.88	7.77	7.66
12.25 CFS	7.55	7.45	7.35	7.26	7.16	7.07	6.99	6.90
12.65 CFS	6.82	6.74	6.66	6.58	6.51	6.44	6.37	6.30

13.05 CFS	6.24	6.18	6.11	6.05	6.00	5.94	5.88	5.83
13.45 CFS	5.78	5.72	5.67	5.62	5.57	5.52	5.47	5.42
13.85 CFS	5.37	5.33	5.28	5.23	5.19	5.15	5.11	5.08
14.25 CFS	5.05	5.02	4.99	4.96	4.93	4.91	4.89	4.86
14.65 CFS	4.84	4.81	4.79	4.77	4.75	4.72	4.70	4.68
15.05 CFS	4.66	4.64	4.62	4.60	4.58	4.56	4.54	4.52
15.45 CFS	4.50	4.48	4.45	4.43	4.41	4.39	4.37	4.35
15.85 CFS	4.33	4.31	4.28	4.26	4.24	4.22	4.20	4.18
16.25 CFS	4.16	4.14	4.11	4.09	4.07	4.05	4.03	4.01
16.65 CFS	3.99	3.97	3.96	3.94	3.92	3.90	3.88	3.87
17.05 CFS	3.85	3.83	3.81	3.80	3.78	3.77	3.75	3.73
17.45 CFS	3.72	3.70	3.69	3.67	3.66	3.64	3.63	3.62
17.85 CFS	3.60	3.59	3.58	3.57	3.55	3.54	3.53	3.52
18.25 CFS	3.51	3.49	3.48	3.47	3.46	3.45	3.44	3.43
18.65 CFS	3.42	3.41	3.40	3.39	3.38	3.37	3.36	3.35
19.05 CFS	3.34	3.33	3.32	3.31	3.31	3.30	3.29	3.28
19.45 CFS	3.27	3.27	3.26	3.25	3.24	3.24	3.23	3.22
19.85 CFS	3.22	3.21	3.20					

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.30 WATERSHED INCHES; 151 CFS-HRS; 12.5 ACRE-FEET.

OPERATION ADDHYD STRUCTURE 45

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.34	53.8	(NULL)
13.05	3.7 *	(NULL)

* FIRST POINT OF FLAT PEAK

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.63 WATERSHED INCHES; 105 CFS-HRS; 8.7 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 80 TO STRUCTURE 1
STARTING TIME = .00 RAIN DEPTH = 2.60 RAIN DURATION = 1.00
ANT. RUNOFF COND. = 2 MAIN TIME INCREMENT = .050 HOURS
ALTERNATE NO. = 1 STORM NO. = 4 RAIN TABLE NO. = 1

OPERATION ADDHYD STRUCTURE 79

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.28	80.5	.99
13.12	5.1	.06
20.01	3.7	.05
23.95	1.9 *	.02
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.52 WATERSHED INCHES; 158 CFS-HRS; 13.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 89

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.11	9.0	(RUNOFF)
7.98	1.8	(RUNOFF)

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.34 WATERSHED INCHES; 19 CFS-HRS; 1.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 67

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.28	84.5	(RUNOFF)
13.00	2.8 *	(RUNOFF)
19.98	1.9	(RUNOFF)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.33 WATERSHED INCHES; 120 CFS-HRS; 9.9 ACRE-FEET.

OPERATION ADDHYD STRUCTURE 80

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.27	93.0	(NULL)
9.98	4.7	(NULL)
13.00	3.6 *	(NULL)
19.98	2.5	(NULL)
23.95	1.3 *	(NULL)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.94 WATERSHED INCHES; 139 CFS-HRS; 11.5 ACRE-FEET.

OPERATION ADDHYD STRUCTURE 49

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.28	173.3	(NULL)
13.07	8.7	(NULL)
20.00	6.2	(NULL)
23.95	3.1 *	(NULL)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.66 WATERSHED INCHES; 297 CFS-HRS; 24.6 ACRE-FEET.

OPERATION REACH XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.41	163.1	(NULL)
13.16	8.7	(NULL)
20.08	6.2	(NULL)
24.00	3.1 *	(NULL)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
.66 WATERSHED INCHES; 297 CFS-HRS; 24.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 66

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.35	69.1	(RUNOFF)
13.05	3.1 *	(RUNOFF)
19.99	2.2	(RUNOFF)
23.95	1.1 *	(RUNOFF)
	* FIRST POINT OF FLAT PEAK	

RUNOFF ABOVE BASEFLOW (BASEFLOW = .00 CFS)
1.01 WATERSHED INCHES; 117 CFS-HRS; 9.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 17

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
6.33	9.2	(RUNOFF)

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

			HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
			INFLOW		OUTFLOW		Q-A EQ.				
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN COEFF (C)
ALTERNATE 1 STORM 2											
15	1185		667	6.5	667	6.6	1.10	1.40	.005	.999	.84?
16	2040		710	6.5	706	6.6	1.10	1.40	.011	.993	.60
48	1466		119	6.4	117	6.5	1.10	1.40	.012	.985	.53
47	2202		899	6.6	893	6.7	.20	1.70	.005	.994	.61
81	5193		29	6.3	22	6.8	1.40	1.30	.152	.748	.12
77	3245		117	6.1	106	6.2	.39	1.67	.028	.908	.30
11	2203		116	6.4	113	6.6	.86	1.50	.025	.972	.43
54	2420		188	6.4	182	6.6	.31	1.67	.021	.971	.40
12	1479		213	6.3	212	6.4	.37	1.67	.005	.995	.65
53	2579		280	6.4	274	6.6	.27	1.67	.014	.979	.41
55	2276		706	6.5	702	6.6	.37	1.67	.005	.993	.67?
14	1058		845	6.6	845	6.6	.37	1.67	.001	1.000	1.00?
52	2987		878	6.6	862	6.7	.30	1.60	.015	.981	.45
145	3325		2050	6.7	2012	6.8	.10	1.70	.013	.982	.43
194	5914		58	6.1	42	6.4	1.80	1.30	.203	.723	.15
94	5914		29	6.1	19	6.6	1.70	1.30	.264	.665	.12
83	6124		185	6.1	159	6.6	1.90	1.30	.068	.861	.19
82	5808		17	6.7	13	7.3	1.40	1.30	.141	.783	.10
75	2699		243	6.6	240	6.8	.25	1.67	.009	.988	.36
7	1618		344	6.4	341	6.5	.21	1.67	.004	.992	.55
84	5491		503	6.0	442	6.2	2.00	1.30	.142	.878	.26
91	5491		110	6.5	98	6.8	2.00	1.30	.071	.893	.19
85	6178		445	6.6	392	6.8	1.40	1.30	.100	.882	.18
74	2793		948	6.3	940	6.4	.25	1.67	.008	.992	.54
107	1455		1102	6.4	1099	6.4	.20	1.67	.003	.998	.79?

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

			HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
			INFLOW		OUTFLOW		Q-A EQ.			PEAK	ATT-
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	LENGTH FACTOR (k*)	RATIO Q/I (Q*)	KIN COEFF (C)
ALTERNATE 1 STORM 2											
73	462		1460	6.4	1460	6.4	.80	1.50	.000	1.000	1.00?
5	717		1500	6.4	1500	6.4	.80	1.50	.001	1.000	1.00?
72	3305		121	6.8	116	6.9	1.70	1.30	.040	.962	.28
20	1187		389	6.1	387	6.2	.33	1.67	.004	.994	.83?
6	1461		481	6.2	474	6.3	1.70	1.30	.016	.986	.67?
8	507		1943	6.4	1943	6.4	2.90	1.40	.000	1.000	1.00?
4	1900		148	6.7	147	6.7	2.90	1.40	.008	.997	.74?
57	1614		1323	7.0	1323	7.0	2.90	1.40	.001	1.000	1.00?
56	2274		1720	6.8	1720	6.9	2.90	1.40	.002	1.000	1.00?
71	1302		104	6.7	104	6.8	2.90	1.40	.005	.999	.88?
9	1253		180	6.7	180	6.8	2.90	1.40	.004	1.000	.97?
10	711		2011	6.8	2011	6.8	.90	1.60	.000	1.000	1.00?
44	6890		2148	6.8	2139	6.9	.90	1.60	.006	.995	.52
28	3168		1170	8.8	1166	8.9	.20	1.60	.004	.997	.38
128	3131		289	6.0	262	6.2	.50	1.50	.113	.906	.30
26	3221		1191	8.9	1187	9.1	.20	1.60	.003	.996	.38
25	2323		1368	6.2	1323	6.3	.20	1.60	.002	.967	.51
24	2524		1421	6.2	1389	6.3	.20	1.60	.002	.977	.48
31	3358		156	6.1	133	6.3	.50	1.50	.138	.852	.24
30	2323		430	6.0	394	6.2	.30	1.50	.073	.916	.33
124	4594		461	6.1	428	6.2	.70	1.60	.036	.929	.40
198	5227		157	6.1	144	6.2	1.20	1.60	.068	.915	.34
18	3696		2178	6.2	2131	6.3	.20	1.70	.002	.979	.55
70	2743		20	6.7	18	6.9	1.20	1.30	.060	.907	.18
19	1060		102	6.8	102	6.9	.21	1.67	.006	.994	.53

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

			HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
		FLOOD	INFLOW		OUTFLOW		Q-A EQ.			PEAK	ATT-
XSEC ID	REACH LENGTH (FT)	PLAIN LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	LENGTH FACTOR (k*)	RATIO Q/I (Q*)	KIN COEFF (C)
ALTERNATE 1 STORM 2											
1	1515		105	6.9	105	7.1	1.90	1.30	.011	.995	.54
2	4301		183	6.1	159	6.2	1.90	1.30	.049	.867	.26
58	1292		437	6.1	431	6.1	1.90	1.30	.012	.988	.75?
43	4664		573	6.2	518	6.3	1.20	1.40	.052	.904	.32
88	5597		20	6.2	14	6.6	1.90	1.30	.174	.715	.13
68	3118		91	6.1	82	6.2	.41	1.67	.035	.904	.29
67	3100		25	6.1	25	6.2	8.16	1.37	.016	.980	.61
66	2328		329	6.3	316	6.3	.24	1.67	.020	.960	.44
17	1033		80	6.4	80	6.4	9.11	1.48	.001	1.000	1.00?
18	1060		94	6.4	89	6.6	.10	1.60	.040	.944	.30
59	4946		105	7.7	101	8.0	.60	1.60	.010	.967	.22
60	1413		120	7.9	119	8.0	.80	1.50	.002	.998	.58
42	3705		123	8.0	118	8.4	.30	1.50	.018	.964	.15
62	3683		45	6.9	43	7.2	1.50	1.30	.035	.951	.19
61	2897		91	6.3	84	6.5	1.70	1.30	.052	.926	.29
40	2218		192	6.3	178	6.6	.30	1.50	.044	.924	.27
46	1498		397	6.1	393	6.2	1.20	1.40	.004	.991	.69?
199	890		64	15.6	64	15.6	.30	1.60	.000	1.000	.53
33	7445		304	6.1	193	6.6	.20	1.60	.061	.635	.11
35	3252		352	6.1	301	6.3	.60	1.40	.142	.856	.25
34	1816		558	6.3	542	6.3	.40	1.50	.026	.971	.50
22	3062		325	7.2	321	7.4	.20	1.60	.006	.987	.26
122	2503		162	6.0	143	6.2	.60	1.40	.160	.883	.26
19	3802		730	6.0	626	6.2	.20	1.60	.012	.858	.28
15	2571		1073	6.1	1015	6.2	.20	1.60	.008	.946	.44

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	HYDROGRAPH INFORMATION: INFLOW PEAK (CFS)	INFLOW TIME (HR)	OUTFLOW PEAK (CFS)	OUTFLOW TIME (HR)	ROUTING PARAMETERS: Q-A EQ. COEFF (X)	Q-A EQ. POWER (M)	LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN COEFF (C)
ALTERNATE 1 STORM 2											
17	3274		457	6.1	398	6.2	.60	1.40	.127	.870	.27
116	2260		1158	6.8	1153	6.9	.20	1.60	.001	.996	.49
14	3448		1552	6.8	1545	7.1	.10	1.60	.004	.995	.27
5	4910		1609	6.3	1582	7.2	.10	1.60	.007	.983	.20
20	3960		307	6.1	242	6.3	.30	1.50	.175	.786	.19
12	3221		520	6.1	459	6.2	.20	1.60	.057	.883	.29
112	2250		97	6.0	84	6.2	.30	1.50	.153	.861	.22
195	2788		91	6.0	72	6.3	.20	1.60	.219	.795	.19
6	8976		830	6.1	596	6.4	.20	1.60	.206	.718	.14
6	8976		199	6.0	101	6.8	.20	1.60	1.102?	.510	.08
4	2851		2248	6.7	2226	6.8	.10	1.60	.003	.990	.36
8	3907		105	6.0	79	6.3	.60	1.40	.268	.757	.16
104	4066		563	6.1	519	6.2	.80	1.50	.046	.920	.38
3	2482		2493	6.6	2478	6.8	.10	1.60	.003	.994	.41
2	3432		2498	6.7	2471	6.9	.10	1.60	.004	.989	.32
1	7234		2676	6.8	2532	7.2	.10	1.60	.015	.946	.17
ALTERNATE 1 STORM 3											
79	5691		61	6.1	41	6.4	1.70	1.25	.325	.674	.13
13	4849		71	6.5	60	6.8	1.10	1.40	.083	.848	.17
51	3804		211	6.4	201	6.6	.39	1.67	.034	.950	.32
49	1380		60	6.3	58	6.4	1.00	1.40	.020	.967	.46
50	1361		470	6.4	467	6.4	.18	1.67	.006	.994	.64
15	1185		510	6.5	509	6.6	1.10	1.40	.005	.998	.81?
16	2040		543	6.6	538	6.7	1.10	1.40	.011	.991	.57
48	1466		79	6.4	77	6.6	1.10	1.40	.012	.983	.49

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

			HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
			INFLOW		OUTFLOW		Q-A EQ.				
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN COEFF (C)
ALTERNATE 1 STORM 3											
47	2202		676	6.6	670	6.7	.20	1.70	.006	.991	.57
81	5193		19	6.3	14	6.8	1.40	1.30	.150	.731	.11
77	3245		76	6.1	67	6.3	.39	1.67	.032	.881	.26
11	2203		94	6.4	91	6.6	.86	1.50	.027	.969	.40
54	2420		151	6.4	146	6.6	.31	1.67	.023	.967	.38
12	1479		162	6.4	161	6.5	.37	1.67	.005	.993	.60
53	2579		217	6.5	211	6.7	.27	1.67	.016	.972	.37
55	2276		553	6.6	550	6.6	.37	1.67	.006	.994	.63
14	1058		667	6.6	667	6.6	.37	1.67	.001	1.000	1.00?
52	2987		695	6.6	681	6.8	.30	1.60	.016	.980	.42
145	3325		1590	6.7	1554	6.8	.10	1.70	.014	.977	.40
194	5914		40	6.1	28	6.4	1.80	1.30	.204	.700	.14
94	5914		20	6.1	13	6.6	1.70	1.30	.266	.643	.11
83	6124		121	6.1	107	6.6	1.90	1.30	.067	.884	.17
82	5808		11	6.7	9	7.3	1.40	1.30	.141	.768	.09
75	2699		165	6.7	162	6.8	.25	1.67	.010	.982	.32
7	1618		241	6.4	238	6.6	.21	1.67	.005	.990	.50
84	5491		398	6.0	346	6.2	2.00	1.30	.147	.868	.25
91	5491		76	6.6	67	6.8	2.00	1.30	.072	.883	.18
85	6178		354	6.6	309	6.8	1.40	1.30	.104	.873	.17
74	2793		801	6.3	790	6.4	.25	1.67	.009	.986	.51
107	1455		919	6.4	917	6.5	.20	1.67	.004	.998	.76?
73	462		1169	6.5	1169	6.5	.80	1.50	.001	1.000	1.00?
5	717		1203	6.5	1203	6.5	.80	1.50	.001	1.000	1.00?
72	3305		92	6.8	88	6.9	1.70	1.30	.042	.957	.26

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

			HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
			INFLOW		OUTFLOW		Q-A EQ.				
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN COEFF (C)
ALTERNATE 1 STORM 3											
20	1187		319	6.1	317	6.2	.33	1.67	.004	.992	.79?
6	1461		396	6.2	390	6.3	1.70	1.30	.017	.985	.65
8	507		1550	6.4	1550	6.4	2.90	1.40	.000	1.000	1.00?
4	1900		131	6.7	130	6.8	2.90	1.40	.008	.996	.73?
57	1614		1160	6.9	1160	6.9	2.90	1.40	.001	1.000	1.00?
56	2274		1501	6.8	1501	6.8	2.90	1.40	.002	1.000	.98?
71	1302		85	6.7	85	6.8	2.90	1.40	.005	.999	.85?
9	1253		148	6.7	148	6.8	2.90	1.40	.004	1.000	.95?
10	711		1739	6.8	1739	6.8	.90	1.60	.000	1.000	1.00?
44	6890		1855	6.8	1845	6.9	.90	1.60	.007	.995	.50
28	3168		664	8.9	658	9.1	.20	1.60	.004	.991	.32
128	3131		240	6.0	215	6.2	.50	1.50	.122	.896	.29
26	3221		831	6.1	758	6.2	.20	1.60	.004	.913	.34
25	2323		1089	6.2	1048	6.3	.20	1.60	.003	.963	.48
24	2524		1116	6.2	1085	6.3	.20	1.60	.003	.972	.45
31	3358		121	6.1	100	6.3	.50	1.50	.148	.832	.22
30	2323		354	6.0	321	6.2	.30	1.50	.081	.907	.31
124	4594		374	6.1	345	6.2	.70	1.60	.041	.923	.38
198	5227		123	6.1	111	6.2	1.20	1.60	.074	.905	.32
18	3696		1695	6.2	1657	6.3	.20	1.70	.003	.978	.51
70	2743		13	6.7	12	7.0	1.20	1.30	.060	.896	.16
19	1060		80	6.8	79	6.9	.21	1.67	.007	.992	.49
1	1515		82	6.9	82	7.1	1.90	1.30	.012	.994	.52
2	4301		152	6.1	130	6.3	1.90	1.30	.053	.858	.25
58	1292		338	6.1	333	6.2	1.90	1.30	.012	.984	.73?

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

			HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
		FLOOD	INFLOW		OUTFLOW		Q-A EQ.			PEAK	ATT-
XSEC ID	REACH LENGTH (FT)	PLAIN LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	LENGTH FACTOR (k*)	RATIO Q/I (Q*)	KIN COEFF (C)
ALTERNATE 1 STORM 3											
43	4664		455	6.2	408	6.3	1.20	1.40	.054	.897	.30
88	5597		13	6.2	9	6.7	1.90	1.30	.172	.694	.12
68	3118		58	6.1	51	6.3	.41	1.67	.039	.871	.25
67	3100		16	6.1	16	6.2	8.16	1.37	.016	.978	.56
66	2328		246	6.3	235	6.4	.24	1.67	.022	.953	.40
17	1033		64	6.4	64	6.4	9.11	1.48	.001	1.000	1.00?
18	1060		76	6.4	71	6.6	.10	1.60	.044	.935	.28
59	4946		41	8.7	40	9.1	.60	1.60	.007	.960	.16
60	1413		73	6.4	72	6.5	.80	1.50	.002	.984	.51
42	3705		84	6.4	69	6.8	.30	1.50	.020	.825	.13
62	3683		33	6.9	31	7.3	1.50	1.30	.033	.952	.18
61	2897		62	6.3	57	6.5	1.70	1.30	.053	.919	.27
40	2218		132	6.4	120	6.6	.30	1.50	.047	.912	.24
46	1498		296	6.1	292	6.2	1.20	1.40	.005	.984	.66
199	890		52	16.0	52	16.0	.30	1.60	.001	1.000	.50
33	7445		222	6.1	133	6.6	.20	1.60	.063	.601	.10
35	3252		282	6.1	238	6.3	.60	1.40	.150	.845	.24
34	1816		449	6.3	433	6.3	.40	1.50	.028	.966	.47
22	3062		237	7.3	234	7.6	.20	1.60	.006	.988	.24
122	2503		133	6.0	115	6.2	.60	1.40	.169	.870	.25
19	3802		595	6.0	503	6.2	.20	1.60	.013	.845	.26
15	2571		837	6.1	788	6.2	.20	1.60	.008	.941	.41
17	3274		364	6.1	313	6.3	.60	1.40	.134	.859	.25
116	2260		924	6.9	919	7.0	.20	1.60	.002	.994	.46
14	3448		1242	6.8	1230	7.1	.10	1.60	.005	.991	.25

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

			HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
			INFLOW		OUTFLOW		Q-A EQ.			PEAK	ATT-
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	LENGTH FACTOR (k*)	RATIO Q/I (Q*)	KIN COEFF (C)
ALTERNATE 1 STORM 3											
5	4910		1270	6.9	1251	7.3	.10	1.60	.008	.985	.18
20	3960		234	6.1	179	6.4	.30	1.50	.188	.766	.17
12	3221		407	6.1	354	6.2	.20	1.60	.063	.869	.27
112	2250		72	6.0	60	6.3	.30	1.50	.164	.835	.20
195	2788		69	6.0	53	6.3	.20	1.60	.241	.768	.17
6	8976		635	6.1	443	6.5	.20	1.60	.220	.698	.12
6	8976		162	6.0	77	6.8	.20	1.60	1.205?	.475	.07
4	2851		1715	6.8	1701	7.0	.10	1.60	.004	.992	.33
8	3907		78	6.0	57	6.3	.60	1.40	.281	.729	.14
104	4066		428	6.1	391	6.2	.80	1.50	.049	.914	.35
3	2482		1855	6.8	1850	6.9	.10	1.60	.003	.997	.38
2	3432		1864	6.9	1852	7.1	.10	1.60	.005	.993	.29
1	7234		1981	6.9	1895	7.4	.10	1.60	.017	.957	.15
ALTERNATE 1 STORM 4											
79	5691		45	6.1	29	6.4	1.70	1.25	.332	.657	.12
13	4849		46	6.5	38	6.8	1.10	1.40	.088	.828	.15
51	3804		165	6.4	155	6.6	.39	1.67	.038	.941	.30
49	1380		38	6.3	36	6.4	1.00	1.40	.021	.962	.41
50	1361		349	6.4	346	6.4	.18	1.67	.006	.992	.59
15	1185		378	6.5	377	6.6	1.10	1.40	.006	.997	.77?
16	2040		404	6.6	400	6.7	1.10	1.40	.012	.990	.54
48	1466		46	6.4	45	6.6	1.10	1.40	.013	.977	.43
47	2202		490	6.6	484	6.7	.20	1.70	.007	.988	.51
81	5193		11	6.3	8	6.9	1.40	1.30	.143	.715	.10
77	3245		44	6.1	37	6.3	.39	1.67	.035	.840	.21

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

			HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
			INFLOW		OUTFLOW		Q-A EQ.			PEAK	ATT-
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	LENGTH FACTOR (k*)	RATIO Q/I (Q*)	KIN COEFF (C)
ALTERNATE 1 STORM 4											
11	2203		74	6.4	71	6.6	.86	1.50	.029	.965	.38
54	2420		117	6.4	112	6.6	.31	1.67	.026	.961	.34
12	1479		113	6.4	112	6.6	.37	1.67	.006	.991	.54
53	2579		155	6.6	150	6.7	.27	1.67	.019	.964	.34
55	2276		411	6.6	407	6.7	.37	1.67	.007	.991	.58
14	1058		500	6.7	500	6.7	.37	1.67	.002	1.000	.97?
52	2987		523	6.7	510	6.8	.30	1.60	.018	.975	.38
145	3325		1172	6.8	1142	6.9	.10	1.70	.016	.974	.36
194	5914		25	6.1	17	6.5	1.80	1.30	.202	.674	.12
94	5914		12	6.1	8	6.7	1.70	1.30	.263	.614	.10
83	6124		69	6.5	64	6.8	1.90	1.30	.063	.920	.15
82	5808		6	6.8	5	7.4	1.40	1.30	.138	.751	.08
75	2699		100	6.8	97	7.0	.25	1.67	.011	.976	.27
7	1618		148	6.4	146	6.6	.21	1.67	.006	.985	.43
84	5491		299	6.0	256	6.2	2.00	1.30	.152	.855	.24
91	5491		48	6.6	42	6.8	2.00	1.30	.072	.869	.16
85	6178		270	6.6	233	6.8	1.40	1.30	.109	.862	.16
74	2793		599	6.3	590	6.5	.25	1.67	.010	.985	.47
107	1455		691	6.4	688	6.5	.20	1.67	.004	.995	.70?
73	462		841	6.5	841	6.5	.80	1.50	.001	1.000	1.00?
5	717		868	6.6	868	6.6	.80	1.50	.001	1.000	1.00?
72	3305		65	6.8	62	6.9	1.70	1.30	.043	.952	.25
20	1187		252	6.1	249	6.2	.33	1.67	.005	.990	.75?
6	1461		313	6.2	308	6.3	1.70	1.30	.018	.984	.62
8	507		1135	6.4	1135	6.4	2.90	1.40	.000	1.000	1.00?

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

			HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
			INFLOW		OUTFLOW		Q-A EQ.			PEAK	ATT-
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	LENGTH FACTOR (k*)	RATIO Q/I (Q*)	KIN COEFF (C)
ALTERNATE 1 STORM 4											
4	1900		113	6.7	113	6.8	2.90	1.40	.009	.996	.71?
57	1614		971	6.9	971	6.9	2.90	1.40	.002	1.000	1.00?
56	2274		1254	6.8	1254	6.8	2.90	1.40	.003	1.000	.95?
71	1302		66	6.7	66	6.8	2.90	1.40	.005	.999	.81?
9	1253		118	6.8	118	6.8	2.90	1.40	.004	1.000	.91?
10	711		1442	6.8	1442	6.8	.90	1.60	.000	1.000	1.00?
44	6890		1536	6.8	1526	6.9	.90	1.60	.009	.994	.47
28	3168		229	10.7	228	10.9	.20	1.60	.003	.999	.23
128	3131		193	6.0	170	6.2	.50	1.50	.132	.882	.27
26	3221		655	6.1	591	6.2	.20	1.60	.006	.902	.31
25	2323		832	6.2	794	6.3	.20	1.60	.004	.954	.44
24	2524		842	6.3	815	6.3	.20	1.60	.005	.967	.41
31	3358		88	6.1	71	6.3	.50	1.50	.161	.810	.20
30	2323		259	6.0	231	6.2	.30	1.50	.085	.891	.28
124	4594		271	6.1	246	6.2	.70	1.60	.043	.911	.34
198	5227		92	6.1	82	6.2	1.20	1.60	.083	.889	.29
18	3696		1241	6.2	1211	6.3	.20	1.70	.004	.976	.46
70	2743		8	6.8	7	7.1	1.20	1.30	.059	.884	.15
19	1060		59	6.8	59	7.0	.21	1.67	.008	.990	.45
1	1515		61	6.9	61	7.1	1.90	1.30	.013	.993	.49
2	4301		121	6.1	103	6.3	1.90	1.30	.058	.848	.24
58	1292		260	6.1	256	6.2	1.90	1.30	.013	.985	.70?
43	4664		357	6.2	317	6.3	1.20	1.40	.057	.888	.28
88	5597		7	6.2	5	6.7	1.90	1.30	.163	.672	.10
68	3118		32	6.1	26	6.3	.41	1.67	.043	.825	.20

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

			HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
			INFLOW		OUTFLOW		Q-A EQ.			PEAK	ATT-
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	LENGTH FACTOR (k*)	RATIO Q/I (Q*)	KIN COEFF (C)
ALTERNATE 1 STORM 4											
67	3100		9	6.1	9	6.2	8.16	1.37	.015	.972	.50
66	2328		173	6.3	163	6.4	.24	1.67	.026	.943	.36
17	1033		49	6.5	49	6.5	9.11	1.48	.001	1.000	1.00?
18	1060		58	6.4	54	6.7	.10	1.60	.049	.925	.26
59	4946		19	10.8	19	11.2	.60	1.60	.005	.999	.12
60	1413		47	6.4	46	6.6	.80	1.50	.002	.980	.46
42	3705		54	6.4	43	6.9	.30	1.50	.020	.805	.12
62	3683		24	7.0	24	7.4	1.50	1.30	.034	.969	.17
61	2897		38	6.3	35	6.6	1.70	1.30	.053	.906	.25
40	2218		81	6.4	72	6.7	.30	1.50	.051	.893	.21
46	1498		210	6.1	204	6.2	1.20	1.40	.005	.974	.61
199	890		43	16.1	43	16.3	.30	1.60	.001	1.000	.48
33	7445		148	6.1	83	6.7	.20	1.60	.059	.563	.09
35	3252		216	6.1	179	6.3	.60	1.40	.161	.829	.22
34	1816		345	6.3	332	6.4	.40	1.50	.030	.962	.44
22	3062		166	7.4	163	7.8	.20	1.60	.006	.987	.21
122	2503		104	6.0	89	6.2	.60	1.40	.179	.855	.23
19	3802		477	6.0	396	6.2	.20	1.60	.016	.829	.25
15	2571		659	6.1	612	6.2	.20	1.60	.009	.930	.38
17	3274		277	6.1	233	6.3	.60	1.40	.142	.843	.24
116	2260		685	6.9	680	7.1	.20	1.60	.002	.993	.42
14	3448		914	6.9	905	7.2	.10	1.60	.006	.990	.23
5	4910		932	7.1	917	7.3	.10	1.60	.011	.984	.17
20	3960		167	6.1	124	6.4	.30	1.50	.205	.738	.16
12	3221		289	6.1	246	6.3	.20	1.60	.067	.853	.24

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	HYDROGRAPH INFLOW PEAK (CFS)	HYDROGRAPH INFLOW TIME (HR)	HYDROGRAPH OUTFLOW PEAK (CFS)	HYDROGRAPH OUTFLOW TIME (HR)	ROUTING PARAMETERS Q-A EQ. COEFF (X)	Q-A EQ. POWER (M)	LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN COEFF (C)
ALTERNATE 1 STORM 4											
112	2250		50	6.0	40	6.3	.30	1.50	.178	.800	.18
195	2788		49	6.0	36	6.3	.20	1.60	.269	.732	.15
6	8976		437	6.1	296	6.6	.20	1.60	.227	.677	.11
6	8976		126	6.0	55	6.9	.20	1.60	1.337?	.437	.06
4	2851		1232	6.9	1222	7.1	.10	1.60	.005	.992	.29
8	3907		53	6.0	37	6.4	.60	1.40	.295	.695	.13
104	4066		312	6.1	282	6.2	.80	1.50	.053	.903	.33
3	2482		1323	6.9	1319	7.1	.10	1.60	.004	.997	.34
2	3432		1330	7.1	1321	7.3	.10	1.60	.006	.993	.26
1	7234		1400	7.1	1345	7.6	.10	1.60	.020	.960	.13
ALTERNATE 1 STORM 5											
79	5691		24	6.1	15	6.6	1.70	1.25	.340	.623	.11
13	4849		19	6.6	15	6.9	1.10	1.40	.097	.785	.12
51	3804		101	6.4	93	6.7	.39	1.67	.048	.919	.25
49	1380		12	6.3	12	6.4	1.00	1.40	.020	.939	.32
50	1361		187	6.4	185	6.5	.18	1.67	.008	.987	.49
15	1185		203	6.6	202	6.6	1.10	1.40	.006	.997	.68?
16	2040		217	6.6	215	6.7	1.10	1.40	.013	.988	.47
48	1466		12	6.6	12	6.8	1.10	1.40	.011	.972	.32
47	2202		251	6.7	247	6.8	.20	1.70	.009	.983	.42
81	5193		2	6.6	2	7.3	1.40	1.30	.107	.742	.07
77	3245		10	6.1	8	6.7	.39	1.67	.037	.762	.13
11	2203		45	6.4	43	6.6	.86	1.50	.034	.954	.33
54	2420		69	6.5	66	6.7	.31	1.67	.033	.946	.29
12	1479		55	6.6	54	6.7	.37	1.67	.008	.982	.44
53	2579		79	6.7	75	6.8	.27	1.67	.025	.947	.27

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	HYDROGRAPH INFLOW PEAK (CFS)	HYDROGRAPH INFLOW TIME (HR)	HYDROGRAPH OUTFLOW PEAK (CFS)	HYDROGRAPH OUTFLOW TIME (HR)	ROUTING PARAMETERS Q-A EQ. COEFF (X)	Q-A EQ. POWER (M)	LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN COEFF (C)
ALTERNATE 1 STORM 5											
55	2276		228	6.6	225	6.7	.37	1.67	.009	.987	.49
14	1058		283	6.7	282	6.8	.37	1.67	.002	1.000	.86?
52	2987		298	6.8	288	6.9	.30	1.60	.022	.968	.32
145	3325		643	6.8	621	7.0	.10	1.70	.020	.965	.29
194	5914		8	6.1	5	6.7	1.80	1.30	.177	.621	.10
94	5914		4	6.1	2	6.8	1.70	1.30	.231	.565	.08
83	6124		23	6.6	20	7.0	1.90	1.30	.060	.853	.12
82	5808		2	6.9	1	7.9	1.40	1.30	.116	.751	.06
75	2699		31	7.0	30	7.3	.25	1.67	.015	.955	.18
7	1618		62	6.4	60	6.6	.21	1.67	.008	.954	.32
84	5491		168	6.0	139	6.2	2.00	1.30	.161	.825	.21
91	5491		16	6.6	14	7.0	2.00	1.30	.067	.846	.13
85	6178		160	6.5	134	6.8	1.40	1.30	.121	.835	.15
74	2793		360	6.4	353	6.6	.25	1.67	.013	.979	.40
107	1455		413	6.5	410	6.6	.20	1.67	.005	.993	.61
73	462		473	6.6	473	6.6	.80	1.50	.001	1.000	1.00?
5	717		489	6.6	489	6.6	.80	1.50	.001	1.000	1.00?
72	3305		32	6.8	30	7.0	1.70	1.30	.045	.940	.21
20	1187		157	6.1	155	6.2	.33	1.67	.007	.983	.66
6	1461		197	6.2	193	6.3	1.70	1.30	.021	.981	.58
8	507		652	6.4	652	6.4	2.90	1.40	.000	1.000	1.00?
4	1900		87	6.7	87	6.8	2.90	1.40	.010	.996	.67?
57	1614		676	6.8	676	6.8	2.90	1.40	.002	1.000	1.00?
56	2274		874	6.8	873	6.8	2.90	1.40	.004	1.000	.90?
71	1302		41	6.7	40	6.8	2.90	1.40	.006	.997	.75?

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

			HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
			INFLOW		OUTFLOW		Q-A EQ.			PEAK	ATT-
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	LENGTH FACTOR (k*)	RATIO Q/I (Q*)	KIN COEFF (C)
ALTERNATE 1 STORM 5											
9	1253		75	6.8	75	6.8	2.90	1.40	.005	.999	.85?
10	711		994	6.8	994	6.8	.90	1.60	.000	1.000	1.00?
44	6890		1056	6.8	1045	6.9	.90	1.60	.012	.990	.42
28	3168		172	10.1	172	10.4	.20	1.60	.003	1.000	.21
128	3131		124	6.1	106	6.3	.50	1.50	.153	.850	.24
26	3221		391	6.1	340	6.2	.20	1.60	.006	.871	.27
25	2323		465	6.2	437	6.3	.20	1.60	.004	.939	.37
24	2524		460	6.3	437	6.4	.20	1.60	.004	.950	.34
31	3358		46	6.1	35	6.3	.50	1.50	.188	.755	.17
30	2323		145	6.0	125	6.2	.30	1.50	.096	.859	.24
124	4594		138	6.1	126	6.3	.70	1.60	.047	.912	.27
198	5227		50	6.1	43	6.3	1.20	1.60	.102	.846	.24
18	3696		643	6.3	632	6.4	.20	1.70	.004	.983	.37
70	2743		2	6.9	2	7.5	1.20	1.30	.049	.881	.11
19	1060		33	6.8	33	7.0	.21	1.67	.011	.985	.37
1	1515		34	7.0	34	7.1	1.90	1.30	.014	.991	.44
2	4301		79	6.1	66	6.3	1.90	1.30	.069	.828	.22
58	1292		155	6.1	152	6.2	1.90	1.30	.014	.985	.64
43	4664		220	6.2	192	6.3	1.20	1.40	.066	.871	.25
88	5597		2	6.3	1	7.1	1.90	1.30	.114	.707	.07
68	3118		7	6.1	5	6.7	.41	1.67	.041	.769	.11
67	3100		2	6.2	2	6.3	8.16	1.37	.011	.953	.36
66	2328		87	6.3	80	6.4	.24	1.67	.035	.914	.28
17	1033		29	6.5	29	6.5	9.11	1.48	.001	1.000	1.00?
18	1060		34	6.4	31	6.7	.10	1.60	.060	.900	.22

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

			HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
			INFLOW		OUTFLOW		Q-A EQ.			PEAK	ATT-
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	LENGTH FACTOR (k*)	RATIO Q/I (Q*)	KIN COEFF (C)
ALTERNATE 1 STORM 5											
59	4946		9	14.4	9	14.9	.60	1.60	.007	.999	.09
60	1413		16	6.7	16	6.8	.80	1.50	.002	.983	.34
42	3705		18	6.8	15	7.6	.30	1.50	.018	.836	.08
62	3683		15	7.0	14	7.4	1.50	1.30	.039	.945	.15
61	2897		12	6.4	11	6.7	1.70	1.30	.048	.888	.20
40	2218		26	6.4	22	6.8	.30	1.50	.053	.862	.15
46	1498		105	6.1	103	6.1	1.20	1.40	.007	.975	.53
199	890		30	13.6	30	13.7	.30	1.60	.001	1.000	.43
33	7445		63	6.1	35	8.2	.20	1.60	.049	.560	.06
35	3252		128	6.1	101	6.3	.60	1.40	.184	.794	.19
34	1816		207	6.3	197	6.4	.40	1.50	.035	.948	.39
22	3062		81	7.9	81	8.4	.20	1.60	.006	.995	.16
122	2503		65	6.0	53	6.3	.60	1.40	.200	.822	.21
19	3802		310	6.0	246	6.3	.20	1.60	.021	.794	.21
15	2571		388	6.2	355	6.3	.20	1.60	.011	.917	.32
17	3274		159	6.1	128	6.3	.60	1.40	.159	.807	.20
116	2260		360	7.2	357	7.4	.20	1.60	.002	.993	.35
14	3448		500	6.8	494	7.2	.10	1.60	.006	.988	.18
5	4910		510	7.1	497	7.6	.10	1.60	.011	.973	.13
20	3960		83	6.1	56	6.6	.30	1.50	.237	.676	.12
12	3221		156	6.1	127	6.3	.20	1.60	.082	.813	.20
112	2250		22	6.0	16	6.3	.30	1.50	.202	.721	.14
195	2788		24	6.0	16	6.4	.20	1.60	.329	.648	.12
6	8976		220	6.1	140	6.7	.20	1.60	.255	.636	.08
6	8976		77	6.0	28	7.2	.20	1.60	1.625?	.366	.05

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

			HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
			INFLOW		OUTFLOW		Q-A EQ.				
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN COEFF (C)
ALTERNATE 1 STORM 5											
4	2851		653	7.2	645	7.4	.10	1.60	.005	.988	.24
8	3907		24	6.0	15	6.5	.60	1.40	.315	.624	.10
104	4066		161	6.1	141	6.3	.80	1.50	.061	.879	.27
3	2482		687	7.3	683	7.6	.10	1.60	.004	.994	.27
2	3432		689	7.6	682	7.8	.10	1.60	.006	.991	.21
1	7234		707	7.7	685	8.2	.10	1.60	.020	.968	.10

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	4	5
STRUCTURE 95	1.13					
ALTERNATE 1		297	105	41	19	9
STRUCTURE 93	.18					
ALTERNATE 1		60	45	33	24	15
STRUCTURE 80	.23					
ALTERNATE 1		262	158	124	93	52
STRUCTURE 49	.70					
ALTERNATE 1		591	329	247	173	87
STRUCTURE 47	.18					
ALTERNATE 1		244	151	120	90	51
STRUCTURE 45	.26					
ALTERNATE 1		157	78	54	34	11
XSECTION 17	.02					
ALTERNATE 1		25	15	12	9	5
XSECTION 18	.08					
ALTERNATE 1		114	73	59	46	27
XSECTION 59	1.13					
ALTERNATE 1		296	101	40	19	9
XSECTION 62	.18					
ALTERNATE 1		59	43	31	24	14
XSECTION 65	.04					
ALTERNATE 1		67	43	35	27	16
XSECTION 66	.18					
ALTERNATE 1		199	120	93	69	37

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

			HYDROGRAPH INFORMATION				ROUTING PARAMETERS				
			INFLOW		OUTFLOW		Q-A EQ.				
XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	PEAK (CFS)	TIME (HR)	PEAK (CFS)	TIME (HR)	COEFF (X)	POWER (M)	LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN COEFF (C)
ALTERNATE 1 STORM 5											
59	4946		9	14.4	9	14.9	.60	1.60	.007	.999	.09
60	1413		16	6.7	16	6.8	.80	1.50	.002	.983	.34
42	3705		18	6.8	15	7.6	.30	1.50	.018	.836	.08
62	3683		15	7.0	14	7.4	1.50	1.30	.039	.945	.15
61	2897		12	6.4	11	6.7	1.70	1.30	.048	.888	.20
40	2218		26	6.4	22	6.8	.30	1.50	.053	.862	.15
46	1498		105	6.1	103	6.1	1.20	1.40	.007	.975	.53
199	890		30	13.6	30	13.7	.30	1.60	.001	1.000	.43
33	7445		63	6.1	35	8.2	.20	1.60	.049	.560	.06
35	3252		128	6.1	101	6.3	.60	1.40	.184	.794	.19
34	1816		207	6.3	197	6.4	.40	1.50	.035	.948	.39
22	3062		81	7.9	81	8.4	.20	1.60	.006	.995	.16
122	2503		65	6.0	53	6.3	.60	1.40	.200	.822	.21
19	3802		310	6.0	246	6.3	.20	1.60	.021	.794	.21
15	2571		388	6.2	355	6.3	.20	1.60	.011	.917	.32
17	3274		159	6.1	128	6.3	.60	1.40	.159	.807	.20
116	2260		360	7.2	357	7.4	.20	1.60	.002	.993	.35
14	3448		500	6.8	494	7.2	.10	1.60	.006	.988	.18
5	4910		510	7.1	497	7.6	.10	1.60	.011	.973	.13
20	3960		83	6.1	56	6.6	.30	1.50	.237	.676	.12
12	3221		156	6.1	127	6.3	.20	1.60	.082	.813	.20
112	2250		22	6.0	16	6.3	.30	1.50	.202	.721	.14
195	2788		24	6.0	16	6.4	.20	1.60	.329	.648	.12
6	8976		220	6.1	140	6.7	.20	1.60	.255	.636	.08
6	8976		77	6.0	28	7.2	.20	1.60	1.625?	.366	.05

SUMMARY TABLE 2

MODIFIED ATT-KIN REACH ROUTING IN ORDER PERFORMED.
QUESTION MARK (?) AFTER: OUTFLOW PEAK - MAX. NUMBER ROUTING ITERATIONS USED;
LENGTH FACTOR - VALUE k* GREATER THAN 1.0;
ATT-KIN COEFF - VALUE C GREATER THAN 0.667.

XSEC ID	REACH LENGTH (FT)	FLOOD PLAIN LENGTH (FT)	HYDROGRAPH INFLOW PEAK (CFS)	HYDROGRAPH INFLOW TIME (HR)	HYDROGRAPH OUTFLOW PEAK (CFS)	HYDROGRAPH OUTFLOW TIME (HR)	ROUTING PARAMETERS Q-A EQ. COEFF (X)	Q-A EQ. POWER (M)	LENGTH FACTOR (k*)	PEAK RATIO Q/I (Q*)	ATT-KIN COEFF (C)
ALTERNATE 1 STORM 5											
4	2851		653	7.2	645	7.4	.10	1.60	.005	.988	.24
8	3907		24	6.0	15	6.5	.60	1.40	.315	.624	.10
104	4066		161	6.1	141	6.3	.80	1.50	.061	.879	.27
3	2482		687	7.3	683	7.6	.10	1.60	.004	.994	.27
2	3432		689	7.6	682	7.8	.10	1.60	.006	.991	.21
1	7234		707	7.7	685	8.2	.10	1.60	.020	.968	.10

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	4	5
STRUCTURE 95	1.13					
ALTERNATE 1		297	105	41	19	9
STRUCTURE 93	.18					
ALTERNATE 1		60	45	33	24	15
STRUCTURE 80	.23					
ALTERNATE 1		262	158	124	93	52
STRUCTURE 49	.70					
ALTERNATE 1		591	329	247	173	87
STRUCTURE 47	.18					
ALTERNATE 1		244	151	120	90	51
STRUCTURE 45	.26					
ALTERNATE 1		157	78	54	34	11
XSECTION 17	.02					
ALTERNATE 1		25	15	12	9	5
XSECTION 18	.08					
ALTERNATE 1		114	73	59	46	27
XSECTION 59	1.13					
ALTERNATE 1		296	101	40	19	9
XSECTION 62	.18					
ALTERNATE 1		59	43	31	24	14
XSECTION 65	.04					
ALTERNATE 1		67	43	35	27	16
XSECTION 66	.18					
ALTERNATE 1		199	120	93	69	37

SUMMARY TABLE 3 (CONT)

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES
QUESTION MARK (?) AFTER: OUTFLOW PEAK - RISING TRUNCATED HYDROGRAPH.

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	4	5
XSECTION 67		.14					
ALTERNATE	1		210	135	109	85	51
XSECTION 89		.09					
ALTERNATE	1		57	25	16	9	2
XSECTION 148		1.13					
ALTERNATE	1		1058	616	473	342	180

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 2.04TEST
FILES

INPUT = C:\BLR\BLRPR06.DAT , GIVEN DATA FILE
OUTPUT = C:\BLR\BLRPR06.OUT , DATED 03/14/**,10:52:19

FILES GENERATED - DATED 03/14/**,10:52:19

FILE C:\BLR\BLRPR06.TMG CONTAINS MESSAGE + WARNING INFORMATION

TOTAL NUMBER OF WARNINGS = 211, MESSAGES = 45

JOB ENDED AT 10:52:23
*** TR-20 RUN COMPLETED ***

APPENDIX G:

RELATED INFORMATION & MAPS

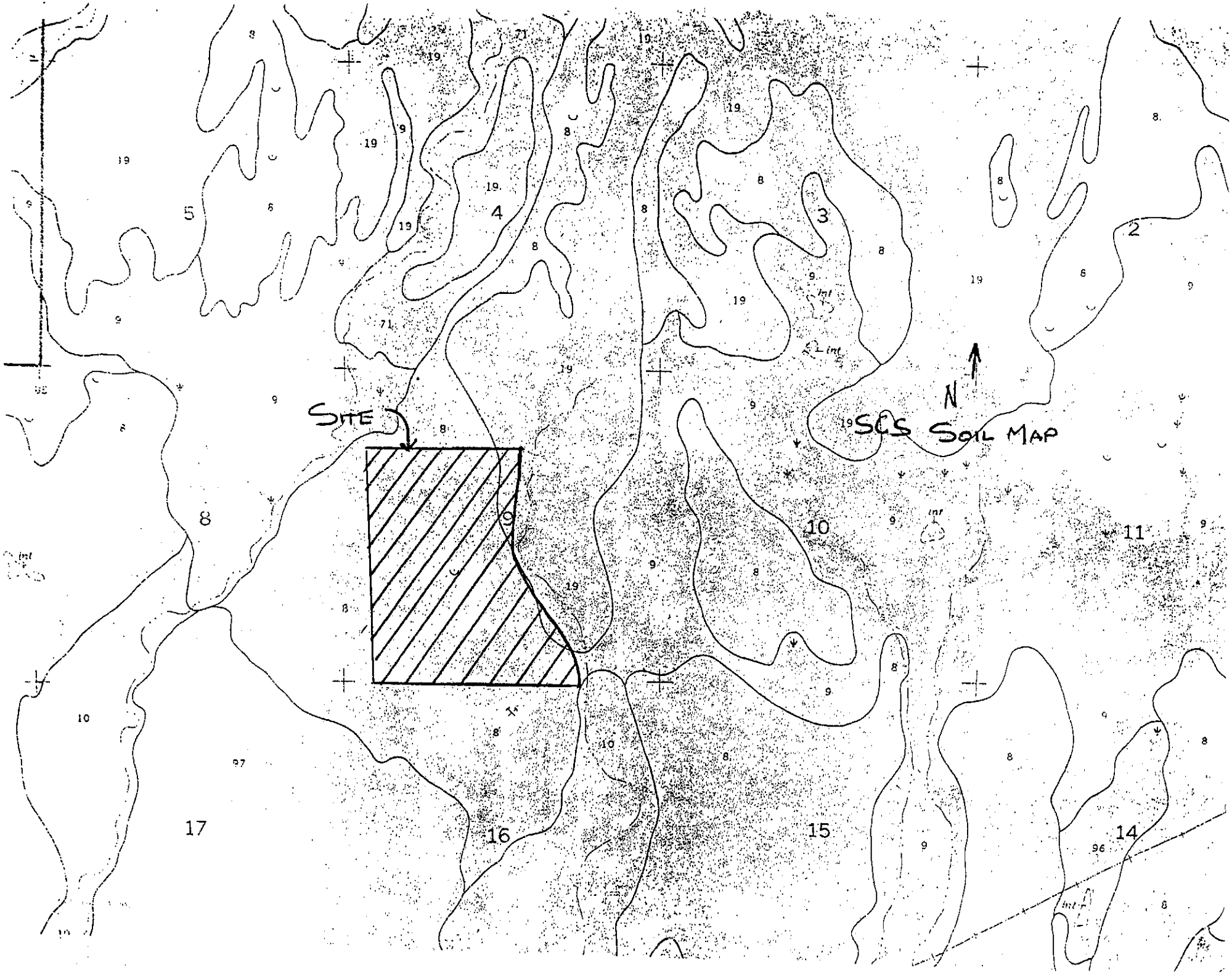
SITE
N
SCS Soil Map
5
4
3
2
8
10
11
17
16
15
14

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

[The symbol > means greater than. Absence of an entry means data were not estimated. NP is nonplastic]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Alamosa:											
----------	0-6	Loam----------	ML	A-4	0	90-100	80-100	80-95	55-75	30-40	5-10
	6-33	Clay loam, loam	CL	A-6, A-7	0	90-100	80-100	80-100	65-80	35-50	15-30
	33-60	Loam, sandy loam, loamy sand.	ML, SM, CL-ML, SM-SC	A-4, A-2	0	85-100	75-100	50-90	15-70	15-30	NP-10
Ascalon:											
2, 3----------	0-8	Sandy loam------	SM	A-2, A-4	0	85-100	80-100	70-95	25-50	15-25	NP-5
	8-21	Sandy clay loam	SC, CL	A-6	0	85-100	80-100	70-100	40-55	20-40	10-20
	21-30	Sandy loam, sandy clay loam, fine sandy loam.	SC, SM-SC, CL, CL-ML	A-4, A-6	0	85-100	80-100	75-95	35-65	20-40	5-15
	30-60	Fine sandy loam, loamy sand, sandy loam.	SM	A-2	0	95-100	95-100	70-95	20-35	---	NP
Badland:											
Bijou:											
5----------	0-8	Loamy sand------	SM	A-2, A-1	0	85-100	80-100	40-60	15-30	---	NP
	8-28	Coarse sandy loam, sandy loam.	SC	A-2, A-6	0	85-100	80-100	35-60	25-40	20-40	10-20
	28-60	Loamy coarse sand, loamy sand.	SM	A-1, A-2	0	85-100	80-100	30-50	15-30	---	NP
6, 7----------	0-8	Sandy loam------	SM-SC, SC	A-2, A-4, A-6	0	85-100	80-100	35-60	25-40	20-40	5-15
	8-28	Coarse sandy loam, sandy loam.	SC	A-2, A-6	0	85-100	80-100	35-60	25-40	20-40	10-20
	28-60	Loamy coarse sand, loamy sand.	SM	A-1, A-2	0	85-100	80-100	30-50	15-30	---	NP
Blakeland:											
----------	0-11	Loamy sand------	SM-SC, SC	A-2	0	95-100	90-100	40-60	15-30	15-30	5-10
	11-60	Loamy sand, loamy coarse sand, sand.	SP-SC, SM-SC	A-2	0	95-100	80-100	35-60	5-25	20-25	5-10
9:											
Blakeland part--	0-11	Loamy sand------	SM-SC, SC	A-2	0	85-100	80-100	40-60	15-30	15-30	5-10
	11-60	Loamy sand, loamy coarse sand, sand.	SM-SC, SC	A-2	0	85-100	80-100	35-60	5-25	20-25	5-10
Fluvaquentic Haplaquolls part----------	0-60	Variable--------	---	---	---	---	---	---	---	---	---
Gadon:											
----------	0-23	Sandy loam------	SM	A-2, A-4	0	80-100	70-100	60-100	25-50	20-30	NP-5
	23-60	Fine sandy loam, sandy loam.	SM	A-2, A-4	0	80-100	70-100	60-100	25-50	20-30	NP-5

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	P t i
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Bresser:											
11, 12, 13--------	0-8	Sandy loam------	SM	A-1, A-2	0	95-100	75-100	35-50	20-35	15-25	N
	8-27	Sandy clay loam	SC	A-2, A-6, A-7	0	95-100	75-100	50-70	30-50	30-55	1
	27-36	Sandy loam, coarse sandy loam, gravelly sandy loam.	SC, SM-SC	A-2	0	90-100	60-100	30-60	20-30	25-35	
	36-60	Loamy coarse sand, gravelly loamy sand, very gravelly loamy sand.	SP-SC, SP-SM	A-2	0-5	80-100	35-85	20-50	5-10	20-30	
Brussett:											
14, 15----------	0-12	Loam----------	ML	A-4	0	100	95-100	85-95	75-85	30-40	
	12-34	Clay loam, loam	CL	A-6, A-7	0	100	95-100	95-100	80-90	30-50	1
	34-60	Silt loam-------	ML	A-4	0	100	95-100	95-100	80-90	30-40	
Chaseville:											
16, 17----------	0-19	Gravelly sandy loam.	SP-SM, SM, GM, GP-GM	A-1	0-5	50-85	35-70	15-35	5-25	15-25	N
	19-60	Very gravelly loamy sand, very gravelly sand.	GP, GP-GM, SP, SP-SM	A-1	0-5	40-80	20-50	10-30	0-10	---	
[1]18:											
Chaseville part-	0-19	Gravelly sandy loam.	SP-SM, SM, GM, GP-GM	A-1	0-5	50-85	35-70	15-35	5-25	15-25	N
	19-60	Very gravelly loamy sand, very gravelly sand.	GP, GP-GM, SP, SP-SM	A-1	0-5	40-80	20-50	10-30	0-10	---	
Midway part-----	0-4	Clay loam-------	CL, CH	A-7	0	100	100	90-100	80-95	45-60	2
	4-13	Clay------------	CL, CH	A-7	0	100	100	90-100	80-95	45-60	2
	13	Weathered bedrock.	---	---	---	---	---	---	---	---	
Columbine:											
19----------	0-6	Gravelly sandy loam.	SM	A-2, A-1	0-5	75-85	50-75	30-40	15-30	---	
	6-60	Very gravelly loamy sand, very gravelly coarse sand.	SP, SP-SM, GP, GP-GM	A-1	0-5	40-70	20-50	10-20	0-10	---	
Connerton:											
[1]20:											
Connerton part--	0-13	Loam----------	CL	A-6	0-5	85-100	80-100	70-95	50-75	25-35	1
	13-60	Sandy clay loam	CL	A-6	0-5	85-100	80-100	70-95	50-75	25-35	1
Rock outcrop part.											
Cruckton:											
21----------	0-11	Sandy loam------	SM, SM-SC	A-2	0	85-100	75-100	50-70	20-30	15-25	N
	11-28	Sandy loam------	SC, SM-SC	A-2, A-4, A-6	0	85-100	75-100	50-65	30-40	25-40	
	28-60	Sandy loam, loamy sand.	SC, SM-SC	A-2	0	85-100	75-100	40-60	20-35	25-35	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means greater than. Erosion factor T and wind group are for the entire profile. Absence of an entry means data were not available or amounts were insignificant]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Risk of corrosion		Erosion factors		Wind erodibility group
							Uncoated steel	Concrete	K	T	
	In	In/hr	In/in	pH	Mmhos/cm						
Alamosa:											
1----------	0-6	0.6-2.0	0.16-0.20	6.1-7.3	2-16	Low	High	Moderate	0.28	5	6
	6-33	0.2-0.6	0.18-0.20	6.6-8.4	2-16	Moderate	High	Moderate	0.28		
	33-60	0.6-2.0	0.08-0.16	7.4-8.4	<16	Low	High	Moderate	0.28		
Ascalon:											
2, 3----------	0-8	0.6-6.0	0.11-0.16	6.6-7.8	<2	Low	Low	Low	0.17	5	3
	8-21	0.6-2.0	0.13-0.15	6.6-7.8	<2	Moderate	Moderate	Low	0.24		
	21-30	0.6-2.0	0.11-0.15	6.6-7.8	<2	Low	Moderate	Low	0.24		
	30-60	2.0-6.0	0.06-0.13	7.4-8.4	<2	Low	Moderate	Low	0.17		
Badland:											
4.											
Bijou:											
5----------	0-8	6.0-20	0.06-0.08	6.1-7.8	---	Low	Low	Low	0.10	5	2
	8-28	6.0-20	0.10-0.12	6.1-7.8	<2	Low	Moderate	Low	0.10		
	28-60	6.0-20	0.05-0.07	6.6-7.8	<2	Low	Moderate	Low	0.10		
6, 7----------	0-8	6.0-20	0.08-0.12	6.6-7.3	---	Low	Low	Low	0.10	5	3
	8-28	6.0-20	0.10-0.12	6.6-7.8	<2	Low	Moderate	Low	0.10		
	28-60	6.0-20	0.05-0.07	6.6-7.8	<2	Low	Moderate	Low	0.10		
Blakeland:											
8----------	0-11	6.0-20	0.06-0.09	6.1-7.8	---	Low	Low	Low	0.10	5	2
	11-60	6.0-20	0.05-0.08	6.1-7.8	---	Low	Low	Low	0.10		
19:											
Blakeland part--	0-11	6.0-20	0.06-0.09	6.1-7.8	---	Low	Low	Low	0.10	5	2
	11-60	6.0-20	0.05-0.08	6.1-7.8	---	Low	Low	Low	0.10		
Fluvaquentic Haplaquolls part----------	0-60	---	---	---	---	---	---	---	---	---	---
Blendon:											
10----------	0-23	2.0-6.0	0.11-0.17	6.1-7.3	---	Low	Moderate	Low	0.20	5	3
	23-60	2.0-6.0	0.11-0.17	6.1-7.3	---	Low	Moderate	Low	0.20		
Bresser:											
11, 12, 13----	0-8	0.6-6.0	0.11-0.13	6.1-7.3	---	Low	Moderate	Low	0.10	5	2
	8-27	0.6-2.0	0.15-0.18	6.1-7.3	---	Low	Moderate	Low	0.15		
	27-36	0.6-2.0	0.10-0.13	6.1-7.3	---	Low	Moderate	Low	0.10		
	36-60	2.0-20	0.05-0.08	6.1-7.3	---	Low	Moderate	Low	0.10		
Brussett:											
14, 15----------	0-12	0.6-2.0	0.17-0.20	6.1-7.3	---	Low	Moderate	Low	0.28	5	6
	12-34	0.6-2.0	0.16-0.18	6.1-7.8	<2	Moderate	High	Low	0.37		
	34-60	0.6-2.0	0.15-0.18	6.1-8.4	<2	Low	High	Low	0.43		
Chaseville:											
16, 17----------	0-19	6.0-20	0.06-0.09	6.1-7.3	---	Low	Moderate	Low	0.15	2	8
	19-60	6.0-20	0.04-0.06	6.1-7.3	---	Low	Moderate	Low	0.10		
18:											
Chaseville part-	0-19	6.0-20	0.06-0.09	6.1-7.3	---	Low	Moderate	Low	0.15	2	8
	19-60	6.0-20	0.04-0.06	6.1-7.3	---	Low	Moderate	Low	0.10		
Midway part-----	0-4	0.06-0.2	0.12-0.17	7.9-9.0	2-8	High	High	High	0.43	1	4
	4-13	0.06-0.2	0.14-0.17	7.9-9.0	2-8	High	High	High	0.37		
	13	---	---	---	---	---	---	---	---		
Columbine:											
19----------	0-6	6.0-20	0.07-0.09	6.1-7.8	---	Low	Moderate	Low	0.10	2	6
	6-60	>20	0.04-0.08	6.1-7.8	---	Low	Moderate	Low	0.10		

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES

[Absence of an entry indicates the feature is not a concern. See "flooding" in Glossary for definition of terms as "rare," "brief," and "very brief." The symbol > means greater than]

Soil name and map symbol	Hydrologic group	Flooding			Bedrock		Potential frost action
		Frequency	Duration	Months	Depth	Hardness	
					In		
Alamosa: 1	C	Frequent	Brief	May-Jun	>60	---	High.
Ascalon: 2, 3	B	None	---	---	>60	---	Moderate.
Badland: 4	D	---	---	---	---	---	---
Bijou: 5, 6, 7	B	None	---	---	>60	---	Low.
Blakeland: 8	A	None	---	---	>60	---	Low.
[1]9: Blakeland part	A	None	---	---	>60	---	Low.
Fluvaquentic Haplaquolls part	D	Common	Very brief	Mar-Aug	>60	---	High.
Blendon: 10	B	None	---	---	>60	---	Moderate.
Bresser: 11, 12, 13	B	None	---	---	>60	---	Low.
Brussett: 14, 15	B	None	---	---	>60	---	Moderate.
Chaseville: 16, 17	A	None	---	---	>60	---	Low.
[1]18: Chaseville part	A	None	---	---	>60	---	Low.
Midway part	D	None	---	---	10-20	Rippable	Moderate.
Columbine: 19	A	None to rare	---	---	>60	---	Low.
Connerton: [1]20: Connerton part	B	None	---	---	>60	---	High.
Rock outcrop part	D	---	---	---	---	---	---
Cruckton: 21	B	None	---	---	>60	---	Moderate.
Cushman: 22, 23	C	None	---	---	20-40	Rippable	Moderate.
[1]24: Cushman part	C	None	---	---	20-40	Rippable	Moderate.
Kutch part	C	None	---	---	20-40	Rippable	Moderate.
Elbeth: 25, 26	B	None	---	---	>60	---	Moderate.
[1]27: Elbeth part	B	None	---	---	>60	---	Moderate.

See footnote at end of table.

404 Permit

DEPARTMENT OF THE ARMY PERMIT

FILE COPY

Permittee Capital Pacific Holdings, Incorporated

Permit No. 2003 00157

Issuing Office Albuquerque District Corps of Engineers

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: To construct and rock line 2.2 miles of "engineered" stream channels, construct check dams and drop structures, construct road crossings, and construct detention ponds in stream channels; rock line the floodway banks of 3.2 miles of "avoidance" stream channels; and excavate wetlands to enlarge the floodway channel and create additional wetlands.

The project will be constructed in accordance with the attached drawings, entitled, "Banning Lewis Ranch channel modification and detention ponds in East Fork Sand Creek and tributaries near Falcon, El Paso County, Colorado", Application by Capital Pacific Holdings, Incorporated, Application No. 2003 00157," sheets 1 through 19, dated August 2004.

Project Location: East Fork Sand Creek and tributaries near Falcon, El Paso County, Colorado

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on December 31, 2007. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided an forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified i the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains suc conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure tha it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

After a detailed and careful review of all of the conditions contained in this permit, the permittee acknowledges that, although said conditions were required by the Corps of Engineers, nonetheless the permittee agreed to those conditions voluntarily to facilitate issuance of the permit; the permittee will comply fully with all the terms of all the permit conditions.

1. A drawing showing the final design of road crossings, including stream modifications such as riprap lining will be provided to the Corps of Engineers 60 days prior to start of crossing construction, for review and approval.

2. A drawing showing the final design of detention basins will be provided to the Corps of Engineers 60 days prior to start of detention basin construction.

3. Black and white archival photographs will be taken of the standing structures for Sites 5EP4674 and 5EP4676. The photographs will be sent with the site records to the State Historic Preservation Office. Demolition of the structures will not occur until the documentation has been approved or accepted by the SHPO and the Corps of Engineers has given approval to proceed with demolition.

4. Erosion control measures will be implemented to prevent upland erosion into wetlands and streams. All upland areas disturbed by the permittee or their (sub)contractors located within 200 feet of a stream or wetland will be treated with erosion control measures including placing topsoil, seeding, and mulching within 21 calendar days after final grading or final earth disturbance or in accordance with the erosion control plan required by the City of Colorado Springs. An erosion control plan will be provided to the Corps of Engineers within 60 days of permit issuance.

5. The soil covering the riprap bank protection will be 12 inches thick to allow sufficient plant rooting depth. The buried riprap will be seeded with a mixture of native grasses and forbs and will be mulched. A plan giving the plant species and seeding rates will be submitted to the Corps of Engineers 60 days prior to start of project construction, for review and approval.

6. Temporary disturbances to existing wetlands will be held to the minimum practicable. Temporary construction or silt fencing will be used to limit construction impacts.

7. All wetland disturbed areas will be restored to pre-existing or design conditions within 60 days of construction completion. A final plan will be submitted to the Corps of Engineers, for review and approval, giving plant species, seeding rates, and planting densities. If wetland topsoil is to be stockpiled, it will stored separately during construction.

8. A detailed mitigation plan will be provided to the Corps of Engineers within 60 days of permit issuance of the permit, for review and approval prior to start of project construction. The plan will provide for the mitigation of the 35-acre loss of emergent and wet meadow wetlands. New emergent and wet meadow wetlands adjacent to the channel will be created (1:1 ratio). Riparian tree/shrub buffer zones adjacent to the wetland mitigation areas will be created. The mitigation work will begin in the spring following winter construction (or in the fall following summer construction) and be completed within 6 months of project construction. The plan will follow the Albuquerque District's Compensatory Mitigation Plan Checklist, Part II and Detailed Outline (copy enclosed). It will include all the items in the checklist, including:

a. Maintenance of mitigation and restoration efforts for at least 5 years including 5 growing seasons or until the Corps of Engineers has determined that the mitigation and restoration efforts have been successful. The restored wetlands will be deemed successful when there is 70% vegetative cover of desirable species at the end of the 5-year period. The created wetlands will be deemed successful when there is 70% vegetative cover of the planted species at the end of the 5-year period. The riparian tree plantings will be deemed successful when 80% of the planted trees and shrubs are alive at the end of the 5-year period.

b. An annual monitoring report of mitigation and restoration activities will be sent to the Corps of Engineers. The monitoring report will follow Albuquerque District's Mitigation and Monitoring Guidelines, Part III, Outline for Monitoring Reports.

c. Control of noxious weeds in all project-disturbed areas within 200 feet of a stream or wetland and in wetland and riparian mitigation sites during the 5-year maintenance period.

d. A plan for short and long term management and maintenance of the mitigation sites, including supplemental tree/shrub watering if needed, replacement of failed plantings before the end of the 5-year monitoring period, and other contingency needs.

e. Financial assurances for construction, contingency, and monitoring of the mitigation and restoration efforts will be provided

sufficient to hire an independent contractor to complete and maintain the proposed mitigation and restoration should the permittee default. Financial assurances may be in the form of performance bonds, escrow accounts, letters of credit, or other instruments approved by the Corps of Engineers. The financial assurance for construction of the mitigation project and restoration of temporarily disturbed wetland areas will be posted in an amount equal to 115 percent of the estimated cost of construction and restoration. In addition to the 115%, financial assurance to assure the success of the mitigation project and restoration will also be posted in an amount equal to 30 percent of the estimated cost of construction. The total financial assurances will be 145% of the estimated cost of construction. A proposal for financial assurances will be submitted to the Corps of Engineers, for approval, within 90 days of permit issuance. Financial assurance documents will be forwarded to the Corps of Engineers within 30 days of the Corps of Engineers' approval of the financial assurance proposal. The financial assurance will be reviewed annually and adjusted as needed.

9. The mitigation areas on private land will be preserved by placing a conservation easement, deed restriction, or other protection measure on the areas. This will be completed within 90 days of completion of mitigation construction. A copy of the preservation instrument will be sent to the Corps of Engineers.

10. Any changes to the project must be approved by the Corps of Engineers through a permit modification prior to the changes being implemented.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(XX) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natura' causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

_____ _____

(PERMITTEE) (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

_____ _____

Van A. Truan (DATE)
Chief, Southern Colorado Regulatory Office
(for the DISTRICT ENGINEER)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____

(TRANSFERREE) (DATE)

BANNING LEWIS RANCH

VILLAGE I

MASTER DEVELOPMENT DRAINAGE PLAN (MDDP)

Design Point	Area (ac)	Q_5 (cfs)	Q_{100} (cfs)
E1	2.18	1.89	4.69
E2	19.54	16.02	39.90
E3	27.77	19.06	47.51
E4	10.18	7.66	19.10
E5	5.28	4.74	11.79
E6	12.37	10.70	26.63
E7	9.8	7.21	17.98
E8	85.3	48.92	122.05
E9	36.5	20.93	52.22
E10	22.18	19.19	47.74
E11	10.16	8.79	21.87
E12	58.56	50.65	126.05
E13	17.39	15.04	37.43
E14	17.11	14.80	36.83
Total	334.32	245.61	611.79

SUMMARY OF FLOWS

200 0 200 400

(IN FEET)

1 inch = 200 ft.

LEGEND

- DESIGN POINT
- MINOR BASIN BASIN I.D.
- DRAINAGE AREA (ACRES)
- RUNOFF COEFFICIENTS: MINOR STORM RUN OFF COEF., MAJOR STORM RUN OFF COEF.
- PROPERTY BOUNDARY
- PROPOSED MAJOR & MINOR CONTOURS
- EXISTING MAJOR & MINOR CONTOURS
- DRAINAGEWAY/SWALE
- EASEMENT LINE
- PROPOSED STORM SEWER WITH MH & INLET
- EXISTING STORM SEWER W/ MH
- FUTURE STORM SEWER W/ MH
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- RIP RAP WITH FLARED END SECTION (FES)
- MINOR BASIN BOUNDARY
- MAJOR BASIN BOUNDARY
- LOW POINT (LP) / HIGH POINT (HP)
- FLOW ARROW
- EMERGENCY OVERFLOW
- TCB ORIGINAL MDDP BASINS
- MAJOR DRAINAGE BASINS

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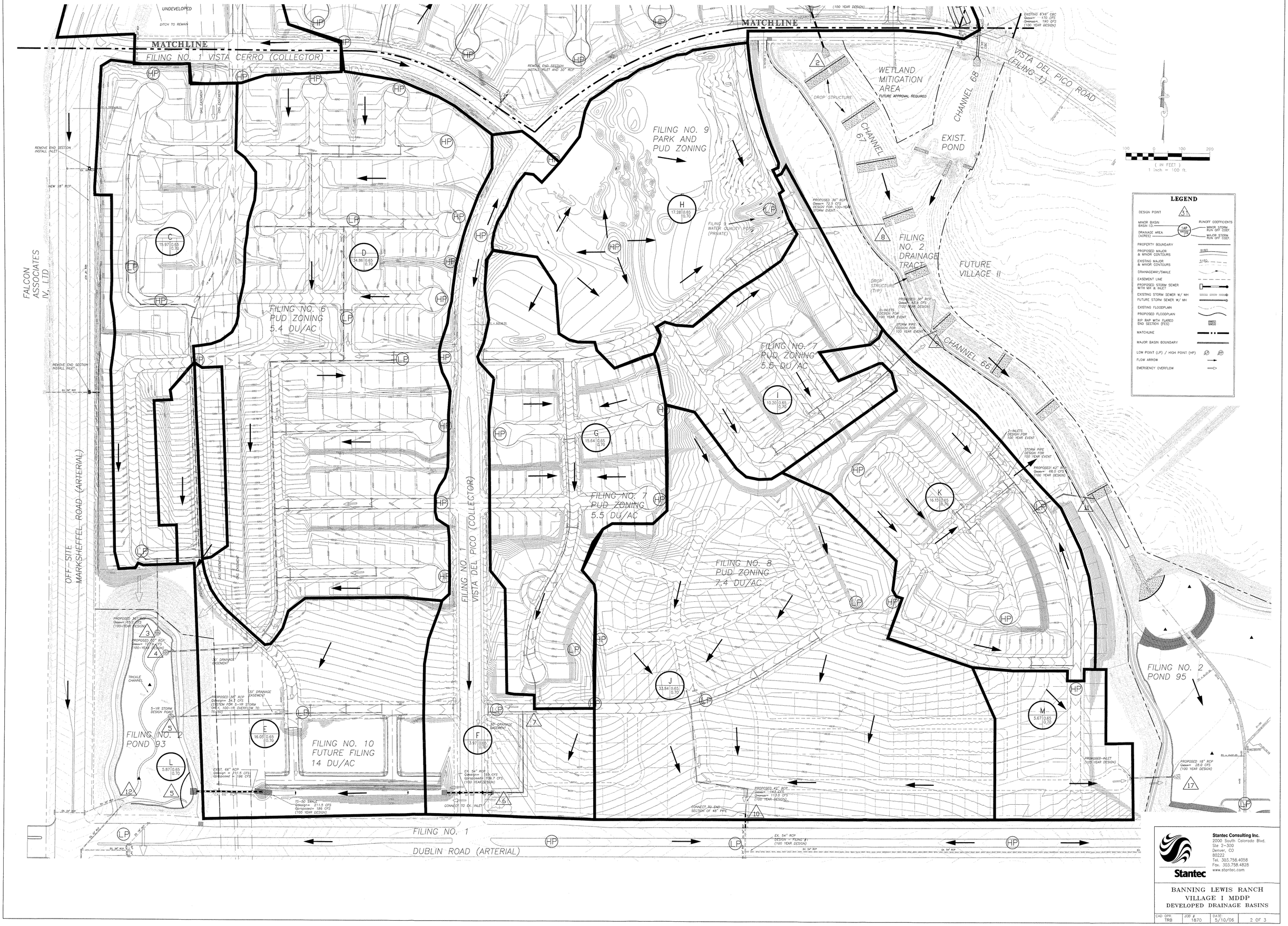
BANNING LEWIS RANCH
VILLAGE I MDDP
EXISTING DRAINAGE BASINS

CAD OPR.	JOB #	DATE	
TRB	1870	12/09/05	1 OF 3

BANNING LEWIS RANCH

VILLAGE I

MASTER DEVELOPMENT DRAINAGE PLAN (MDDP)



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BANNING LEWIS RANCH
VILLAGE I MDDP
DEVELOPED DRAINAGE BASINS

CAD/ DPR.	JOB #	DATE	
TRB	1870	5/10/06	2 OF 3

BANNING LEWIS RANCH

VILLAGE I

MASTER DEVELOPMENT DRAINAGE PLAN (MDDP)

ON-SITE

Drainage Area	Design Point	Area (ac)	Q5 (cfs)	Q100 (cfs)	Accumulative Flows (100-yr)
A	1	19.72	19.7	82.7	
B	2	63.48	127.0	207.9	385.0
C	3	15.97	47.9	65.2	
D	4	34.86	139.4	127.9	
E	5	16.05	80.3	71.7	183.5
F	6	13.97	83.8	46.6	106.7
G	7	14.72	103.0	60.1	
H	8	17.28	138.2	72.5	
I	9	10.20	91.8	43.9	
J	10	33.84	338.4	113.0	
K	11	16.15	177.7	66.0	
L	12	5.87	70.4	29.0	
M	17	5.67	96.4	28.0	

OFF-SITE DEVELOPED

Drainage Area	Design Point	Area (ac)	Q 5 (cfs)	Q 100 (cfs)	Accumulative Flows (100-yr)
O1	13	4.54	13.0	24.6	
O2	14	23.25	59.3	112.2	149.10
O3	15	14.28	36.4	68.9	
O4	16	25.25	72.5	137.2	

SUMMARY OF FLOWS

LEGEND

- DESIGN POINT
- MINOR BASIN BASIN I.D.
- DRAINAGE AREA (ACRES)
- RUNOFF COEFFICIENTS: MINOR STORM RUN OFF COEF. / MAJOR STORM RUN OFF COEF.
- PROPERTY BOUNDARY
- PROPOSED MAJOR & MINOR CONTOURS (5180)
- EXISTING MAJOR & MINOR CONTOURS (5180)
- DRAINAGEWAY/SWALE
- EASEMENT LINE
- PROPOSED STORM SEWER WITH MH & INLET
- EXISTING STORM SEWER W/ MH
- FUTURE STORM SEWER W/ MH
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- RIP RAP WITH FLARED END SECTION (YES) (RND) (RND)
- MATCHLINE
- MAJOR BASIN BOUNDARY
- LOW POINT (LP) / HIGH POINT (HP)
- FLOW ARROW
- EMERGENCY OVERFLOW

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BANNING LEWIS RANCH
VILLAGE I MDDP
DEVELOPED DRAINAGE BASINS

CAD DWG	JOB #	DATE	
TRB	1870	5/10/06	3 OF 3