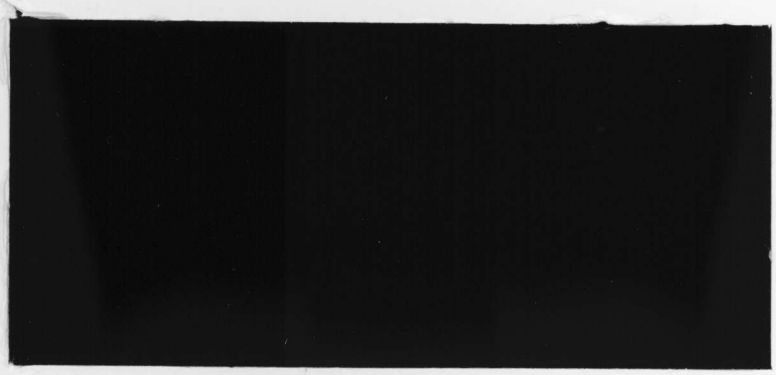

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ENGINEERING SERVICE REQUEST (ESR)
NAVFAC 11000/7 (4-78)
Supersedes NAVDOCKS 2038
S/N 0105-LF-010-0035

Instructions on Reverse

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SECTION A FOR USE BY REQUESTER

1. FROM (Activity and location)
Commanding General, Marine Corps Base, Camp Lejeune, N. C. 28542-5001

2. TO Commander, Atlantic Division, Naval Facilities Engineering Command, Norfolk, VA 23511-6787

3. REFERENCE(S)

4. ESR IDENTIFICATION NUMBER (if applicable)
9E85

5. ENCLOSURE(S) (check)
☐ NAVCOMPT 140
☐ NAVCOMPT 2038
☐ NAVCOMPT 372
☐ OTHER (specify)

6. TYPE OF FUNDING (check)
☐ O&MN
☒ OTHER (specify) O&MMC
☐ NIF
☐ NAF

7. TYPE OF SERVICES REQUESTED
An Engineering Study is required to identify the impact of Construction and Military Training on the stream discharge and natural environment of Cogdell's Creek.

8. DESIRED COMPLETION DATE

9. DESCRIPTION OF WORK

I. General: Provide an engineering study to determine the impact of proposed military construction and ongoing military training on the stream discharge and natural environment of Cogdell's Creek.

II. Scope of Work: (See attached sheets)

III. Funds are available upon request.

10. FOR INFORMATION CONSULT (Name and phone)
R. E. ALEXANDER
AV: 484-3034/FTS:676-3034

11. OFFICIAL REPRESENTATIVE (Signature)
B. W. ELSTON
By direction

12. DATE
15 MAY 1985

SECTION B FOR USE BY EFD

1. SCOPE OF SERVICES

2. DATE RECEIVED

3. ESR NUMBER

SECTION C INTERIM ENDORSEMENT

1. REMARKS

2. EST. COMPLETION DATE
10/86

3. AUTHORIZED REPRESENTATIVE (Signature)
K. E. Godfrey by DBS
K. E. GODFREY
By direction

4. DATE
19 SEP 1985

SECTION D FINAL ENDORSEMENT

1. ENCLOSURE(S)
☐ DRAWINGS AND MAPS
☐ SPECIFICATIONS
☐ REPORT
☐ OTHER (specify) Study cancelled

2. EST. COST (if applicable)
$

3. AUTHORIZED REPRESENTATIVE (Signature)
K. E. Godfrey by DS
K. E. GODFREY
By direction

4. DATE OF COMPLETION
11 FEB 1987

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NV-5900-D1228

EVALUATION OF PEAK STORM WATER RUNOFF IN COGDELS CREEK WATERSHED MARINE CORPS BASE CAMP LEJEUNE JACKSONVILLE, NORTH CAROLINA

May 1986

Prepared for:

DEPARTMENT OF THE NAVY
Atlantic Division
Naval Facilities Engineering Command
Norfolk, Virginia 23511

ecology and environment, inc.
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1. INTRODUCTION

The purpose of this report is to address the potential effects on peak storm water runoff in the Cogdels Creek Watershed resulting from the development of military facilities on Marine Corps Base Camp Lejeune which are proposed for construction during the period 1986 through 1992. This report also recommends storm water management and erosion control measures to alleviate existing and potential impacts resulting from enhanced storm water runoff due to the development in the watershed.

The area under consideration is the portion of the Cogdels Creek Watershed located generally west and south of Snead's Ferry Road (Figure 1-1). Military facilities within the watershed include portions of the Hadnot Point Administrative and Industrial Area, the French Creek Force Troops Complex, and the 1800 Area. These areas encompass administrative, residential, industrial, and military training facilities.

The remainder of this section includes a brief history of Marine Corps Base Camp Lejeune (Section 1.1) and a description of the problem under study (Section 1.2). General information on the existing environment in the Cogdels Creek Watershed is presented in Section 2. Section 3 presents information on existing hydrologic conditions in the watershed; Section 4 is a discussion of the potential impacts of proposed development on watershed hydrology; and Section 5 presents recommendations to remediate existing problems and to manage projected changes in surface hydrology in the watershed resulting from proposed

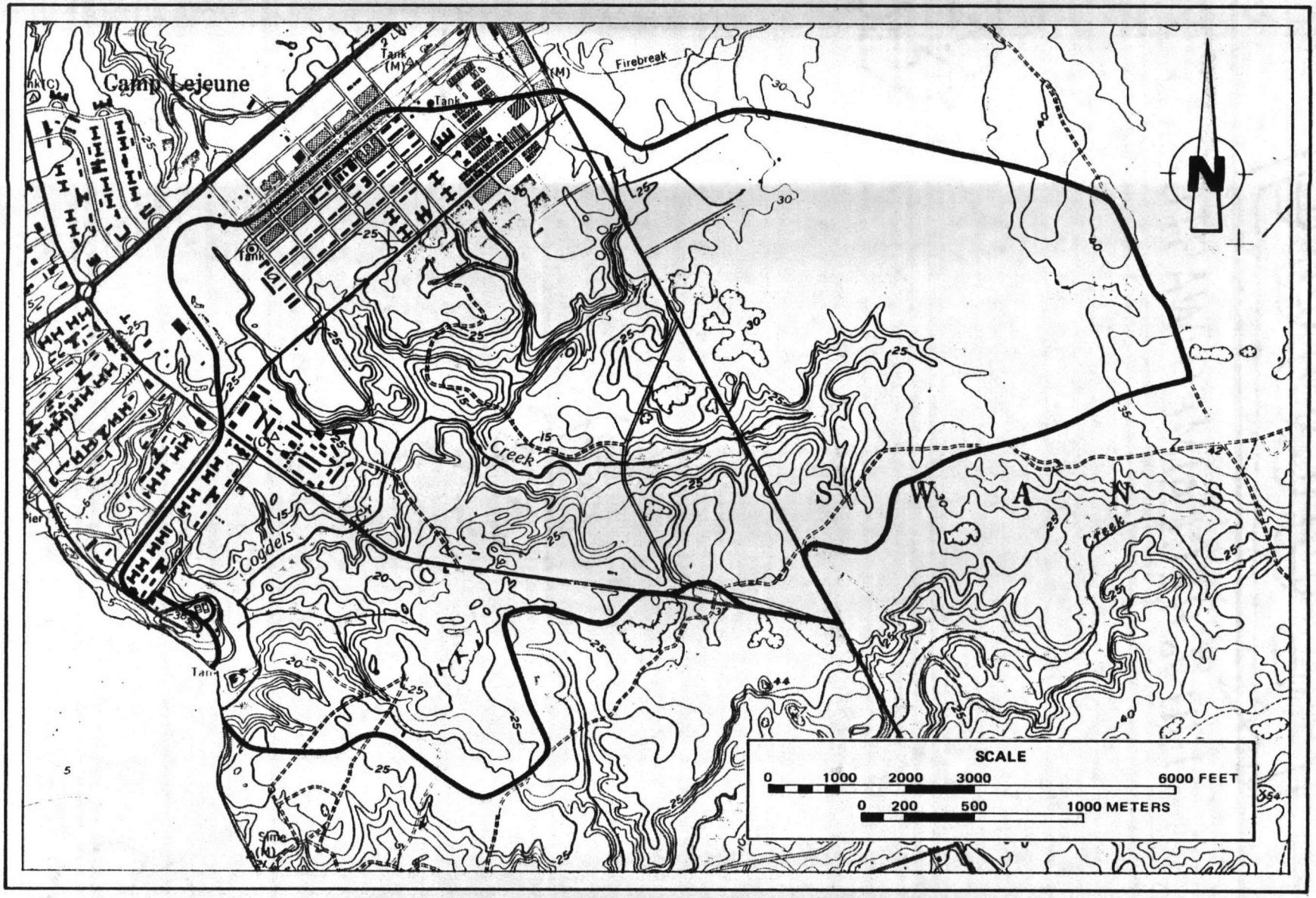

Figure 1–1 LOCATION OF COGDELS CREEK WATERSHED ON CAMP LEJEUNE, JACKSONVILLE, NORTH CAROLINA

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development. A proposed schedule and estimated costs to implement the recommended measures are presented in Section 6.

1.1 STATION BACKGROUND

Marine Corps Base Camp Lejeune is located near Jacksonville in Onslow County on the southeastern coast of North Carolina. The base encompasses more than 170 square miles on both sides of the New River, and has over 11 miles of frontage on the Atlantic Ocean and a perimeter of 68 miles.

Camp Lejeune is known as "The World's Most Complete Amphibious Training Base." The base came into existence in the late 1930s when the Marine Corps realized that its existing bases in Washington, DC, and Quantico, Virginia, were inadequate for its growing size and training requirements. After careful study, a selection board recommended that a base be established in the New River area of North Carolina. Construction of the new camp, named in honor of the Corps' 13th commandant, Lieutenant General John A. Lejeune, began in April 1941. The companion Cherry Point Air Station, conceived at about the same time, placed air support agencies in close proximity to ground units based in Camp Lejeune. The region provides access to deep-water ports and suitable areas for amphibious training.

Also located in the same general area is the United States Marine Corps (USMC) Air Station, New River, located on the northwest side of Camp Lejeune and south of Jacksonville. The Air Station encompasses approximately 2,672 acres. Originally a part of Camp Lejeune, USMC Air Facility, Peterfield Point, was surveyed and set up as a separate command in 1951. It was used as a helicopter training base and as a touch-and-go training field for jet fighters during the Korean War. The base underwent a name change in 1968 and is now known as the Marine Corps Air Station, New River.

1.2 DESCRIPTION OF THE PROBLEM

Marine Corps Base Camp Lejeune provides facilities for approximately 40,000 military personnel and approximately 60,000 civilians, and there are several areas on the base which have been developed extensively to provide such facilities. The Cogdels Creek Watershed

is one area which has been developed in the past, and which is scheduled to be further developed in the future.

Permanent development or temporary disturbances must be carefully planned so that they do not result in significant adverse impacts to water quality, aquatic biota, or the riparian environments in general. The impacts which may result from development in the watershed include accelerated soil erosion and sedimentation; increased storm water runoff and subsequent flooding or streambed scour; and non-point source pollution from maintained lawns (fertilizers, pesticides) or paved surfaces (oil, grease, heavy metals).

For the most part, development in the watershed has occurred on upland areas around the perimeter of the watershed boundary, and not within the stream channel or floodplain itself. However, stream channels and floodplains have been affected by temporary disturbances such as tank and heavy equipment movements through stream channels and clearing vegetation along stream channels. In addition, there are several existing and/or potential problems in Cogdels Creek Watershed resulting from past development activities and ongoing military activities. These are discussed in Section 3.2, and primarily include impacts resulting from accelerated soil erosion in areas where vegetation has been disturbed and soils have been destabilized; gully erosion and channel scour in areas where enhanced surface runoff from developed upland areas has been diverted either through storm drains or open channels to natural stream channels without adequately protecting the discharge areas from the erosive forces of high energy flows; and obstruction of normal stream flows at locations of unimproved tank and heavy equipment crossings.

Remediation of existing problems and adequate planning for future development or military training activities will insure that adverse impacts such as accelerated soil erosion and sedimentation in watercourses and riparian wetlands, or adverse effects on watershed hydrology resulting in excess flows during peak runoff and/or reduction in base flow, do not occur. This report analyzes existing hydrologic conditions in Cogdels Creek Watershed to determine whether the existing channel is adequate to handle peak storm water runoff, and identifies existing critical erosion problems. This report also evaluates

the potential effects on future peak runoff conditions which will result from development of proposed facilities, and recommends measures to alleviate existing and potential flooding and/or erosion problems.

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2. EXISTING ENVIRONMENT

This section discusses the existing environmental conditions on Camp Lejeune in general, and in the Cogdels Creek Watershed in particular. Special emphasis is placed on those environmental features which influence the hydrologic regime of surface waters in the study area.

2.1 GEOLOGY AND TOPOGRAPHY

Camp Lejeune is in the lower Coastal Plain of eastern North Carolina. This land originated in a marine or coastal environment similar to that along the present Atlantic Coast. Changes in sea level due to glacial fluctuations and/or slight crustal movements have caused the alternating emergence and submergence of portions of this surface at irregular intervals. When submerged, the area collected deposits of continental and marine sediments. Each successive emergence resulted in shoreline modifications upon the newly emerged coastal area and the development of surface drainage on the previously emerged lands further inland.

In the vicinity of Camp Lejeune, the Coastal Plain is underlain by hundreds of feet of unconsolidated to weakly consolidated sediments ranging from Cretaceous to Miocene age. Generally, these formations are covered with 5 to 30 feet of Pleistocene sediments. The sediments are mostly clean sand and clayey sand, interlayered with deposits of clay and marine shells. Outcroppings of the Miocene Yorktown Formation occur on the banks of large streams. The Yorktown Formation

consists of clay, sand, and shell marl beds similar to the younger surficial deposits.

The topography of the base area is mostly upland plains which include parts of three topographic surfaces representing three periods of geologically recent land emergence. The Pamlico surface lies at elevations of 2 to 25 feet in a 2-mile strip near the coast and along New River and other streams. The inland boundary of the Pamlico surface is a gentle scarp (Suffolk) that can be traced on aerial topographic maps. The majority of the base is on the Talbot surface which lies at elevations of about 25 to 45 feet. The Wicomico surface may be represented by a few areas south of Jacksonville at elevations of 45 to 70 feet.

The topography of Camp Lejeune is largely the result of the dissection of about two-thirds of the original, nearly level coastal plains by the New and White Oak rivers, their tributaries, and drainageways to the Atlantic Ocean. Dissection of the landscape affects the formation of soils by influencing the depth of the water table and the geologic removal of soil material by slope retreat.

2.2 SOILS

The soils in Camp Lejeune formed in surficial sediment of the Wicomico, Talbot, and Pamlico marine terraces, in alluvium recently deposited on drainageways, and in accumulations of organic material on the broad, undissected interstream areas. Many of the differences in the soils of Camp Lejeune are attributed to differences in the parent material from which the soils were formed, and to topographic relief and drainage.

As discussed above, most of Camp Lejeune is nearly level with wide, undissected divides. These areas have minimal relief and water movement is slow. Consequently, the soils are somewhat poorly drained, poorly drained, or very poorly drained. The major soils of these areas are Torhunta, Murville, Woodington, Leon, Rains, and Stallings. A few small oval depressions have developed thick mantles of organic matter. The soil in these depressions is Croatan.

Soils found on side slopes near drainageways include the well-drained Baymeade and the moderately well-drained Marvyn soils.

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The major soils along the main streams draining Camp Lejeune are Muckalee loam and Dorovan. In addition to the major streams, there are several short creeks that drain directly into the Intracoastal Waterway. These coastal creeks have wide estuarial floodplains. High tides back saltwater up into these streams. These floodplains are flooded with brackish water from 1 mile to 3 miles inland. The major soil along these streams is Bohicket.

The Cogdels Creek Watershed contains many of the above soil series (Figure 2-1). In general, upland soils are sandy and very well-drained, whereas soils found in bottomlands and depressions are loamy and less well-drained. Soils found immediately adjacent to Cogdels Creek and its tributaries are Muckalee loam. This nearly level, poorly drained soil generally occurs in narrow areas along floodplains. The soil is frequently flooded for brief periods, and water ponds in low areas for long periods during the winter.

Adjacent to and upslope from the Muckalee soils are Marvyn loamy fine sands. These well-drained soils generally occur on short side slopes (6 to 15%) near large drainageways. This soil is very susceptible to accelerated erosion if vegetative cover is not maintained.

Upland areas between the major drainages are occupied primarily by Baymeade fine sand. Baymeade fine sand, which is the predominant soil in the watershed, is a well-drained soil which occurs on moderately convex slopes (0 to 6%) near major drainageways. The seasonal high water table is 4 to 5 feet below the surface. If vegetative cover is disturbed, this soil is susceptible to accelerated erosion, although, because of the low slope and high permeability, it is not likely that erosion would be extensive.

Other soils occurring in the Cogdels Creek Watershed to a lesser extent include Onslow loamy fine sand, Kureb fine sand, Torhunta fine sandy loam, Murville fine sand, Croatan muck, Woodington loamy fine sand, and Newhan fine sand. These soils are described briefly below:

- Croatan muck is nearly level, very poorly drained soil found in oval depressions on broad interstream areas in uplands. The seasonal high water table is at or near the surface, although flooding is rare. Limitations of these soils are wetness, flooding, and low strength.

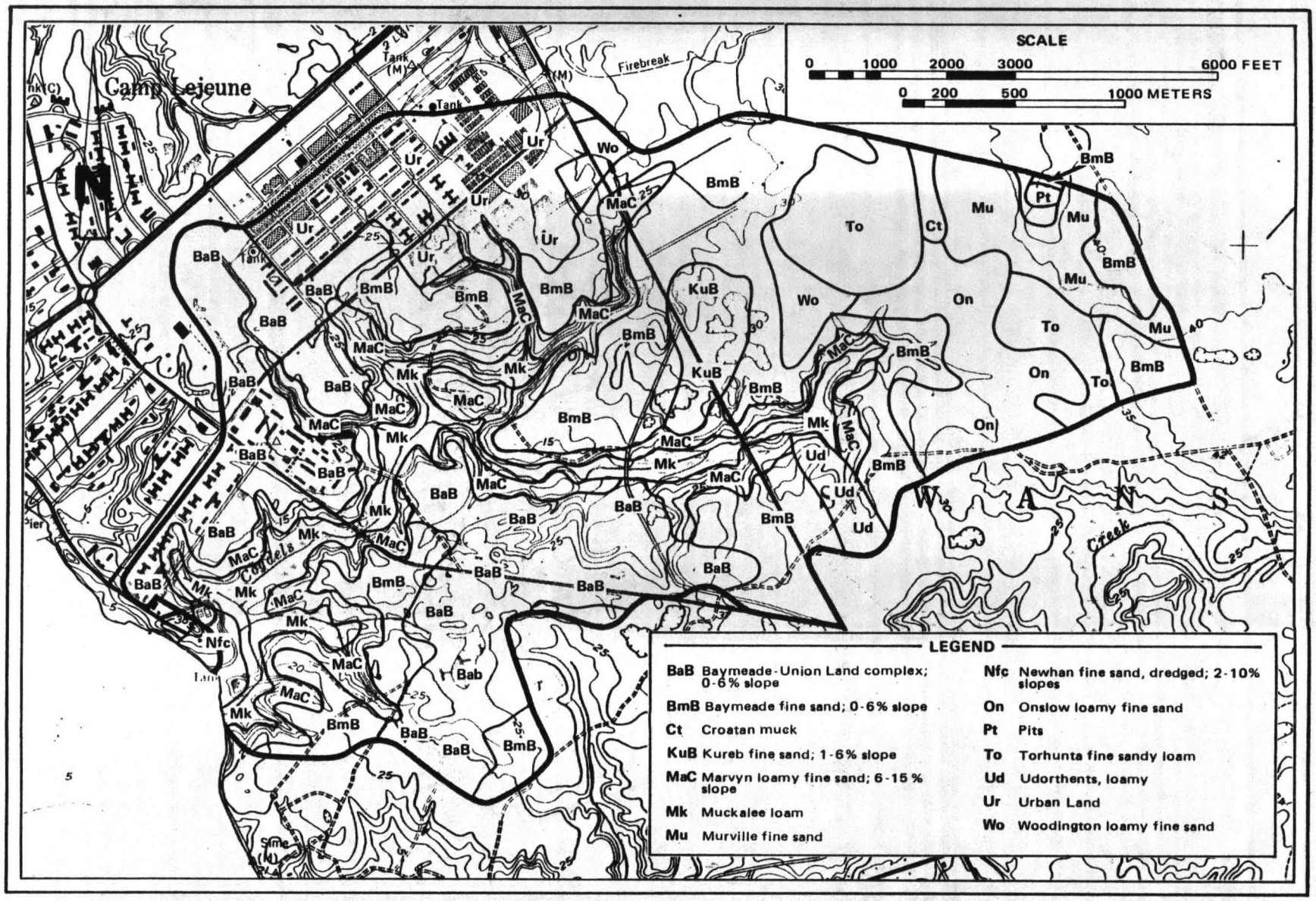

Figure 2–1 MAJOR SOIL TYPES IN THE COGDELS CREEK WATERSHED

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- Kureb fine sand (1 to 6% slopes) is found near large drainageways and on undulating convex divides in upland areas. The soil is excessively well-drained and the seasonal high water table is below 6 feet. If unprotected by vegetative cover, this soil is very susceptible to erosion by wind and water, although because of droughtiness, vegetation can be difficult to establish.

- Murville fine sand is nearly level, very poorly drained soil found in depressions on upland interstream areas. Although infiltration is rapid, the seasonal high water table is at or near the surface, and water ponds on the surface during winter. Major limitations of this soil are wetness, seepage, and caving of ditch banks.

- Newhan fine sand, dredged, is excessively drained soil deposited on uplands by dredging operations along the Intracoastal Waterway. Infiltration is rapid and the water table is below 6 feet. These soils are subject to severe erosion by wind and water if vegetation is not maintained. However, like Kureb fine sand, vegetation may be difficult to establish because of droughtiness.

- Onslow loamy fine sand is nearly level, moderately well drained to somewhat poorly drained soil found near shallow drainageways on uplands. Infiltration is moderate, and the seasonal high water table ranges from 1.5 to 3 feet below the surface. Compaction of the soil makes it nearly impervious, and subsequent surface runoff and erosion can result.

- Torhunta fine sandy loam is nearly level, very poorly drained soil on broad interstream upland areas. This soil has moderately rapid permeability and high organic matter content. The seasonal high water table is at or near the surface, and water ponds on the surface during the winter. Limitations of Torhunta soils include wetness, caving of cut banks, and seepage.

- Woodington loamy fine sand is nearly level, poorly drained soil found on broad, smooth interstream uplands. Infiltration is moderate, and the seasonal high water table ranges from 0.5 to 1 foot below the surface. The soil is subject to compaction if developed, and wetness is the major limitation.

In addition to the soils listed above, a major portion of the watershed has soils which have been modified as a result of the development of military facilities. Soils on these areas are identified as Urban Land or Baymeade-Urban Land complex. Urban Land consists of areas where the original soil has been cut, filled, graded, or paved so that most soil properties have been altered to the extent that a soil series is not recognizable.

2.3 CLIMATE

The climate of Camp Lejeune is generally warm and humid. In the summer, Camp Lejeune is hot and humid, but the coast is frequently cooled by sea breezes. Winter is cool, with occasional brief cold spells. Rains occur throughout the year and are fairly heavy; snowfall is rare. Annual precipitation is adequate for all crops.

Table 2-1 presents data on temperature and precipitation for the Camp Lejeune area for the period 1951 to 1979. In winter, the average temperature is 45°F and the average daily minimum temperature is 32°F. The lowest temperature on record, which occurred at Camp Lejuene on February 1, 1965, is 2°F. In summer, the average temperature is 76°F and the average daily maximum temperature is 87°F. The highest recorded temperature, which occurred on June 28, 1954, is 103°F. The total annual precipitation is 56 inches. Of this, 60% usually falls in April through September.

The intensity and duration of rainfall events at Camp Lejeune is shown in Table 2-2. Information on rainfall intensity is necessary for predicting the potential volume of surface runoff which can be expected to occur with a certain return periodicity. For example, based on the data, it can be expected that once in 10 years a rainstorm will occur which will result in 3.25 inches of rain in a two-hour period. For the purposes of this report, the design storm of interest is the 10-year, 24-hour storm. For the area of North

Table 2-1

TEMPERATURE AND PRECIPITATION DATA FOR CAMP LEJEUNE*

Month	Temperature			Precipitation				
					2 Years in 10 Will Have:			
	Average Daily Maximum (°F)	Average Daily Minimum (°F)	Average (°F)	Average (in)	Less than (in)	More than (in)	Average Number of Days with 0.10 Inch or More	Average snowfall (in)
January	56.3	31.0	43.7	4.10	2.36	5.64	8	1.2
February	58.3	32.2	45.3	4.01	2.38	5.46	7	.8
March	65.5	38.3	51.9	3.96	2.37	5.38	8	.5
April	74.7	46.0	60.4	3.11	1.66	4.36	5	.0
May	80.8	54.5	67.7	4.80	3.23	6.24	8	.0
June	85.5	61.7	73.6	6.00	3.18	8.47	8	.0
July	88.6	66.4	77.5	7.01	4.64	9.17	10	.0
August	87.9	65.7	76.8	6.87	4.03	9.39	9	.0
September	83.8	59.9	71.9	5.96	2.80	8.67	7	.0
October	75.2	48.9	62.1	3.34	1.30	5.04	5	.0
November	67.4	39.3	53.4	3.11	1.58	4.43	5	.0
December	59.1	32.8	46.0	3.69	1.91	5.23	6	.4
Yearly								
Average	73.6	48.1	60.9	--	--	--	--	--
Extreme	--	--	--	--	--	--	--	--
Total	--	--	--	55.96	47.23	64.30	86	2.9

*Data were recorded in the period 1951 through 1979 at Maysville, North Carolina.

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Table 2-2

RAINFALL INTENSITY AND FREQUENCY
FOR CAMP LEJEUNE AREA

(Precipitation in Inches for Time Intervals)

Frequency	5 Min.	10 Min.	15 Min.	30 Min.	60 Min.	120 Min.
2-year	.48	.80	1.00	1.35	1.75	1.90
5-year	.53	.95	1.20	1.75	2.25	2.50
10-year	.60	1.05	1.38	2.00	2.60	3.25
25-year	.72	1.15	1.55	2.30	3.10	4.00
50-year	.80	1.30	1.75	2.50	3.60	4.50
100-year	.85	1.42	1.92	2.80	4.10	5.25

Source: U.S. Department of Agriculture, Miscellaneous Publication No. 204.

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Carolina which encompasses Camp Lejeune, the 10-year storm can be expected to result in approximately 7 inches of rain over the 24-hour period. These storms are most likely to occur during late summer (United States Department of Commerce 1961).

2.4 VEGETATION

The existing vegetation on Camp Lejeune is typical of the coastal lowlands of North Carolina in general. Variations in soils is the main cause of variations in vegetation. In areas with loamy soils, the vegetation is dominated by dense stands of loblolly pine. Where the soils are sandy and have hardpan subsoils, the vegetation is sparse, consisting mostly of longleaf pine and scrub oaks.

Vegetation in undeveloped portions of the Cogdels Creek Watershed is primarily forested (Figure 2-2). The upland areas between stream channels are dominated by loblolly pine, either in fairly pure stands or more commonly in association with various species of hardwoods, including red oak, white oak, sweet gum, black gum, or maple. Other species of pine which are found only in the extreme upper portions of the watershed, adjacent to Lyman Road, include longleaf pine and pond pine.

Deciduous forests dominate the bottomlands along the stream channels and drainageways. These deciduous forest associations include maple, sweet gum, black gum, and red and white oak, among others. Hardwoods are also found on uplands in two areas of the Cogdels Creek Watershed. One large area is located north of Cogdels Creek and east of Snead's Ferry Road; the other is located north of the creek and south of Duncan and "O" streets. According to the Natural Resources Management Plan, these two areas were predominantly covered in pine in 1975, but have been managed to encourage hardwoods. The latest timber stand inventory (Black 1986) indicates these areas are now predominantly red and white oak. The characteristic species found in the major forest types are described below.

Loblolly pine represents the main forest type on upland areas of the watershed. Many loblolly stands on Camp Lejeune in general grow on sites which were once old farm homesteads. Persimmon, black cherry, red cedar, holly, dogwood, and scrub oak are the associated

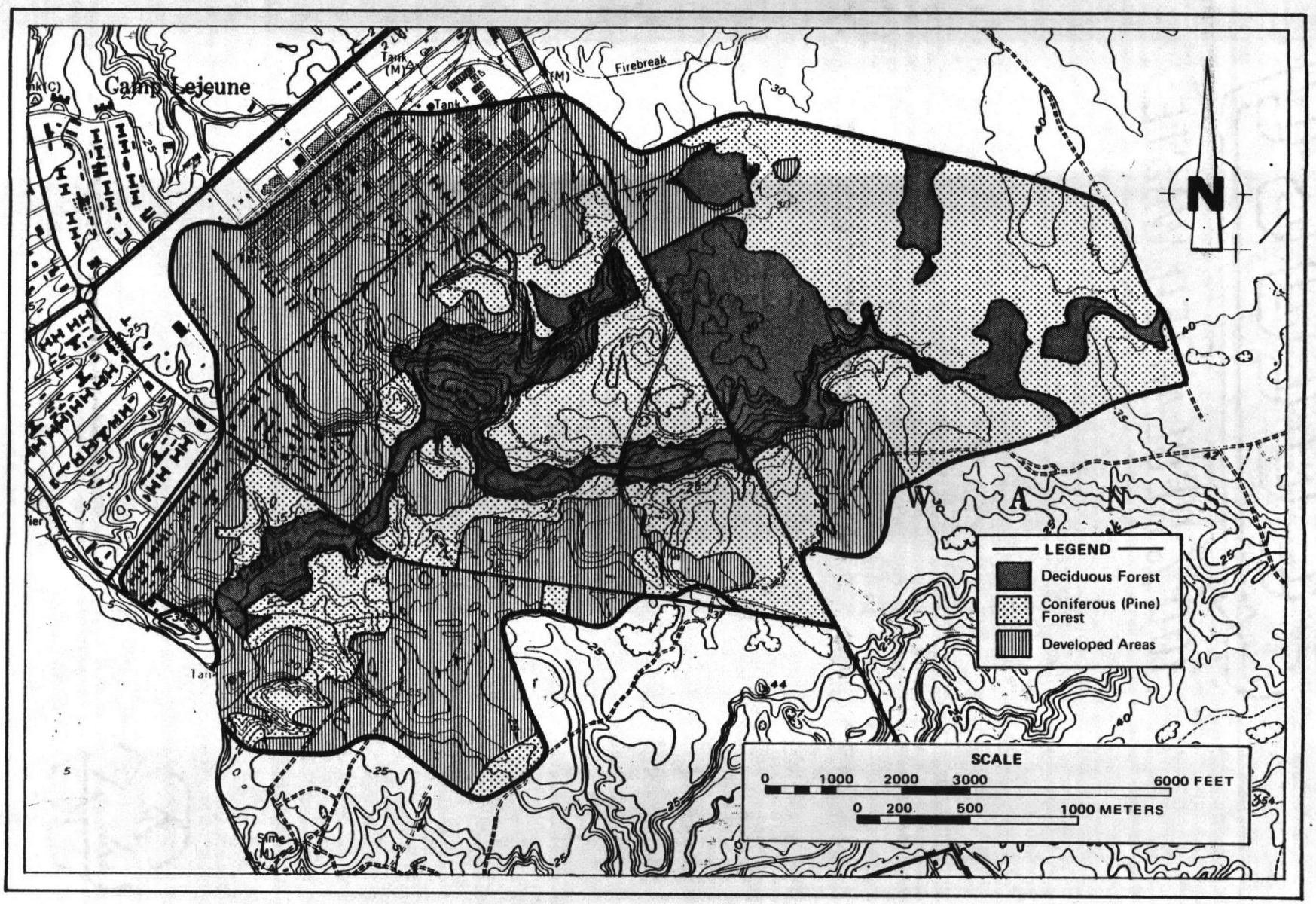

Figure 2–2 MAJOR VEGETATION IN THE COGDELS CREEK WATERSHED

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species, while highbush huckleberry, chinquapin, gallberry, beauty-berry, and wax myrtle make up the understory. Associated upland weeds and herbs are pokeweed, ragweed, smartweed, beggarweed, and partridge pea.

Loblolly pine-hardwood forests occur just below the pure stands of loblolly pine on higher upland sites but above the hardwood slopes. Sweet gum, black cherry, red cedar, holly, sweet bay, and dogwood are the associated species, while highbush huckleberry, gallberry, and wax myrtle comprise the understory. Associated upland weeds and herbs are panic grass, broomsedge, pokeweed, partridge pea, and beggarweed.

Oak-hickory occurs on slopes below the mixed stands of loblolly-hardwood and above bottomland hardwoods. Principal species are white oak and southern red oak. Black, post, chestnut, and scrub oak; yellow poplar; sweet gum; black gum; persimmon; black cherry; maple; and dogwood are the associated species, while blueberry, chinquapin, and beauty-berry make up the understory. Associated plants are ferns, teaberry, paspalums, and sedges.

Floodplains along streams, creeks, and swamps, downslope from mixed hardwoods, are dominated by sweet bay/swamp black gum and red maple. Swamp tupelo, ash, and elm are the associated species, while greenbrier, rattan-vine, grape, and rose make up the understory vegetation. Associated aquatic plants are wild millet, coontail, swamp smartweed, and arrowhead.

Pond pine forest types are composed of what is commonly known as "pocosins" or upland swamps. This group occurs on the poorly drained peat soils which are underlain by hardpan marine sands. Red maple, black gum, sweet bay, and red bay are the associated species, while greenbrier, cyrilla, fetter bush, and sheep laurel comprise the understory. Associated marsh and aquatic plants are moss, fern, pitcher plant, venus fly trap, and sundew.

2.5 LAND USE

Camp Lejeune, including the Marine Corps Air Station, New River, encompasses approximately 86,695 acres. Of this, 13,376 acres or 15% is improved or semi-improved grounds, and the remaining 73,319 acres are unimproved. Improved grounds include areas of troop and family

housing buildings, hospital and medical buildings, administrative buildings, warehouses, community buildings, and all other buildings associated with the official functions of the base. Intensively maintained cantonment areas such as lawns, parade grounds, drill fields, recreational fields, and major road berms together with the less intensively maintained areas such as firing ranges, magazine areas, and utility rights-of-way are also included in improved areas.

Unimproved areas include forestland, which is the predominant land use on the base as a whole, occupying some 60,093 acres or 69% of the land area, as well as roadsides and stream channels (2,523 acres or 3%); impact areas (5,447 acres or 6%); coastal beaches (1,645 acres or 2%); tidal marshes (3,326 acres or 4%); and wildlife food plots (285 acres or less than 1%).

Land use in the Cogdels Creek Watershed is also predominantly forestland. Of the 2,200 acres in the watershed, forestland occupies approximately 70% of the area. The remaining land uses in the watershed include the intensively developed industrial, commercial, and residential areas of Hadnot Point, the French Creek Complex, and the 1800 Area, as well as semi-improved areas, including the landfill and the tank and heavy equipment training area. These areas occupy approximately 700 acres, or 30% of the watershed.

Much of the area along Cogdels Creek which is identified as forestland can also be classified as wetland. The distribution of wetland along the floodplain can generally be delineated by soil type, which reflects seasonal saturation. Wetlands within the Cogdels Creek watershed are shown on Figure 2-3.

Figure 2-4 shows the location of the designated 100-year-floodplain along Cogdels Creek. The floodplain boundaries reflect the extent to which tidal surge during the 100-year storm would inundate the stream valley.

Land use in Cogdels Creek Watershed was also characterized by categories which reflect the potential effects of land cover on surface runoff. Five land cover categories were delineated, including:

- Fully developed areas which include areas occupied by buildings, parking areas, and road surfaces;

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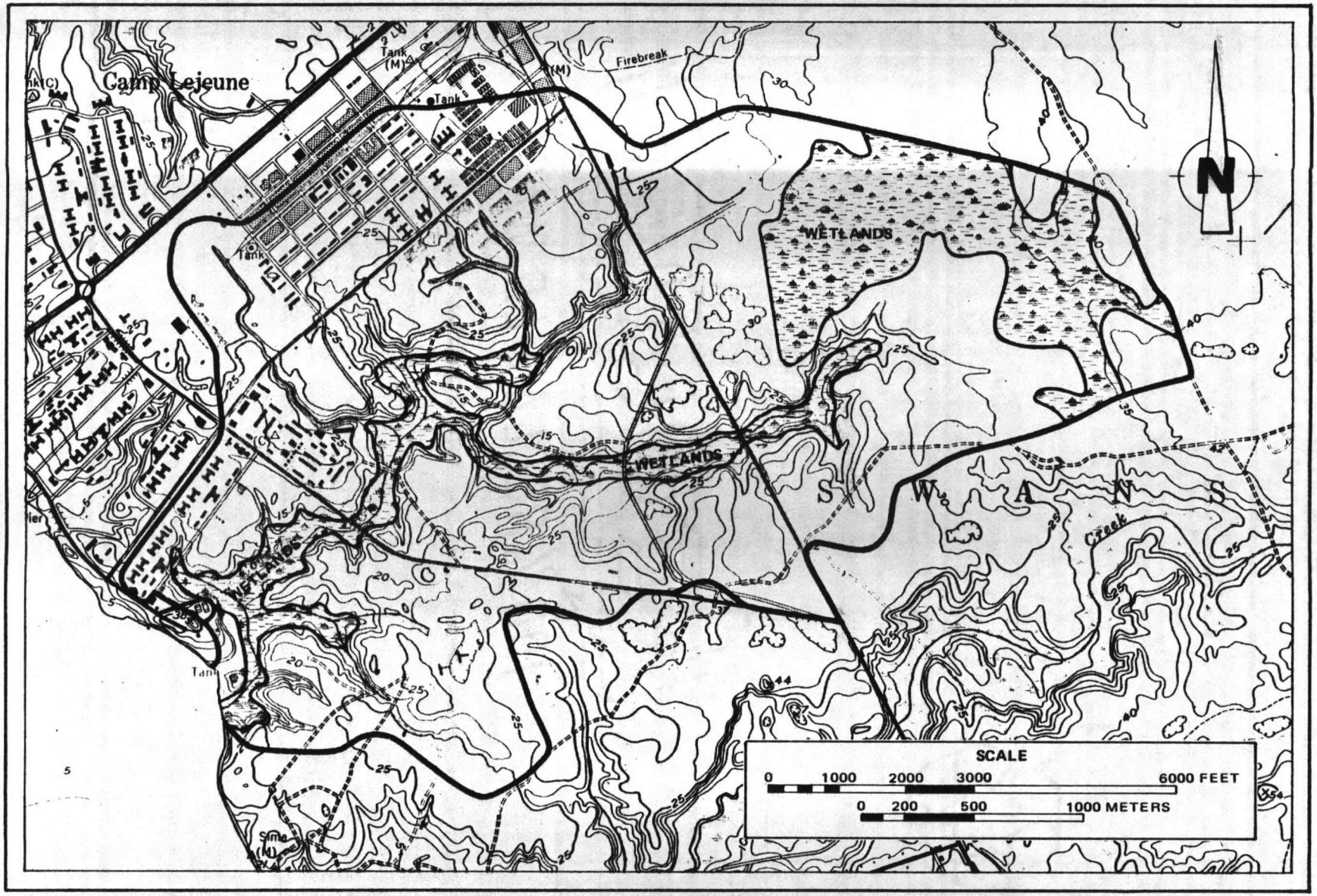

Figure 2–3 WETLANDS WITHIN THE COGDELS CREEK WATERSHED

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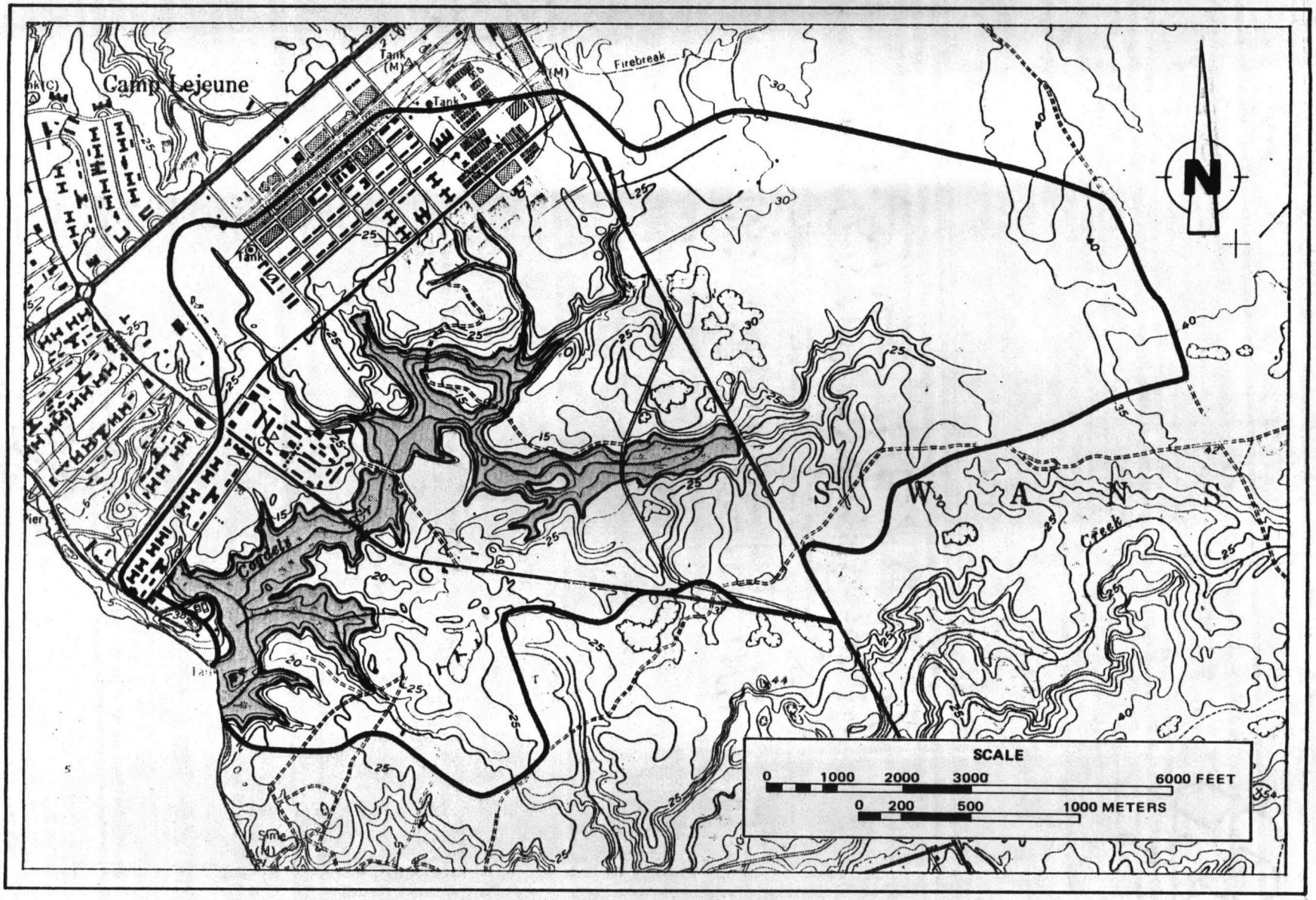

Figure 2–4 100-YEAR FLOODPLAINS WITHIN THE COGDELS CREEK WATERSHED

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- Partially developed areas in which buildings and other paved surfaces are interspersed with lawns, athletic fields, and other vegetated areas;

- Undeveloped areas which are occupied by undisturbed native forest vegetation;

- Semi-undeveloped areas which are occupied by forested vegetation which has been thinned or in which the understory has been removed or disturbed (park-like); and

- Disturbed areas in which vegetation has been removed exposing soils but which have not been developed.

Figure 2-5 shows the distribution of these land cover types in the Cogdels Creek Watershed; the extent of each is shown in Table 2-3.

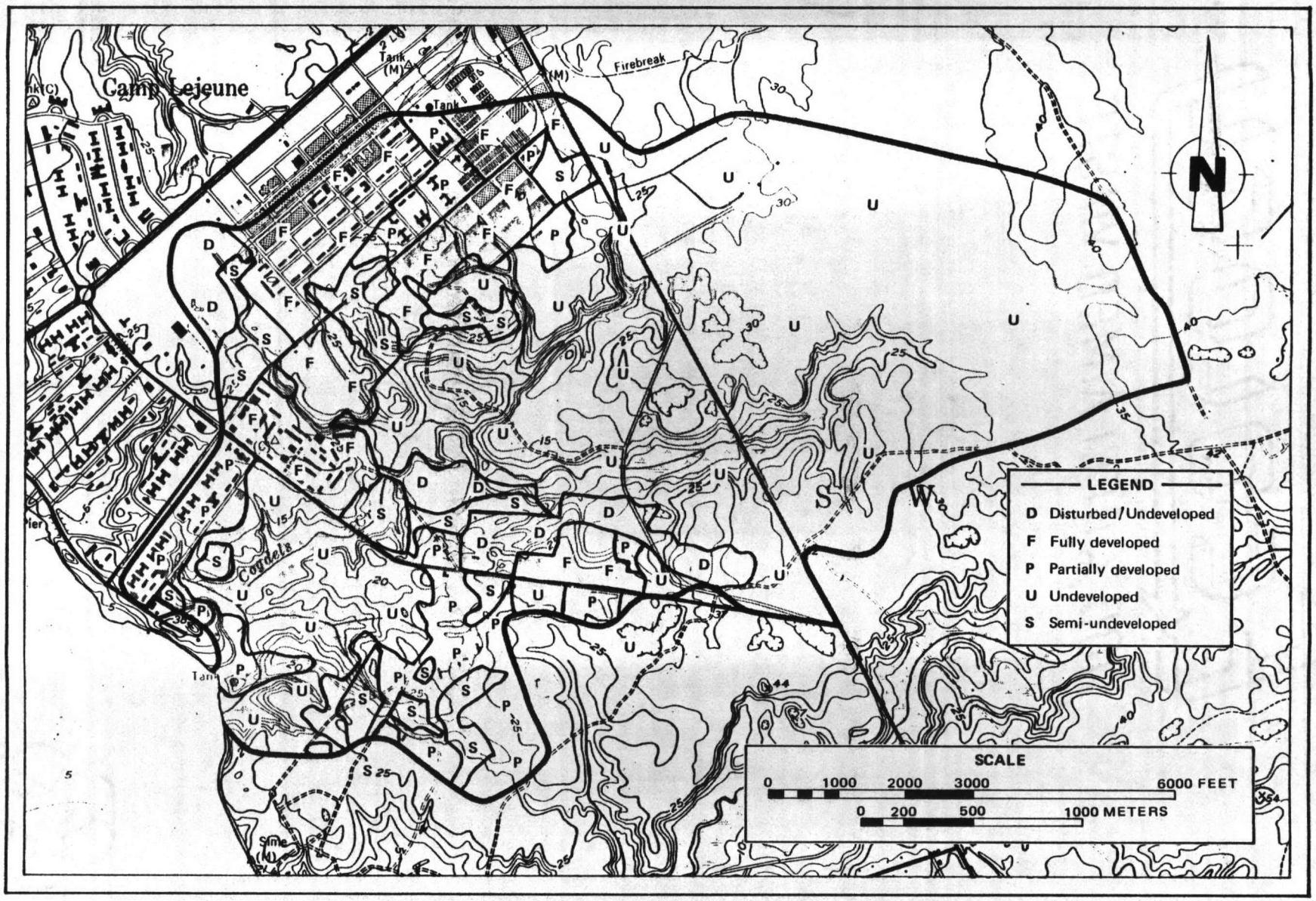

Figure 2–5 MAJOR LAND USES IN THE COGDELS CREEK WATERSHED

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Table 2-3

DISTRIBUTION OF MAJOR LAND COVER TYPES
IN COGDELS CREEK WATERSHED

Land Cover	Area (acres)	Percent of Total Watershed
Fully developed	358	16
Partially developed	238	11
Semi-undeveloped	67	3
Undeveloped	1,464	66
Disturbed	97	4
Total	2,218	100

Source: Ecology and Environment, Inc., 1986.

3. EXISTING HYDROLOGY

This section discusses the existing hydrology of the Cogdels Creek Watershed under the present conditions of development and land cover, taking into account soils, vegetation, and in-place water control structures. This section also discusses areas on the base which are presently experiencing accelerated soil erosion.

3.1 WATERSHED HYDROLOGY

The Cogdels Creek Watershed encompasses approximately 3.98 square miles (Meikle 1986). Approximately 14% of this area is located north and west of Lyman Road. Drainage from the area northeast of Lyman Road has been interrupted and modified by the road, and for the purposes of this report, the watershed is considered to encompass 3.43 square miles, or 2,200 acres.

Figure 3-1 (map pocket inside back cover) shows the approximate boundaries of the watershed. The watershed is primarily drained by the main branch of Cogdels Creek and a major unnamed tributary to Cogdels Creek, as well as numerous minor tributaries. The main branch of Cogdels Creek is approximately 3.4 miles long. The main tributary, which is 1.5 miles long, joins the main branch approximately 1.4 miles from the mouth of Cogdels Creek.

There is no gauging station on Cogdels Creek, and thus there are no data on normal or peak stream flow volumes. A general indication of the range of stream flows which might be expected in Cogdels Creek can be determined from other watersheds in the general geographic area of Camp Lejeune which are gauged. Using data provided by the United

States Geological Survey (USGS 1984), five watersheds ranging in size from less than 2 to over 5,000 square miles were identified within the coastal lowland areas of North Carolina (Table 3-1). Average annual flows in these five watersheds range from 0.9 to 2.7 cubic feet per second per square mile (cfsm), and average 1.6 cfsm. Based on these figures, the average annual stream flow in Cogdels Creek can be expected to be in the range of 3 to 10 cfs, with an average stream flow of 6 cfs.

Base flow is defined as that portion of stream flow which results from groundwater discharge. Without actual measurements of stream flow and precipitation, it is not possible to determine base flow in Cogdels Creek. However, again using the existing data from the five gauged watersheds, a rough approximation of base flow can be determined.

Although there are several methods of determining base flow from gauged watersheds, one method is to average the minimum monthly flow over the year under the assumption that these minimums will exclude stream flows resulting from surface runoff during storm events. This was done for the five gauged watersheds in the general vicinity of Camp Lejeune, and the average minimum monthly flow was found to range from 0.1 to 0.7 cfsm, with an average of 0.5 cfsm. Based on these figures, base flow in Cogdels Creek can be expected to range from 0.4 to 2.8 cfs, with 1.8 cfs as an average.

Crude stream flow measurements were made at two locations in Cogdels Creek on February 4, 1986. Stream flow through a 5-foot, 6-inch diameter oval corrugated steel culvert located near the Wastewater Treatment Plant was approximately 3.5 cfs. Stream flow immediately upstream from the main tank tract crossing ranged from 4 to 5 cfs. These stream flow measurements are in general agreement with the calculated base flow approximation, since rainfall had occurred a few days prior to the field inspection and it is likely that stream flows had not reached base flow levels. From the above averages and estimates, for the purposes of this report, base flow was assumed to be 3 cfs.

There are several structures along the main branch and the major tributary of Cogdels Creek which can affect the flow of water in the stream channel. These structures are primarily culverts and are located where the streams pass beneath roadways. Table 3-2 lists the

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Table 3-1

BASE FLOW FOR GAUGED STREAMS ALONG
COASTAL LOWLANDS OF NORTH CAROLINA

USGS Gauge No.	Stream Name/Location	Drainage (Square Miles)	Average Annual Flow Per Square Mile (cfsm)	Average Monthly Min. Flow (cfs)	Min. Flow Per Square Mile
2093229	Hewletts Creek/Wilmington	1.98	2.7	1.36	0.7
2105769	Cape Fear River/Kelly	5,255	1.6	3,133	0.6
210800	Northeast Cape Fear River/Chinquapin	599	1.4	316	0.5
2108548	Little Rockfish Creek/Wallace	7.8	1.4	1.04	0.1
2109500	Waccamaw River/Freeland	680	0.9	301	0.4
Average			1.6		0.5

Source: USGS 1984.

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Table 3-2

MAJOR CULVERTS LOCATED WITHIN THE
COGDELS CREEK WATERSHED

Structure Number*	Description**	Location
10	2 x 66" diameter CMP	Main Branch Cogdels Creek at Sneads Ferry Road
20	1 x 48" diameter CMP	Main Branch Cogdels Creek at Tank Crossing
30	1 x 30" diameter CP	Main Tributary Cogdels Creek at Sneads Ferry Road
40	1 x 48" diameter CMP	Main Tributary Cogdels Creek at Tank Crossing
50	2 x 48" diameter CP	Main Branch Cogdels Creek at Major Tank Crossing
60	3 x 48" diameter CP	Main Branch Cogdels Creek at Main Service Road
70	1 x 68" diameter CMP	Main Branch Cogdels Creek at Wastewater Treatment Plant
80	1 x 66" diameter CMP	Main Branch Cogdels Creek at Wastewater Treatment Plant

*Refers to map identification number in Figure 3-1 (in map pocket inside back cover) and Structure Number in Appendix A.
**CMP = Corrugated metal pipe
CP = Concrete pipe

Source: Ecology and Environment, Inc., 1986.

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major culverts which influence peak flow in the watershed. Also listed are their sizes and approximate locations along the main branch or main tributary. Their locations are shown on Figure 3-1. The numerous other minor culverts were not found to have a major influence on flood transport capacity in Cogdels Creek. However, several of these culverts were in poor repair and should receive some remedial maintenance. They are discussed in Section 3.2.

Within the Cogdels Creek watershed, 19 minor watersheds (subwatersheds) were delineated to facilitate determination of peak runoff and stream flow. These subwatersheds are shown on Figure 3-1. They range in size from 0.01 acres to 0.84 acres.

The hydrology of the watershed is determined largely by land cover, soil types, and slope, which combine to determine the volume and rate of surface runoff resulting from precipitation events. Section 2 discusses these conditions on the base in general and in the watershed in particular. The following section interprets these conditions as they influence surface runoff.

3.1.1 Development of Curve Numbers

The general characteristics of the soils found in Cogdels Creek Watershed are discussed in Section 2.1. Table 3-3 lists these soils and the area of the watershed occupied by each. Also shown in Table 3-3 is the hydrologic soil group for each soil type. Hydrologic soil groups are used to estimate runoff from precipitation for soils not protected by vegetation. Soils are assigned to one of four groups which are related to the rate of water uptake when the soils are thoroughly wet and are receiving precipitation from long duration storms.

The four hydrologic soil groups are:

- Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well-drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

- Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or

Table 3-3

SUMMARY OF SOIL TYPE AND LAND COVER IN COGDELS CREEK WATERSHED

Soil Type	Area	% of Total	Hydrologic Soil Group	Description of Land Cover	Slope (%)
Ur - Urban	0.79	23	--	Fully developed urban area	0-6
BaB - Baymeade-Urban Land Complex	0.45	13	A	50% Forestland 30% Urban 20% Disturbed but undeveloped	0-6
BmB - Baymeade	0.93	27	A	Forestland (upland)	0-6
MaL - Marvyn	0.41	12	B	Forestland (slopes along stream channels)	6-15
MK - Muckalee	0.21	6	D	Forestland (floodplains)	Nearly level
On - Onslow	0.21	6	B	Forestland near shallow drainageways	Nearly level
Wo - Woodington	0.07	2	D	Forestland in poorly drained uplands	Nearly level
Mu - Murville	0.14	4	D	Forestland in poorly drained uplands	Nearly level
Knb - Kureb	0.10	3	A	Sparse forestland on uplands	1-6
Ct - Croatan	0.03	1	D	Forestland in poorly drained upland depressions	Nearly level
Pt - Pits	0.02	0.5	--	Gravel pits	Variable
Nfc - Newhan	0.03	1	A	Maintained vegetation and urban development	2-10
Ud - Landfill	0.03	1	--	Sanitary landfill - disturbed	--

Source: Adapted from USDA SCS 1984.

deep, moderately well-drained or well-drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

- Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water, or soils of moderately fine or fine texture. These soils have a slow rate of water transmission.

- Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a clay pan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

In the Cogdels Creek Watershed, approximately 40% of the area is occupied by soils in group A, 18% by soils in group B, and 13% by soils in group D. There are no soils in group C. Approximately 2% of the area is occupied by pits and the landfill, for which there is no hydrologic soil group. The remaining 27% of the watershed is occupied by Urban Land, which is defined as areas that are more than 85% covered by buildings, streets, parking lots, airports, railroad yards, and other urban uses. Because of extensive urbanization, the natural soil has been altered and the topography and original landscape have been changed. As a result, these areas are not assigned to a hydrologic soil group. It should be noted that the area identified as urban land includes the areas mapped by the Soil Conservation Service (SCS) as Urban Land (23%), as well as 30% of the areas mapped as Baymeade-Urban Land complex. According to the soil survey, within the Baymeade-Urban Land complex, 50% of the area is Baymeade soil, 20% comprises areas disturbed during urbanization but not fully developed (both of these areas are considered to belong to hydrologic group A), and 30% is Urban Land.

Another factor which influences the amount of surface runoff is land cover. Dense vegetation cover and deep layers of undecomposed organic matter intercept precipitation and reduce the amount of surface runoff, as well as the rate at which it runs off. On the other hand, developed areas with minimal vegetation cover or paved surfaces trap very little precipitation, most of which becomes surface runoff. Table 3-3 lists the predominant land cover for each of the major soil types in the watershed. As discussed in Section 2.4, approximately 70% of the area is dominated by undisturbed forest vegetation, and the remaining areas are either disturbed (4%) or developed (27%) to some degree.

The combination of soil hydrologic groups and land cover is used to determine a curve number (CN) which is used in the calculation of surface runoff.

As discussed in Section 2.5, five major land cover types were identified within the Cogdels Creek Watershed. These land cover types were selected based on their relevance to storm water runoff, and include: undeveloped forestland; semi-undeveloped forestland; partially developed (urbanized) areas; fully developed (urbanized) areas; and disturbed areas in which native vegetation has been removed but which have not been developed. The characteristics of these land cover types are described more fully in Section 2.5.

Curve numbers for the various combinations of land cover and soil hydrologic groups were selected using similar land cover categories for which curve numbers had been determined by the SCS in Technical Release No. 55 (TR 55; 1975). Table 3-4 is reproduced from TR 55, and the land use descriptions corresponding to the five land use types in Cogdels Creek Watershed are indicated. Using these curve numbers for each combination of land cover and soil group, a weighted curve number for each of the 19 subwatersheds was determined based on the percent of each subwatershed which was occupied by each land cover-soil group type. These curve numbers are shown in Table 3-5, and the calculations are presented in Appendix A. The higher numbers reflect a greater amount of direct runoff from a storm.

Also shown in Table 3-5 are the time of concentration (Tc) values for each subwatershed. The Tc consists of the travel time of water from the hydraulically most distant point in the watershed to the point of interest. The Tc is estimated by combining the water travel

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Table 3-4

RUNOFF CURVE NUMBERS FOR SELECTED FORESTED, AGRICULTURAL, SUBURBAN, AND URBAN LAND USE REPRODUCED FROM TR No. 55 (USDA SCS 1975) AND CORRESPONDING LAND USE TYPES IN COGDELS CREEK WATERSHED

Land Use Description		Hydrologic Soil Group A	B	C	D	Cogdels Creek Land Use Type
Cultivated Land*: Without conservation treatment		72	81	88	91	D
: With conservation treatment		62	71	78	81	--
Pasture or Range Land: Poor condition		68	79	86	89	--
Good condition		39	61	74	80	--
Meadow: good condition		30	58	71	78	--
Wood or Forestland: Thin stand, poor cover, no mulch		45	66	77	83	S
Good cover**		25	55	70	77	U
Open Spaces, Lawns, Parks, Golf Courses, Cemeteries, etc.						
Good condition: grass cover on 75% or more of the area		39	61	74	80	P
Fair condition: grass cover on 50% to 75% of the area		49	69	79	84	P
Commercial and Business Areas (85% impervious)		89	92	94	95	F/P
Industrial Districts (72% impervious).		81	88	91	93	F
Residential:†						
Average Lot Size	Average % Impervious††					
1/8 acre or less	65	77	85	90	92	P
1/4 acre	38	61	75	83	87	P
1/3 acre	30	57	72	81	86	P
1/2 acre	25	54	70	80	85	P
1 acre	20	51	68	79	84	P
Paved Parking Lots, Roofs, Driveways, etc***		98	98	98	98	F
Streets and Roads:						
Paved with curbs and storm sewers***		98	98	98	98	F
Gravel		76	85	89	91	F
Dirt		72	82	87	89	F

*For a more detailed description of agricultural land use curve numbers, refer to National Engineering Handbook, Section 4, Hydrology, Chapter 9, August 1972.
**Good cover is protected from grazing and litter and brush cover soil.
***In some warmer climates of the country, a curve number of 95 may be used.

†Curve numbers are computed assuming the runoff from the house and driveway is directed toward the street with a minimum of roof water directed to lawns where additional infiltration could occur.
††The remaining pervious areas (lawn) are considered to be in good pasture condition for these curve numbers.

Key:

D = Disturbed
S = Semi-undeveloped
U = Undeveloped
P = Partially developed
F = Fully developed

Source: Adapted from USDA SCS 1975.

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Table 3-5

HYDROLOGIC CHARACTERISTICS OF
SUBWATERSHEDS IN COGDELS CREEK WATERSHED

Subwatershed Number*	Drainage Area		Weighted Curve Number (CN)	Time of Concentration (T_c) (Hours)
	Square Mile	Acre		
1	0.08	51	50	0.42
2	0.01	4	40	0.15
3	0.11	72	41	0.48
4	0.28	176	50	0.61
5	0.20	125	66	1.15
6, 8, 9	0.19	120	56	0.74
7	0.05	33	74	0.19
10	0.02	16	64	0.12
11	0.24	155	73	0.62
12	0.36	230	85	0.42
13	0.05	34	45	0.90
14	0.28	183	53	1.02
15	0.20	132	42	0.19
16	0.11	69	40**	1.67
17	0.06	36	40**	1.00
18	0.37	237	49	3.90
19	0.84	539	51	7.50

*See Figure 3-1 (map pocket inside back cover) for location of subwatershed.

**Calculated CN less than 40; minimum CN 40 used in calculations
Source: Ecology and Environment, Inc., 1986.

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time which usually occurs as overland flow, storm sewer, and/or channel flow. The travel times for overland flow and channel flow were estimated from information obtained from the topographic map of the watershed, and the travel time for sewer flow was estimated from design drawings. For channel flow, the estimates are based on slope and an assumed water depth of approximately 1 foot. For sewer flow, the estimates are based on slope and an assumed depth in the pipe of one-half full to full. These values of CN and Tc provide the data necessary to determine the existing peak runoff in Cogdels Creek as discussed in the following subsection.

3.1.2 Existing Storm Water Runoff and Flood Transport Capacity of Cogdels Creek

3.1.2.1 Methods

The existing hydrology of the Cogdels Creek Watershed was determined using the TR-20 Computer Program for Project Formulation Hydrology, dated May 1983. The program was developed by the SCS and is patterned after procedures described in Section 4 of the SCS National Engineering Handbook, usually referred to as NEH-4.

The TR-20 Program requires various input data to characterize the watershed and factors within the watershed which influence rate of runoff from storm events. These input data, some of which have been described in previous sections, include: curve numbers for each subwatershed, time of concentration, structure (culverts) characteristics, slope and length of various stream reaches, base flow, design rainfall data, characteristics of subwatersheds, etc. In addition, certain information is provided by the program, and requires only that the user select relevant information. This information includes synthetic rainfall distributions, dimensionless unit hydrographs, antecedent moisture condition, etc. The program is described more fully in USDA SCS (1983). The following paragraphs briefly describe the input data and assumptions used in developing the estimate of peak runoff under existing and proposed conditions in Cogdels Creek. A copy of the program printout showing input and output data is reproduced in Appendix B.

The limits of the Cogdels Creek Watershed and subwatersheds were defined by field inspection, existing storm drainage drawings, topographic maps, and aerial photographs. This information is shown on Figure 3-1. The subwatersheds were located to define hydrologic and structural effects, i.e., the entrance of tributaries and existing culverts. The watershed is divided into 19 subwatersheds. Three of these subwatersheds (6, 8, and 9) were combined so that 17 subwatersheds were used in the computer program.

The average design rainfall is 7 inches, representing the 24-hour 10-year frequency storm. The computer program contains six standard synthetic rainfall distributions. These distributions are listed in the printout (Appendix B) as Table No. 5, RAINFL 1 through 6. Rainfall Table 2, which contains the 24-hour type II standard distribution generally used east of the Cascade and Sierra Nevada Mountains, was selected for this study. The standard SCS dimensionless unit hydrograph also is contained in the program and was utilized for the analysis. The antecedent moisture condition (AMC), which is an index of the watershed wetness, is selected by the user. The average conditions of AMC-II is used in this program. The base flow was determined in the field by measuring the velocity of the stream and the cross sectional area at several locations. This was compared to calculations of approximate base flow from five gauged watersheds in the coastal area of North Carolina. Based on these methods, a base flow of 3 cfs was assumed for Cogdels Creek.

The hydrologic study recognizes six structures (10 through 60 in Table 3-2). Although there are other structures within the watershed, these were not judged to be major factors controlling flow, and thus were not modeled. To evaluate each structure, a table is provided as input relating discharge to water surface elevation. Complete data are not available for each of the structures, such as slope, culvert length, construction details, and site-specific topography. To arrive at flow, the slope is estimated based on field inspection and average conditions. Also, the headwater depth is taken into account whenever the possibility of inlet submergence occurs. However, there was not sufficient information to evaluate the probable submergence of the outlet, and this item was not considered. This limitation does not exert a major influence on the ultimate runoff calculations, but the

effect of outlet submergence should be considered in the final design of water control structures.

The movement of the flood hydrograph through a valley reach is dependent upon such information as the length of the reach and a cross section of the valley including the stream channel. The cross section of the stream channel would have to be obtained by survey for input into the computer program. The computer program incorporates a power curve to describe the valley reach that can be used where valley cross sections are not available. The power curve requires as input the coefficients x and m from the equation $Q = XA^m$, where Q = discharge and A = cross section end-area representative of the reach. The coefficients x and m were selected based on a trapezoidal channel cross section.

The relationships of subwatersheds, structures, reaches, and tributaries is shown on Figure 3-2 (map pocket inside back cover). This drawing contains the information upon which the input data is structured for the computer program, including the length of stream reaches, values of x and m for each reach as described above, subwatershed areas, CNs and Tcs for each subwatershed, and structure characteristics.

3.1.2.2 Results

The results of the peak runoff modeling in Cogdels Creek Watershed under existing conditions are shown in Table 3-6. Information in this table was summarized from the computer output, which is contained in Appendix B. The table shows peak flow (in cfs) which is contributed by each subwatershed and stream reach, and incrementally adds the contributed runoff as the flood moves down the watershed. The flow at each of the six major structures is also calculated and, if the structure is inadequate to handle the peak flow, the elevation of the resulting reservoir is shown in parentheses.

Total volume of runoff for the entire watershed for the 10-year 24-hour storm is approximately 350 acre-feet. Peak flow at the mouth of Cogdels Creek is 406 cfs, although upstream of the Tank Crossing Area peak flows reach nearly 1,700 cfs.

As expected, runoff from the undeveloped portions of the watershed north and east of Sneads Ferry Road (subwatersheds 18 and 19) is

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Table 3-6

PEAK RUNOFF IN COGDELS CREEK UNDER
EXISTING CONDITIONS

Operation*	Identification No.	Cross-Section Number	Structure Number	Peak Flow Existing 1985 (cfs)	Sub-Water-Shed	Drainage Area (square mile)	Description - Remarks
Runoff	1	--	10	97	19	0.84	Undeveloped area east of Sneads Ferry Road
Resvor	2	--	10	97(9.5)	19	--	Two 66" diameter CMP culvert at Sneads Ferry Road
Reach	3	010	--	99	--	--	Stream travel to cross section 010
Runoff	2	010	--	122	15	0.20	Incremental runoff
Addhyd	4	010	--	125	--	1.04	Combines hydrographs from subwatersheds 15 and 19
Resvor	2	--	20	93(9.2)	--	--	48" diameter CMP at Tank Crossing Road
Reach	3	020	--	93	--	--	Stream travel to cross section 020
Runoff	1	020	--	158	14	0.28	Incremental runoff
Addhyd	4	020	--	181	--	1.32	Combine hydrographs from subwatersheds (15, 19) and 14
Runoff	1	--	30	61	18	0.37	Undeveloped area east of Sneads Ferry Road
Resvor	2	--	30	48(25.9)	--	--	30" diameter culvert at Sneads Ferry Road
Reach	3	040	--	48	--	--	Stream travel to cross section 040
Runoff	1	040	--	10	17	0.06	Incremental runoff
Addhyd	4	040	--	50	--	0.43	Combine hydrographs from subwatersheds 18 and 17
Resvor	2	--	40	50(10.9)	--	--	48" diameter CMP culvert at Tank Crossing Road
Reach	3	050	--	50	--	--	Stream travel to cross section 050
Runoff	1	049	--	14	16	0.11	Incremental runoff

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Table 3-6 (Cont.)

Operation*	Identification No.	Cross-Section Number	Structure Number	Peak Flow Existing 1985 (cfs)	Sub-Water-Shed	Drainage Area (square mile)	Description - Remarks
Addhyd	4	050	--	54	--	0.54	Combine hydrographs for subwatersheds (18, 17) and 16
Runoff	1	050	--	1079	12	0.36	Tributary runoff (industrial area) severe erosion - brig
Addhyd	4	050	--	1080	--	0.90	Combine hydrographs for subwatersheds (18, 17, 16) and 12
Reach	3	060	--	1080	--	--	Stream travel to cross section 060
Runoff	1	060	--	17	13	0.05	Incremental runoff
Addhyd	4	060	--	1086	--	0.95	Combine hydrographs for subwatersheds (18, 17, 16, 12) and 13
Addhyd	4	070	--	1159	--	2.27	Combine hydrographs for subwatersheds (15, 19, 14) and (18, 17, 16, 12, 13)
Reach	3	080	--	1159	--	--	Stream travel to cross Section 080
Runoff	1	080	--	55	10	0.02	Incremental runoff
Addhyd	4	080	--	1178	--	2.29	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13) and 10
Runoff	1	090	--	435	11	0.24	Tributary runoff (industrial area)
Addhyd	4	100	--	1568	--	2.53	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10) and 11
Reach	3	110	--	1568	--	--	Stream travel to cross section 110
Reach	3	120	--	1568	--	--	Stream travel to cross section 120
Runoff	1	120	--	159	6,8,9	0.19	Tributary and incremental runoff
Addhyd	4	120	--	1694	--	2.72	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10, 11) and (6, 8, 9)
Resvor	2	--	50	351(10.9)	--	--	Two 48" diameter CP culvert for tank crossing
Reach	3	130	--	351	--	--	Stream travel to cross section 130

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Table 3-6 (Cont.)

Operation*	Identification No.	Cross-Section Number	Structure Number	Peak Flow Existing 1985 (cfs)	Sub-Water-Shed	Drainage Area (square mile)	Description - Remarks
Runoff	1	130	--	160	7	0.05	Incremental runoff
Addhyd	4	130	--	362	--	2.77	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10, 11, 6, 8, 9) and 7
Resvor	2	--	60	272(6.7)	--	--	Three 48" diameter culvert at main service road
Reach	3	140	--	271	--	--	Stream travel to cross section 140
Runoff	1	140	--	191	5	0.20	Incremental runoff
Addhyd	4	140	--	288	--	2.97	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10, 11, 6, 8, 9, 7) and 5
Runoff	1	149	--	68	1	0.08	Tributary runoff
Addhyd	4	150	--	292	--	3.05	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10, 11, 6, 8, 9, 7, 5) and 1
Reach	3	150	--	292	--	--	Stream travel to cross section 150
Runoff	1	150	--	5	2	0.01	Incremental runoff
Addhyd	4	150	--	292	--	3.06	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10, 11, 6, 8, 9, 7, 5, 1) and 2
Runoff	1	180	--	185	4	0.28	Tributary runoff
Addhyd	4	180	--	402	--	3.34	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10, 11, 6, 8, 9, 7, 5, 1, 2) and 4
Reach	3	180	--	386	--	--	Stream travel to cross section 180
Runoff	1	180	--	35	3	0.11	Incremental runoff
Addhyd	4	180	--	406	--	3.45	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10, 11, 6, 8, 9, 7, 5, 1, 2, 4) and 3 (Complete watershed)
Vol.				350 AF			Total Vol., AF = Acre-ft.

*See Appendix B for description of these terms.

Source: Ecology and Environment, Inc., 1986.

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minimal, although together these two subwatersheds comprise 35% of the area of the watershed.

The most notable feature of the watershed study is the severe impact of the storm sewer discharges from the Hadnot Point Industrial Area. The computed peak discharge from this subwatershed (12) is 1,079 cfs. This peak exceeds the capacity of the 48-inch diameter storm sewer, and flooding within the area serviced by this storm sewer system would not be unexpected. The discharge velocity will be exceedingly high, creating downstream erosion problems. This was evident during the field inspection, as discussed in Section 3.2.

This peak flow passes downstream to the first obstruction, structure 50 at the main tank crossing. Structure 50 consists of two 48-inch diameter culverts with 6 feet or more of cover over the culverts. The culverts restrict the downstream discharge to approximately 351 cfs from the peak flow of 1,694 cfs entering the area. This effectively creates a damming effect, resulting in a reservoir or detention basin. The reservoir created stores the excess water to an elevation of 10.9 feet (approximately 8.5 feet above the streambed), and this reservoir floods practically the entire stream channel to Sneads Ferry Road, as shown on Figure 3-2.

The next structure downstream is structure 60 at the Main Service Road. This structure consists of three 48-inch diameter culverts. A slight damming effect also occurs at this location, restricting the incoming flow of 362 cfs to a downstream flow of 272 cfs. The reservoir created by this structure reaches an elevation of 6.7 feet, or 4.7 feet above the streambed.

Although peak flow in the Cogdels Creek Watershed reaches high levels as a result of runoff from the Industrial Area, flooding within the stream channel is not a major problem because there is adequate capacity to store floodwaters within the stream channel. The creek floodplain is fairly wide and the adjacent side slopes are high enough to provide an adequate storage reservoir, as shown on Figure 3-2. It is apparent, however, that storms in excess of the 10-year 24-hour storm could result in flooding along the watercourse.

3.2 CRITICALLY ERODING AREAS

There are several areas in the Cogdels Creek Watershed which are presently eroding, generally resulting in sedimentation and siltation,

and adversely affecting water quality. Soil erosion results from a number of factors including unstable soil conditions, steep slopes, poor vegetative cover, and inadequate water management facilities. This section briefly discusses the critically eroding areas within the Cogdels Creek Watershed. The locations of critically eroding areas are shown on Figure 3-1; the areas are keyed by number, which refers to the following discussion. Recommended measures to remediate these critical erosion problems are discussed in Section 5.

3.2.1 1800 Area (Area 1)

A tributary to Cogdels Creek traverses generally northwest to southeast north of the 1800 Area. The tributary receives surface runoff from the area generally bounded by Main Service Road, Duncan Street, and Gum Street. Severe erosion is occurring along this tributary in the area between Duncan Street (south) and Louis Road, and north of Buildings 1870, 1871, and 1872.

This area is a large open field with very sparse vegetation cover. From Louis Road downstream to Buildings 1870, 1871, and 1872, the tributary has been directed through a 30-inch culvert and the channel has been filled. At a point directly north of these buildings, the tributary emerges from the culvert. The channel immediately downstream from this culvert is eroding severely. In addition, surface runoff from the open field north of the tributary is resulting in severe gully erosion.

3.2.2 Duncan Street (North) - Brig Area (Area 2)

A tributary to Cogdels Creek receives surface and storm water discharge from the industrial areas near the intersections of Duncan and Ash streets, Duncan and Birch streets, and "O" and Dogwood streets. In addition, surface runoff from the brig exercise yard is diverted to this drainage. These discharges are resulting in severe channel and gully erosion. In particular, at the southeast end of Ash Street, a 48-inch storm drain discharges to the tributary. On the 1954 storm drainage maps, this drain is shown to discharge at a point immediately adjacent to Duncan Street. Since that time, however, the head of the tributary channel has been filled, and the storm drain

presently discharges at a point about 200 feet from Duncan Street. At this point, the channel is confined to a deep gully (20 to 30 feet deep), and discharges from the storm drainage system are eroding the channel and the gully headwall where the culvert discharges.

A short distance downstream, this tributary is joined by another drainage which receives storm water discharge from the southeastern ends of Birch and Dogwood streets. Both of these tributaries are high-energy channels with fairly steep gradients. Judging by the size of cement and other debris in the channels, it is apparent that flows in the channels are high at times. The valley walls along both channels are very steep and are eroding in places.

Immediately downstream from the junction of the two tributaries described above, a large gully has recently begun eroding into the tributary channel from the northeast side. This gully is the result of surface runoff from the brig's exercise yard. Apparently to alleviate poor drainage on the southwest side of the exercise yard, a small (1-foot by 1-foot) channel was excavated to direct surface water into the wooded area southwest of the yard. This channel intersects the natural tributary to Cogdels Creek approximately 200 feet into the woods. Flow in this channel initiated erosion of the natural valley wall, and presently a gully approximately 15 feet deep and 30 to 50 feet long extends away from the natural channel toward the yard. Soils along this gully are highly erodible, and the erosion is undermining trees which have subsequently fallen into the channel. This particular problem seems to be relatively recent, as it is not evident on the 1983 aerial photographs.

3.2.3 Tank Crossing (Area 3)

A third area which, although not a problem during the field inspection, will likely result in accelerated erosion and sedimentation, is the tank crossing area east of the 1800 Area. Immediately prior to the field inspection in February, vegetation along Cogdels Creek stream channel had been cleared and the channel widened and/or straightened along approximately 800 feet of stream immediately upstream from the improved tank crossing (i.e., bridge with culverts). The purpose of the channel modification activities was to restore the

normal flow of water in the channel. The channel had been restricted as a result of fill pushed into the channel at an unimproved tank crossing. Restriction of the channel caused the stream to back up, flooding a large area immediately upstream from the unimproved tank crossing. The stream channel modifications resulted in complete removal of the stream-side vegetation, exposing the bottomland soils to potential erosion during high flows. Although such erosion had not occurred at the time of the field investigation, it can be anticipated if vegetative cover is not restored before a major rainfall event.

3.2.4 Tank and Heavy Equipment Training Area (Area 4)

The tank and heavy equipment training area comprises a large area which is continually disturbed. There is almost no vegetative cover on the area, although the areas surrounding the site are well-vegetated. Although the training area appears to have the potential to result in serious erosion and sedimentation problems, such problems do not seem to occur. There are several reasons for this. The soils are primarily Baymeade, which has a very high infiltration capacity and low runoff. The entire area is relatively level and, due to the earth-moving activities most, drainage seems to be internal and runoff is trapped on the site until it percolates into the ground. In general, the only potential problems with this site are along the perimeter, where sediment could be deposited in adjacent undisturbed areas, and along the main access roads to and from the site. In particular the access roads which lead to Cogdels Creek could serve as conduits for surface runoff and sedimentation.

3.2.5 2nd Bulk Terminal Storage (Area 5)

There is a large parking/storage area south of the 2nd Bulk Terminal Storage Building (746 and 739), part of which is paved, but part of which is also sand. The sand is eroding southeast to H.M. Smith Boulevard, and washing into the street. Sand bags have been placed along H.M. Smith Boulevard to trap the sand, but these are not effective, and sand continues to travel past this barrier.

3.2.6 Miscellaneous Erosion Problems (Area 6)

In addition to the areas described above, there are several small areas where minor erosion problems are occurring. A foot path

parallels the south side of Main Service Road between "O" Street and Gonzalez Boulevard (Area 6A). Just east of Cogdels Creek, the foot path traverses a small rise. Foot traffic on the path has killed the vegetation, there is minor rill erosion occurring along the path, and the eroded sediment is being deposited into the roadside drainage system which subsequently discharges to Cogdels Creek.

Along "O" Street, just north of Building 521, there is a drainage swale which is the head of a minor tributary to Cogdels Creek (Area 6B). This drainage swale is vegetated with grass and scattered large trees, and has a park-like appearance. The area appears to receive a lot of foot traffic, and the grass is sparse. There is some sheet erosion and minor rill erosion in this swale, which drains to a grated manhole, and discharges through a 24-inch pipe under "O" Street to a short tributary to Cogdels Creek.

There are several large (36 to 54 inch) storm drain outlets which discharge to the upper headwaters of tributaries to Cogdels Creek (Area 6C). These outlets collect storm drainage from the heavily developed industrial areas on the western side of the watershed. The channels at many of these outlets are eroding from the force of high flows discharging from these culverts.

An existing 30-inch culvert transports flows from the major tributary to Cogdels Creek beneath Sneads Ferry Road. No provisions were made to de-energize the flow at the outlet of this culvert, and the head wall is eroding severely (Area 6D).

An existing drainage channel located east of Building FC115 carries surface runoff from the Main Service Road north to the vegetated area adjacent to the Tank and Heavy Equipment Training Area. This channel is eroding severely, particularly immediately adjacent to the Main Service Road (Area 6E).

Immediately southwest of the Enlisted Mens Club (Building FC-330) a 24-inch culvert discharges to a minor tributary just upstream of Gonzalez Boulevard (Area 6F). The culvert head wall has eroded and the terminal section of culvert has subsided approximately one-half its diameter. In addition, runoff from the adjacent parking lot has resulted in some rill erosion on the slope immediately above the culvert.

4. FUTURE CONDITIONS

This section discusses the potential effects on peak storm water runoff which would result from the construction of all facilities proposed for development in Cogdels Creek watershed during FY86 through FY92 as outlined on the General Development Maps.

4.1 FUTURE LAND USE

Approximately 45 projects totaling approximately 63 acres are proposed for development in Cogdels Creek watershed during FY86 through FY92. These projects range in size from the French Creek Self-service Gas Station and Car Wash (P-840), which is approximately 2,100 square feet, to the Bachelor Enlisted Quarters (P-627), which is estimated to encompass approximately 341,300 square feet. These projects are listed in Table 4-1, grouped according to the fiscal year in which they are to be constructed, along with their size and the subwatershed in which they are located. The extent of development in any one fiscal year ranges from 171,156 square feet (or 3.9 acres) in FY91 to 775,160 square feet (or 17.8 acres) in FY92.

Development of these projects will alter the pattern and intensity of storm water runoff by increasing the area of the watershed which is impervious. To determine the effects of these projects on future peak runoff from the 10-year 24-hour storm, the weighted CNs for each subwatershed were recalculated for each fiscal year in which proposed project development was scheduled. The CN for each of these projects was assumed to be 98, which is indicative of a completely

Table 4-1

SUMMARY OF MCON PROJECTS
SCHEDULED FOR COGDELS CREEK WATERSHED
DURING FY86 THROUGH FY92

Project	Description	Size of Project (sq ft)	Subwatershed in Which Project Is Located	% of Sub-Watershed Affected
FY86				
P-840	French Creek Self-Service Gas Station and Car Wash	2,100	3	0.07
P-631	Unaccompanied Enlisted Personnel Housing	179,062	5	3.29
P-806	Light Armored Vehicle Shop	76,902	5	1.41
P-565 P-527 P-505	Electrical Communication Maintenance Shop	29,775	5	0.55
P-517	Combat Vehicle Maintenance Shop	23,460	14	0.23
	Subtotal	311,299		
FY87				
P-627	Bachelor Enlisted Quarters	341,296*	1	15.43
P-257	Field Maintenance Complex (Incr. 1)	60,540	14/15	0.80
P-027	Combat Vehicle Maintenance Shop	16,120	4	0.21
P-259	French Creek Bowling Alley	18,325	4	0.24
P-701	Medical/Dental Clinic; French Creek	28,700	4	0.38
	Subtotal	464,981		
FY88				
P-626	Bachelor Enlisted Quarters	89,408*	5/1	1.76
P-803	Field Maintenance Complex (Incr. 2)	48,000	15	1.13
P-678	Combat Vehicle Maintenance Shop	76,210	11/12	1.06
P-256	Field Maintenance Shop	13,760	15	0.32
P-065	Gymnasium	21,000	4	0.29
	Subtotal	248,378		
FY89				
P-804	Field Maintenance Complex (Incr. 3)	210,300	14/15	3.50
P-853	Vehicle Ready Fuel Storage	125,664*	12	1.26

Table 4-1 (Cont.)

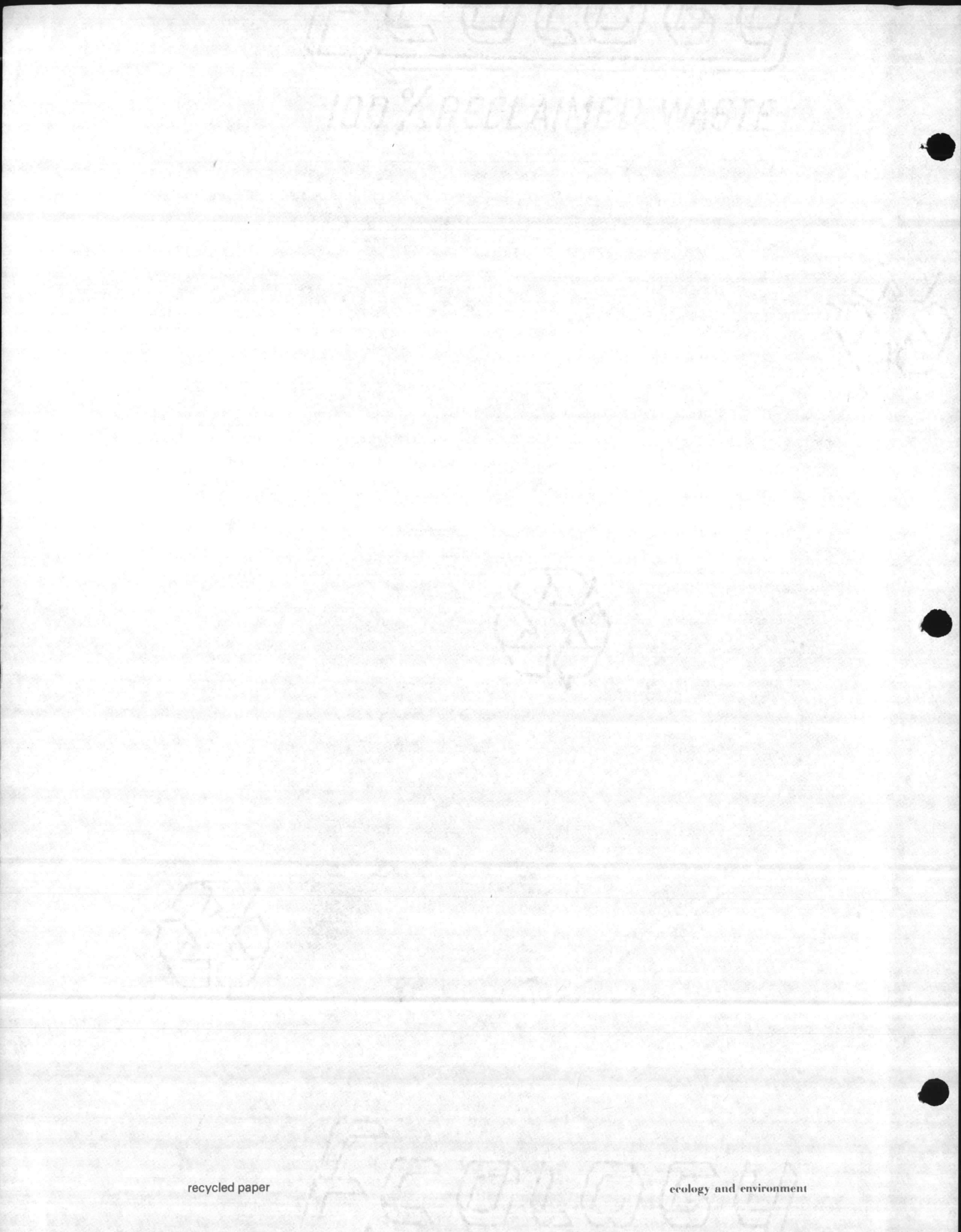
Project	Description	Size of Project (sq ft)	Subwatershed in Which Project Is Located	% of Sub-Watershed Affected
P-679	Electrical/Communication Field Maintenance Shop	19,912	15	0.47
P-564	Electrical/Communication Maintenance Shop	6,100	14	0.06
P-229	Electrical/Communication Maintenance Shop	44,524	6	0.94
P-837	Hand Ball/Racquet Ball Courts	6,000	3	0.19
	Subtotal	412,500		
FY90				
P-773	Hobby Shop Complex; Hadnot Point	40,104	6	0.85
P-794	Roof and Light Handball Courts	42,000*	6	0.88
P-805	Field Maintenance Complex (Incr. 4)	110,000	15/14	2.42
P-843	Road Improvements (Main Service Road)	66,080	5	1.21
P-266	Combat Vehicle Maintenance Shop	49,818	14	0.49
P-541	Electrical/Communication Maintenance Shop	3,300	15	0.08
P-542	Electrical/Communication Maintenance Shop	4,760	14	0.05
P-445	Combat Vehicle Maintenance Shop	23,621	5	0.43
	Subtotal	339,683		
FY91				
P-786	Cold Storage Plant	36,096	12	0.36
P-510	Storage/Out of Stores	85,438	6	1.80
P-227	Armory (Small Arms/Ammo Emergency Gear)	12,527	4	0.16
P-844	Combat Training Pad/Tank	12,735*	4	0.17
P-567	Storage/Out of Stores	24,360	5	0.45
	Subtotal	171,156		
FY92				
P-533	Storage/Out of Storage	43,560	6/5	0.89
P-511	Storage/Out of Storage/Armory	61,400	6/5	1.24
P-550	Storage/Out of Storage/Armory	38,800	15	0.91

Table 4-1 (Cont.)

Project	Description	Size of Project (sq ft)	Subwatershed in Which Project Is Located	% of Sub-Watershed Affected
P-551	Storage/Out of Storage/Armory	53,160	16	1.77
P-552	Storage/Out of Storage/ (Fleet/OPS)	104,000	14	1.02
P-553	Storage/Out of Storage/ (Fleet Stock, Med, Flammable)	104,000	15	2.44
P-121	Storage/Out of Storage	75,120	14/7	1.86
P-548	Storage/Out of Storage	43,560	14	0.43
P-512	Storage/Out of Storage (Fleet Mount Out)	104,000	16/15	3.20
P-513	Storage/Out of Storage (Fleet Stock)	104,000	15	2.44
P-859	Storage/Out of Storage	43,560	5	0.80
	Subtotal	775,160		
	Grand Total	2,723,157		

*Area of Project Measured from General Development Maps.

Source: Alexander, unpublished information.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impervious surface. The calculations involved in reanalyzing the weighted CNs for each subwatershed are contained in Appendix A.

Table 4-2 summarizes the changes in CN and Tc for each subwatershed resulting from proposed project development. For the most part, the proposed development does not alter the CNs significantly, particularly for the larger subwatersheds since the area to be developed constitutes only a small portion of the subwatershed. For small watersheds, however, such as 1, 5, 6, 8, and 9, the weighted CNs do show marked increases. The Tc is not changed by the development because this represents the time required for water falling on the farthest point in the subwatershed to reach the stream, and unless the farthest point is to be developed, which did not occur, the Tc will not change substantially.

It should be noted that Tc actually increased in subwatershed 14. This is because of the proposed construction of a road parallel to Cogdels Creek through this watershed. This road will serve as a dike, and block the flow of surface runoff, diverting it to some as yet undetermined point where it would presumably be discharged to the creek via a culvert and reinforced channel. To account for this damming effect of the proposed roadway, the Tc was increased from 1.02 to 2.00 hours.

4.2 FUTURE STORM WATER RUNOFF

The TR-20 Program was run for each fiscal year from FY86 through FY92, incorporating the modifications to watershed hydrology each year resulting from the proposed development of each subwatershed as identified in Table 4-2. The input and program output for each fiscal year is presented in Appendix B; the major results are summarized in Table 4-3.

Total runoff volume increases from 350 acre-feet under existing conditions, to 399 acre-feet in FY90, but declines again to 362 acre-feet in FY92. Peak flow at the mouth of the stream increases from 406 cfs under existing conditions to 680 cfs in FY92. The largest increase occurs from FY85 to FY86 where the peak flow increases approximately 40% to 566 cfs. This increase in flow at the mouth of the stream is due primarily to a nearly three-fold increase in runoff

Table 4-2

FISCAL YEAR SUMMARY OF CURVE NUMBERS (CN) AND
TIME OF CONCENTRATION (Tc) FOR MAJOR SUBWATERSHEDS
AS AFFECTED BY PROPOSED DEVELOPMENT

Subwatershed Number	CN/ Tc	Present FY 85	FY 86	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92
1	CN	50	--	65	65	--	--	--	--
	Tc	0.42	--	0.42	0.42	--	--	--	--
2	CN	40	--	--	--	--	--	--	--
	Tc	0.15	--	--	--	--	--	--	--
3	CN	41	42	--	--	42	--	--	--
	Tc	0.48	0.48	--	--	0.48	--	--	--
4	CN	50	--	50	50	--	--	50	--
	Tc	0.61	--	0.61	0.61	--	--	0.61	--
5	CN	66	68	--	69	--	70	70	71
	Tc	1.15	0.19	--	0.19	--	0.19	0.19	0.19
6, 8, 9	CN	56	--	--	--	57	58	62	66
	Tc	0.74	--	--	--	0.74	0.74	0.74	0.74
7	CN	74	--	--	--	--	--	--	74
	Tc	0.19	--	--	--	--	--	--	0.19
10	CN	64	--	--	--	--	--	--	--
	Tc	0.12	--	--	--	--	--	--	--
11	CN	73	--	--	78	--	--	--	--
	Tc	0.62	--	--	0.62	--	--	--	--
12	CN	85	--	--	85	85	--	85	--
	Tc	0.42	--	--	0.42	0.42	--	0.42	--
13	CN	45	--	--	--	--	--	--	--
	Tc	0.90	--	--	--	--	--	--	--

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Table 4-2 (Cont.)

Subwatershed Number	CN/ Tc	Present FY 85	FY 86	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92
14	CN	53	54	54	--	54	54	--	55
	Tc	1.02	1.02	2.00	--	2.00	2.00	--	2.00
15	CN	42	--	42	43	44	44	--	48
	Tc	0.19	--	0.19	0.19	0.19	0.19	--	0.19
16	CN	40*	--	--	--	--	--	--	40
	Tc	1.67	--	--	--	--	--	--	1.67
17	CN	40*	--	--	--	--	--	--	--
	Tc	1.00	--	--	--	--	--	--	--
18	CN	49	--	--	--	--	--	--	--
	Tc	3.90	--	--	--	--	--	--	--
19	CN	51	--	--	--	--	--	--	--
	Tc	1.50	--	--	--	--	--	--	-

Source: Ecology and Environment, Inc., 1986.

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Table 4-3

PEAK RUNOFF IN COGDELS CREEK UNDER EXISTING AND PROPOSED CONDITIONS

		Identification		Peak Discharge, cfs (Resvor Peak El.)										
Operation*	No.	Cross-Section Number	Structure Number	Peak Flow Existing 1985 (cfs)	FY86	FY87	FY88	FY89	FY90	FY91	FY92	Sub-Water-Shed	Drainage Area (square mile)	Description - Remarks
Runoff	1	--	10	97	97	97	97	97	97	97	97	19	0.84	Undeveloped area east of Sneads Ferry Road
Resvor	2	--	10	97(9.5)	96(9.5)	96(9.5)	96(9.5)	96(9.5)	96(9.5)	96(9.5)	96(9.5)	19	--	Two 66" diameter CMP culvert at Sneads Ferry Road
Reach	3	010	--	99	99	99	99	99	99	99	99	--	--	Stream travel to cross section 010
Runoff	2	010	--	122	122	122	136	151	151	151	211	15	0.20	Incremental runoff
Addhyd	4	010	--	125	125	125	139	154	154	154	215	--	1.04	Combines hydrographs from subwatersheds 15 and 19
Resvor	2	--	20	93(9.2)	93(9.2)	93(9.2)	93(9.2)	94(9.2)	94(9.2)	94(9.2)	95(9.3)	--	--	48" diameter CMP at Tank Crossing Road
Reach	3	020	--	93	93	93	93	94	94	94	95	--	--	Stream travel to cross section 020
Runoff	1	020	--	158	168	103	103	103	103	103	109	14	0.28	Incremental runoff
Addhyd	4	020	--	181	191	127	129	132	132	132	150	--	1.32	Combine hydrographs from subwatersheds (15, 19) and 14
Runoff	1	--	30	61	61	61	61	61	61	61	61	18	0.37	Undeveloped area east of Sneads Ferry Road
Resvor	2	--	30	48(25.9)	48(25.9)	48(25.9)	48(25.9)	48(25.9)	48(25.9)	48(25.9)	48(25.9)	--	--	30" diameter culvert at Sneads Ferry Road
Reach	3	040	--	48	48	48	48	48	48	48	48	--	--	Stream travel to cross section 040
Runoff	1	040	--	10	10	10	10	10	10	10	10	17	0.06	Incremental runoff
Addhyd	4	040	--	50	50	50	50	50	50	50	50	--	0.43	Combine hydrographs from subwatersheds 18 and 17
Resvor	2	--	40	50(10.9)	50(10.9)	50(10.9)	50(10.9)	50(10.9)	50(10.9)	50(10.9)	50(10.9)	--	--	48" diameter CMP culvert at Tank Crossing Road
Reach	3	050	--	50	50	50	50	50	50	50	50	--	--	Stream travel to cross section 050
Runoff	1	049	--	14	14	14	14	14	14	14	14	16	0.11	Incremental runoff
Addhyd	4	050	--	54	54	54	54	54	54	54	54	--	0.54	Combine hydrographs for subwatersheds (18, 17) and 16
Runoff	1	050	--	1079	1079	1079	1079	1079	1079	1079	1079	12	0.36	Tributary runoff (industrial area) severe erosion - brig
Addhyd	4	050	--	1080	1080	1080	1080	1080	1080	1080	1080	--	0.90	Combine hydrographs for subwatersheds (18, 17 16) and 12
Reach	3	060	--	1080	1080	1080	1080	1080	1080	1080	1080	--	--	Stream travel to cross section 060
Runoff	1	060	--	17	17	17	17	17	17	17	17	13	0.05	Incremental runoff
Adhyd	4	060	--	1086	1086	1086	1086	1086	1086	1086	1086	--	0.95	Combine hydrographs for subwatersheds (18, 17, 16, 12) and 13
Addhyd	4	070	--	1159	1165	1106	1107	1108	1108	1108	1116	--	2.27	Combine hydrographs for subwatersheds (15, 19, 14) and (18, 17, 16, 12, 13)
Reach	3	080	--	1159	1165	1106	1107	1108	1108	1108	1116	--	--	Stream travel to cross Section 080
Runoff	1	080	--	55	55	55	55	55	55	55	55	10	0.02	Incremental runoff
Addhyd	4	080	--	1178	1185	1127	1128	1129	1129	1129	1137	--	2.29	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13) and 10
Runoff	1	090	--	435	435	435	458	458	458	458	458	11	0.24	Tributary runoff (industrial area)
Addhyd	4	100	--	1568	1575	1509	1535	1536	1536	1536	1547	--	2.53	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10) and 11
Reach	3	110	--	1568	1575	1509	1535	1536	1536	1536	1547	--	--	Stream travel to cross section 110
Reach	3	120	--	1568	1575	1509	1535	1536	1536	1536	1547	--	--	Stream travel to cross section 120

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Table 4-3 (Cont.)

Operation*	No.	Identification: Cross-Section Number	Identification: Structure Number	Peak Discharge, cfs (Resvor Peak El.): Peak Flow Existing 1985 (cfs)	FY86	FY87	FY88	FY89	FY90	FY91	FY92	Sub-Water-Shed	Drainage Area (square mile)	Description - Remarks
Runoff	1	120	--	159	159	159	159	168	176	210	245	6,8,9	0.19	Tributary and incremental runoff
Addhyd	4	120	--	1694	1701	1632	1657	1667	1675	1707	1751	--	2.72	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10, 11) and (6, 8, 9)
Resvor	2	--	50	351(10.9)	353(11.0)	339(10.5)	344(10.7)	346(10.8)	347(10.8)	353(11.0)	365(11.3)	--	--	Two 48" diameter CP culvert for tank crossing
Reach	3	130	--	351	353	339	344	346	347	353	365	--	--	Stream travel to cross section 130
Runoff	1	130	--	160	160	160	160	160	160	160	160	7	0.05	Incremental runoff
Addhyd	4	130	--	362	364	349	354	356	357	363	375	--	2.77	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10, 11, 6, 8, 9) and 7
Resvor	2	--	60	272(6.7)	274(6.7)	271(6.7)	277(6.7)	279(6.7)	281(6.7)	287(6.8)	300(6.9)	--	--	Three 48" diameter culvert at main service road
Reach	3	140	--	271	273	271	276	279	280	286	299	--	--	Stream travel to cross section 140
Runoff	1	140	--	191	544	544	560	560	577	577	593	5	0.20	Incremental runoff
Addhyd	4	140	--	288	549	549	566	566	582	583	599	--	2.97	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10, 11, 6, 8, 9, 7) and 5
Runoff	1	149	--	68	68	142	142	142	142	142	142	1	0.08	Tributary runoff
Addhyd	4	150	--	292	592	660	676	676	692	693	709	--	3.05	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10, 11, 6, 8, 9, 7, 5) and 1
Reach	3	150	--	292	592	660	676	676	692	693	709	--	--	Stream travel to cross section 150
Runoff	1	150	--	5	5	5	5	5	5	5	5	2	0.01	Incremental runoff
Addhyd	4	150	--	292	597	665	681	681	697	697	714	--	3.06	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10, 11, 6, 8, 9, 7, 5, 1) and 2
Runoff	1	180	--	185	40	40	40	40	40	40	40	4	0.28	Tributary runoff
Addhyd	4	180	--	402	614	682	698	698	714	714	730	--	3.34	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10, 11, 6, 8, 9, 7, 5, 1, 2) and 4
Reach	3	180	--	386	534	603	618	618	633	633	648	--	--	Stream travel to cross section 180
Runoff	1	180	--	35	35	35	35	35	35	35	35	3	0.11	Incremental runoff
Addhyd	4	180	--	406	566	635	650	650	665	665	680	--	3.45	Combine hydrographs for subwatersheds (15, 19, 14, 18, 17, 16, 12, 13, 10, 11, 6, 8, 9, 7, 5, 1, 2, 4) and 3 (Complete watershed)
Vol.				350 AF	335 AF	340 AF	345 AF	347 AF	399 AF	352 AF	362 AF			Total Vol., AF = Acre-ft.

*See Appendix B for description of these items.

Source: Ecology and Environment, Inc., 1986.

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in subwatershed 5, resulting from development of P-631, P-806, and the P-565/527/505 complex.

Peak runoff at the mouth of the stream increases another 12% between FY86 and FY87 due to development of P-627 in subwatershed 1. This project increases runoff in this subwatershed from 68 cfs to 142 cfs--an increase of 52%.

Other subwatersheds which exhibit increased runoff resulting from proposed development include: subwatershed 15, which increases 73% from 122 cfs in FY87 to 211 cfs in FY92; and subwatersheds 6, 8, and 9, which increase 54% from 159 cfs in FY88 to 245 cfs in FY92. The other subwatersheds do not exhibit any increase or only increase slightly.

Peak runoff in watershed 14 reflects the construction of the proposed road parallel to Cogdels Creek. Peak runoff decreases 39% from 168 cfs in FY86 to 103 cfs in FY87 as a result of the damming effect of the roadway on surface runoff.

Runoff from the industrialized areas within subwatershed 12 do not change because additional development is limited, and runoff from this area is limited by the capacity of the storm sewers. However, incremental increases in runoff from subwatersheds 6, 8, and 9 result in even higher peak reaching structure 50, the twin 48-inch culverts at the Main Tank Crossing. These higher flows cause the reservoir which forms upstream of structure 50 to reach elevation 11.3 feet, or 0.4 feet higher than under existing conditions. However, the flood storage capacity of the upstream floodplain is adequate to store these peak flows without causing excessive flooding.

4.3 REQUIRED DRAINAGE FOR MCON P-257

MCON P-257 (Field Maintenance Complex) will not contribute substantially to peak runoff in the Cogdels Creek Watershed if the road which is proposed for construction along Cogdels Creek is constructed as planned by FY87 (see Figure 4-1). The road serves as a dike which can detain surface runoff and increase the time of concentration for the subwatersheds in which P-257 is located. This increase in Tc allows surface runoff to discharge to the creek in a controlled manner.

To convey flows from the vicinity of P-257, it is proposed that a medium stone fill riprap lined channel be constructed west of and

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generally adjacent to this project as shown in Figure 4-1. The channel should be constructed at right angles to the proposed roadway and should be designed of adequate size to receive surface runoff from P-257. If necessary, a second channel also lined with medium stone fill riprap could be constructed along the northern boundary of P-257 and adjacent to the proposed roadway. This channel could receive flows from a portion of P-257 and convey them west to the channel shown in Figure 4-1. The final design of these channels will require more detailed information on the construction specifications of P-257 and is beyond the scope of this report.

A culvert should be installed to convey flows from the channels beneath the proposed roadway, and a stilling basin or other energy dissipating device should be provided on the downstream side. The culvert should be properly sized to result in a controlled discharge to Cogdels Creek, and, if necessary, the channel can be designed with an emergency spillway which could divert excess flows to a detention basin which could be constructed west of the channel and south of the road. The detention basin could be designed to receive and store excess flows from not only P-257, but also any other proposed development along Main Service Road.

On the north side of the proposed road, the rip rap lined channel should be continued to convey flows to Cogdels Creek. The channel should be sloped to gradually bring runoff to the elevation of the flood plain where it can be discharged onto a stone reinforced outwash area or to the creek itself.

4.4 IMPACT OF PROPOSED DEVELOPMENT ON FLOODPLAIN BOUNDARIES

As discussed in Section 3.1.2, under existing conditions, the structure at the Main Tank Crossing effectively serves as a dam since the twin 48-inch culverts cannot convey the peak flows of 1700 cfs. The resulting reservoir which is created behind this structure is calculated to have a maximum elevation during a 10-year 24-hour storm of 10.9 feet. At this elevation much of the watershed upstream upstream to and just above Sneads Ferry Road is innundated.

As peak flows increase as a result of development in the watershed, the calculated elevation of this reservoir also increases slightly to 11.3 feet; an increase of 0.4 feet. The configuration and

size of the resulting reservoir would not appear substantially different from that shown on Figure 4-1 because of the scale and contour interval of the base map. Because the floodplain along Cogdels Creek is fairly wide and is bordered by fairly steep side slopes, the channel capacity is more than adequate to handle and store these flows. In fact, it is recommended (Section 5) that the Main Tank Crossing be redesigned as a dam and engineered with an emergency spillway to serve as a water control structure, protecting down stream areas from the extremely high flows generated in the industrial area.

5. RECOMMENDATIONS

This section provides recommendations to alleviate existing problems in Cogdels Creek Watershed as described in Section 3.2, and recommends general measures to provide adequate storm water management associated with future development. The locations of these recommendations are shown on Figure 4-1. The exact specifications for each structure would have to be determined during final design, and is beyond the scope of this report.

5.1 MCON P-257

MCON P-257 is discussed in Section 4.3 and will only be summarized here. To insure protection of the Cogdels Creek Watershed from high flows resulting from storm water runoff, as well as to trap sediment presently being generated by erosion in the area north of the Main Service Road, the road which is proposed for construction parallel to Cogdels Creek should be constructed. The road elevation should be at least 15 feet, and the roadside should be well vegetated. The road should be located on the flat uplands adjacent to the creek and not in or through the floodplain or adjacent side slopes. Floodplain vegetation and vegetation on the side slopes should not be disturbed during construction, or should be reestablished immediately following construction using SCS procedures for Critical Area Stabilization.

Peak flows from MCON P-257 should be conveyed in a medium stone fill riprap lined channel, and a controlled discharge should be conveyed beneath the road in a culvert with stilling basin. From the road to the creek, flows should be similarly conveyed in a reinforced

channel to prevent scour and bank erosion particularly along the existing side slopes of the floodplain. Once onto the floodplain, flows can be discharged onto an area which is well vegetated or reinforced with stone, or the riprap lined channel can continue to the creek as necessary.

Excess peak flows which cannot be safely conveyed under the roadway during the storm event can be diverted from the channel into a detention basin and allowed to infiltrate or be discharged in a controlled manner.

5.2 MAIN TANK CROSSING

The main tank crossing effectively serves as a dam restricting downstream flows during the 10-year storm. This structure actually was constructed with a water level control spillway, but the structure is no longer serviceable. This tank crossing should be redesigned to serve as a dam to retain peak storm flows safely in the upper watershed. The redesigned structure should incorporate an emergency spillway.

5.3 DUNCAN STREET - BRIG AREA

As discussed in Section 3.2, there are critical problems in the tributary channel which receives storm water flows from the industrial area and the brig exercise yard. The major 48-inch storm drain outlet is eroding the channel and there is no reinforced head wall. This structure should be reconstructed and provided with an energy dissipating device such as a stilling basin. The channel immediately downstream should also be reinforced to prevent further stream bed scour and channel erosion. The other storm drain outlets to this system should be reconstructed in a similar manner.

Runoff from the brig exercise yard should either be diverted to the storm drain system along Duncan Street and discharged through the above structures, or the channel which presently conveys surface flows to the creek tributary should be repaired and constructed to adequately handle the apparently high flows which have caused considerable erosion of the creek channel. To repair the channel, the side slopes should be graded to no more than 3:1 slope, and the channel

reinforced with medium to large stone fill. A third alternative is to construct a new storm sewer in the approximate location of the surface channel, and allow the storm drain to discharge directly into a stilling basin at the intersection with the creek. Within the main tributary channel downstream, a gabion sediment dam should be placed across the stream valley, as shown in Figure 4-1 to trap sediments and prevent adverse effects on water quality further downstream.

5.4 1800 AREA

The severe channel and upland erosion in the 1800 area described in Section 3.2 should be remedied by installing a stilling basin at the culvert outlet, regrading the downstream channel and side slopes, and reinforcing the channel with large riprap. The upland areas north of the channel which are experiencing severe gully erosion also should be regraded. The entire upland area and channel side slopes should be revegetated following critical area stabilization procedures developed by the SCS. If surface runoff from the upland area requires a channel, a grassed waterway should be constructed to the existing stream channel, with a stone reinforced area at the intersection to dissipate flows and prevent future gully erosion.

5.5 PROPOSED P-631 COMPLEX

Construction of the proposed P-631 complex (Unaccompanied Enlisted Personnel Housing) along "O" Street will result in substantial increases in runoff and peak storm flows in lower Cogdels Creek. During the design of these facilities, the project should be provided with a detention basin to receive and store surface runoff, and discharge it to the creek in a controlled fashion. The detention basin should be designed to adequately handle anticipated runoff, and should be provided with a water control outlet structure. The basin should discharge to a riprap-lined channel which will traverse the steep vegetated side slopes of the floodplain and safely convey runoff to the stream without eroding channel side slopes. The riprap channel should discharge at the elevation of the floodplain, either into the creek channel itself or onto a well-vegetated or stone reinforced area.

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5.6 2ND BULK TERMINAL STORAGE

The existing erosion and sedimentation from the large parking/storage area at the above facility, as described in Section 3.2, can be remedied by constructing a grassed waterway parallel to H.M. Smith Boulevard, which would discharge to the existing tributary south of the fuel storage area. The terminal portion of the channel should be reinforced with riprap to prevent channel erosion, and the discharge to the tributary should be over an energy dissipator. Downstream a gabion sediment dam should be constructed as shown in Figure 4-1 to trap sediments washed from the parking/storage area.

5.7 MISCELLANEOUS RECOMMENDATIONS

- Energy dissipators such as stilling basins should be constructed at the storm drain outlets along Louis Road, "O" Street (north) and Duncan Street; in particular at the end of Cedar, Birch and Ash streets.

- The footpath along the south side of Main Service Road near Cogdels Creek should be paved and the slope regraded and revegetated following critical area stabilization recommendations.

- The runoff channel east of Building FC-115 should be regraded and reconstructed of medium stone fill riprap. The channel should be allowed to discharge to a well-vegetated or stone reinforced area northeast of FC-115 where it can be allowed to infiltrate.

- The culvert head wall and discharge point south of the Enlisted Mens Club (Building FC-330) should be reconstructed. The culvert should have a cement head wall and the discharge point and channel should be protected with medium stone fill riprap. In addition the area upslope from the culvert outfall should be graded and revegetated following critical area stabilization recommendations.

- The parklike drainage swale along "O" Street northeast of Building 521 should be regraded and revegetated according to critical area stabilization procedures. If foot traffic through this area is to be permitted, paved foot paths should be provided to prevent disturbance to vegetation and resultant erosion.

6. IMPLEMENTATION

SCHEDULE AND COSTS TO BE PROVIDED AFTER
APPROVAL OF DRAFT REPORT

7. BIBLIOGRAPHY

TO BE PROVIDED

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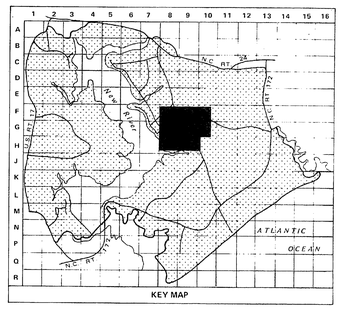


P-853 F.Y. 89
P-786 F.Y. 91
P-837 F.Y. 89
TO STORM DRAIN
ENERGY DISSIPATOR (STILLING BASIN)
REGRADE, AND RIP RAP CHANNEL/ PROVIDE ENERGY DISSIPATOR AT DISCHARGE POINT
ENERGY DISSIPATOR (STILLING BASIN)
P-678 F.Y. 88
P-773 F.Y. 90
P-794 F.Y. 90
ENERGY DISSIPATOR
P-678 F.Y. 88
GABION SEDIMENT DAM
P-551 F.Y. 92
PROPOSED R.R. SPUR
P-512 F.Y. 92
P-552 F.Y. 92
P-513 F.Y. 92
P-553 F.Y. 92
P-550 F.Y. 92
P-228 F.Y. 88
P-567 F.Y. 91
P-510 F.Y. 91
GRADE & REVEGITATE/CRITICAL AREA STABILIZATION, RIP RAP CHANNEL
P-511 F.Y. 92
STILLING BASIN AT CULVERT OUTLET
P-527 F.Y. 86,87
P-533 F.Y. 92
RESIGN THIS STRUCTURE AS A DAM W/DESIGNED EMERGENCY SPILLWAY
FUTURE ROAD-PRESENT DETENTION DIKE (MIN. DIKE ELEVATION 15.0')
WATER CONTROL STRUCTURE AND STILLING BASIN/ RIP RAP CHANNEL TO FLOOD PLAIN ELEVATION
P-805 F.Y. 90
P-804 F.Y. 89
P-808 F.Y. 88
PROVIDE RUNOFF CONTROL WITH DETENTION BASIN, OR STORM SEWERS DISCHARGING VIA STILLING BASINS TO RIP RAP CHANNEL
P-426 F.Y. 88
P-445 F.Y. 90
P-806 F.Y. 86,87
P-849 F.Y. 92
P-121 F.Y. 89
P-564 F.Y. 89
P-542 F.Y. 90
P-266 F.Y. 90
P-548 F.Y. 92
P-257 F.Y. 87
P-257 F.Y. 89
P-256 F.Y. 88
P-257 F.Y. 90
P-837 F.Y. 86,87
P-631 F.Y. 86,87
P-843 F.Y. 90
RIP RAP CHANNEL DISCHARGING TO STONE REINFORCED FLOW DISSIPATOR
PAVED FOOTPATH
RIP RAP CHANNEL TO ACCOMODATE FUTURE DEVELOPMENT
GRADE & REVEGETATE/ CRITICAL AREA STABILIZATION/ PROVIDE PAVED FOOT PATHS AS NECESSARY
INCORPORATE DETENTION BASIN WITH FUTURE DEVELOPMENT IN THIS AREA
P-627 F.Y. 86,87
P-517 F.Y. 86,87
P-257 F.Y. 88
P-541 F.Y. 90
P-679 F.Y. 89
P-027 F.Y. 86,87
GRASSED DRAINAGE CHANNEL
P-790 F.Y. 86,87
GABION SEDIMENT DAM
P-167 F.Y. 86,87
P-054 F.Y. 86,87
P-527 (P-505) F.Y. 86,87
P-549 F.Y. 92
P-055 F.Y. 92
P-571 F.Y. 92
P-118 F.Y. 92
P-564 F.Y. 92
P-121 F.Y. 92
RIP RAP CHANNEL CRITICAL AREA STABILIZATION
P-259 F.Y. 86,87
RIP RAP ENERGY DISSIPATOR AT DISCHARGE
P-701 F.Y. 86,87
P-065 F.Y. 88
P-844 F.Y. 91
P-840 F.Y. 86,87
P-837
P-227 F.Y. 91
P-057 F.Y. 88
P-031 F.Y. 86,87
P-841 F.Y. 88

LEGEND

- BUILDINGS AND STRUCTURES
- RECOMMENDATIONS
- P-786 F.Y. 91 — PROPOSED DEVELOPMENT NUMBER, FISCAL YEAR 1991
- ROADS AND HIGHWAYS
- ROADS (UNPAVED)
- FIVE FOOT CONTOURS (SOURCE – U.S.G.S. MAPS)
- CREEK
- 10 — HYDROLOGIC STRUCTURE AND NUMBER
- WATERSHED LIMITS
- SUBWATERSHED BOUNDARY
- (18) — SUBWATERSHED NUMBER

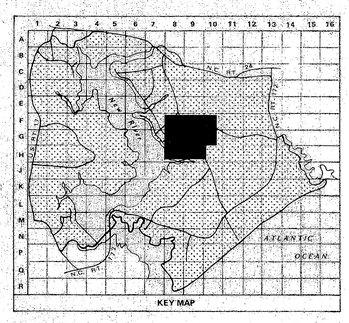
GRAPHIC SCALE

NO	DESCRIPTION OF REVISION	DATE	INT

DEPARTMENT OF THE NAVY
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

PROPOSED DEVELOPMENT AND RECOMMENDATIONS FOR STORMWATER MANAGEMENT

DATE	SCALE GRAPHIC	SHEET OF
APPROVED/DATE		DWG NO. 4 – 1



LEGEND

- BUILDINGS AND STRUCTURES
- ROADS AND HIGHWAYS
- ROADS (UNPAVED)
- 5' CONTOUR (SOURCE - USGS MAPS)

HYDROLOGIC LEGEND

- CREEK
- HYDROLOGIC STRUCTURE AND NUMBER (10)
- STREAM CROSS SECTION AND NUMBER (100)

DRAINAGE AREA SQUARE MILES | SUBWATERSHED NUMBER | RUNOFF CURVE NUMBER | TIME OF CONCENTRATION HOURS

REACH LENGTH - FEET | END AREA COEFFICIENT (K) | EXPONENT (m)

(18) SUBWATERSHED NUMBER

GRAPHIC SCALE

0 100 400 800 1000 FEET

0 50 100 200 400 METERS

NO.	DESCRIPTION OF REVISION	DATE	INI

DEPARTMENT OF THE NAVY
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

SUMMARY OF HYDROLOGIC INPUT DATA

DATE:	SCALE: 1"=400'	SHEET	OF
APPROVED/DATE:		DWG. NO.	3 - 2

3-2

3

LEGEND

- STORM DRAINS
- ROADS AND HIGHWAYS
- ROADS (UNPAVED)
- FIVE FOOT CONTOURS (SOURCE – U.S.G.S. MAPS)
- CREEK
- HYDROLOGIC STRUCTURE AND NUMBER (10)
- WATERSHED LIMITS
- SUBWATERSHED BOUNDARY
- (18) SUBWATERSHED NUMBER
- ⟨5⟩ CRITICAL EROSION AREAS

N

GRAPHIC SCALE

0 100 400 800 1600 FEET
0 50 100 200 400 METERS

NO	DESCRIPTION OF REVISION	DATE	INT

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MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

EXISTING CONDITIONS IN COGDELS CREEK WATERSHED

DATE:	SCALE: GRAPHIC	SHEET OF
APPROVED/DATE:		DWG. NO. 3 – 1

Appendix A

DEVELOPMENT OF WEIGHTED CURVE NUMBERS FOR SUBWATERSHEDS UNDER EXISTING AND PROPOSED CONDITIONS

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WEIGHTED CURVE NUMBERS
UNDER EXISTING CONDITIONS

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PROJECT NV-5000 DATE 4/1 19 86

SUBJECT Cogdels Creek Watershed Study -

Calculations of Weighted CN's - Existing PAGE 1 OF 9

(1) S SOIL TYPE BaB

AREA → 2227/22112 = 0.1007

U 5% MK, 10% MaC, 85% BaB

AREA → 5197/22112 = .2350

P 5% MK, 10% MaC, 85% BaB

AREA → 14688/22112 = .6643

AREA	%	CN	PRODUCT
S	.1007	45	4.532
U	.2350 × .05	77	0.905
	.2350 × .10	55	1.293
	.2350 × .85	25	4.994
P	.6643 × .05	85	2.823
	.6643 × .10	70	4.650
	.6643 × .85	54	30.491

WATERSHED WEIGHTED CN_1 = 49.688

(2) P SOIL TYPE BaB AREA 832/1568 = .5306

S 10% PAVED ALL NfC 736/1568 = .4694 × .1 = .0469

90% 70% NfC, 30% BaB → .4225

AREA	%	CN	PRODUCT
P	.5306	39	20.693
S	.0469 × .10	98	0.4596
	.4225 × .70 × .90	49	18.632
	.4225 × .30 × .90	49	

WEIGHTED CN_2 = 39.785

(3) U 21440/31584 = 0.6788

10% NfC, 10% MK, 60% BmB, 20% MaC

P 10144/31584 = .3212

90% Z → 20% MK, 10% MaC, 60% BmB, 10% NfC

10% Z → 100% Nfc

AREA	%	CN	PRODUCT
U	.6788 x .10	25	1.697
	.6788 x .10	77	5.227
	.6788 x .60	25	10.182
	.6788 x .20	55	7.467
P	.3212 x .90 x .20	80	4.625
	.3212 x .90 x .10	61	1.763
	.3212 x .80 x .10	39	1.127
	.3212 x .90 x .60	39	6.765
	.3212 x .10	81	2.602

$CN_3 = 41.455$

(4) U 15% MK 70% BaB 15% MaC 45952/76576 = 0.600

P 30624/76576 = 0.3999 20% → 100% BaB

30% → 100% BaB 50% → 20% / 30%

AREA	%	CN	Product
U	.15 x .6001	77	6.931
	.70 x .6001	25	10.502
	.15 x .6001	55	4.951
P	.2 x .3999	98	7.838
	.3 x .3999	68	8.158
	.5 x .3999 x .2	70	2.799
	.5 x .3999 x .8	54	8.638

$CN_4 = 49.817$

ecology & environment, inc. BY P. Mazurkiewicz Draft

PROJECT NV-5000 DATE 4/1 19 86

SUBJECT Cogdels Creek Watershed Study -

Calculation of Weighted CN's - Existing PAGE 3 OF 9

(5)

F 12736/54496 = 0.2337

U 33888/54496 = 0.6218 40% MK 30% BaB 30% MaC

P .9 × 7872/54496 = 0.130 100% BaB

.1 × 7872/54496 = 0.0145

AREA	%	CN	Product
F	.2337	98	22.903
P	.0145	98	1.421
	.130	57	7.410
U	.6218 × .40	77	19.151
	.6218 × .30	25	4.664
	.6218 × .30	55	10.260

$CN_5 = 65.809$

(6)

U 17309/47488 = .3645 10% MaC 90% BaB

S 1923/47488 = 0.0405 95% BaB 5% MaC

P 12096/47488 = 0.2547 100% BaB

F 16160/47488 = 0.3403 5% MaC 95% BaB

AREA	%	CN	PRODUCT
U	.3645 × .10	55	2.005
	.3645 × .90	25	8.201
S	.0405 × .95	45	1.731
	.0405 × .05	66	0.134
P	.2547	39	9.933
F	.3403 × .05	> 98	33.349
	.3403 × .95		

SEE (8)

$CN_6 = 55.353$

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Calculation of Weighted CN's - Existing PAGE 4 OF 9

(7)

F $1312/14368 = 0.0913$

P $1440/14368 = 0.1002$ 50% BaB 50% MaC

U $9184/14368 = 0.6392$ 5% BaB 65% MK 30% MaC

D $2432/14368 = 0.1693$ 85% BaB 10% MK 5% MaC

AREA	%	CN	PRODUCT
F	0.0913	98	8.947
P	0.1002 x .5	89	4.459
	0.1002 x .5	92	4.609
U	0.6392 x .05	25	0.799
	0.6392 x .65	77	31.992
	0.6392 x .30	55	10.547
D	0.1693 x 0.85	72	10.361
	0.1693 x .10	91	1.541
	0.1693 x 05	81	0.686

$CN_7 = 73.941$

(8)

D $960/2240 = .4286$ 100% BaB

U $1280/2240 = 0.5714$ 5% MaC 10% BaB 85% MK

AREA	%	CN	PRODUCT
D	.4286	72	30.859
U	.5714 x .05	55	1.571
	.5714 x .10	25	1.429
	.5714 x .85	77	37.398

$CN_8 = 71.257$

COMBINE 6, 8, 9

6	.170 MI^2	55	9.35
8	.098	71	.568
9	.009	62	.558
	.187		10.476

$10.476 / .187 = CN = 56$

Calculation of Weighted CN's - Existing

(9) D 96/2560 = 0.0375 100% BaB

U 2464/2560 = 0.9625 10% BaB, 45% MK, 45% MaC

AREA	%	CN	PRODUCT
D	0.0375	72	2.700
U	.9625 × .10	25	2.406
	.9625 × .45	55	23.822
	.9625 × .45	77	33.351

SEE (8)

$CN_9 = 62.279$

(10) U 6816/7072 = 0.9638 60% MaC 40% MK

D 256/7072 0.0362 100% BaB

AREA	%	CN	PRODUCT
U	.9638 × .6	55	31.805
	.9638 × .4	77	29.685
D	.0362	68	2.462

$CN_{10} = 63.952$

(11)

F 43104/67488 = 0.6387 60% Ur 40% BaB

U 14246/67488 = 0.2111 25% MaC, 75% BaB

S 9498/67488 = 0.1407 100% BaB

P 640/67488 = 0.0095 10% Ur

AREA	%	CN	PRODUCT
F	0.6387 × .6	95	36.406
	0.6387 × .4	89	22.738
U	.2111 × .25	55	2.903
	.2111 × .75	25	3.958
S	.1407	45	6.332
P	.0095 × .90	98	0.8364
	.0095 × .10	89	0.0846

$CN_{11} = 73.258$

(12)

F 60320/99968 = 0.6034 20% Ur 20% Ur

P 16512/99968 = 0.1652 15% 10% 55% } Ur 20% } 5% BaB 95% Ur

U 13882/99968 = 0.1389

S 9254/99968 = 0.0926 100% Wo

AREA	%	CN	PRODUCT
F	.6034 × .60	98	35.479
	.6034 × .20	95	11.465
	.6034 × .20	93	11.223
P	.1652 × .15	98	2.428
	.1652 × .10	80	1.322
	.1652 × .55	89	8.087
	.1652 × .2 × .95	95	2.982
	.1652 × .2 × .05	68	0.1123

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(2) cont

Area	%	CN	Product
U	.1389 × .10	55	0.7640
-	.1389 × .90	25	3.125
S	.0926 × .70	83	5.380
	.0926 × .30	80	2.222

$CN_{12} = 84.589$

(13) U → 15% MK, 45% BmB, 40% MaC

AREA	%	CN	PRODUCT
U	.15	77	11.550
	.45	25	11.250
	.40	55	22.00

$CN_{13} = 44.80$

(14)

U	45184/101760 = 0.444	10% MK, 10% MaC, 80% BaB
F	18496/101760 = 0.1818	100% BaB
D	29856/101760 = 0.2934	15% MK, 60% BaB, 25% MaC
P	8224/101760 = 0.0808	100% BaB

AREA	%	CN	Product
U	.444 × .10	77	3.419
	.444 × .10	55	2.442
	.444 × .80	25	8.880
F	.1818 × .40	81	5.890
	.1818 × .60	68	7.417
D	.2934 × .15	89	3.917
	.2934 × .25	79	5.795
	.2934 × .60	68	11.971
P	.0808	45	3.636

$CN_{14} = 53.367$

(15)

D $^{4032}/_{42560} = .0947$ 10% MaC 90% MaC

U $^{34592}/_{42560} = 0.8128$ 10% MaC, 5% MK, 35% KmB, 50% BaB

F $^{3936}/_{42560} = 0.0925$ 100% BaB

AREA	%	CN	Product
D	.0947 x .10	91	0.8618
	.0947 x .90	81	6.904
U	.8128 x .10	55	4.470
	.8128 x .05	77	3.129
	.8128 x .35	25	7.112
	.8128 x .50	25	10.160
F	.0925	98	9.063

$CN_{15} = 41.699$

(16)

P $^{800}/_{30112} = 0.0266$ 20% Ur 80% BaB

U $^{29312}/_{30112} = 0.9734$ 30% MaC, 70% BaB

AREA	%	CN	Product
P	.0266 x .20 =	95	0.5054
	.0266 x .80	68	1.447
U	.9734 x .30	55	16.061
	.9734 x .70	25	17.035

$CN_{16} = 35.048$

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(17) U 20% MaC 80% BmB

AREA	%	CN	Product
U	.20	55	11.00
	.80	25	20.00

$CN_{17} = 31.00$

(18) U 43% BmB, 22% To, 12% Om, 21% Mu, 2% Pt

AREA	%	CN	Product
U	.43	25	10.75
	.22	70	15.40
	.12	55	6.60
	.21	77	16.17
	.02	25	0.50

$CN_{18} = 49.42$

(19) U = .9397 40% BmB, 15% To, 25% Om, 20% Mu

D = .0603 60% BmB, 30% Om, 10% Mu

AREA	%	CN	Product
U	.9397 x .40	25	9.397
	.9397 x .15	70	9.867
	.9397 x .25	55	12.921
	.9397 x .20	77	14.471
D	.0603 x .60	72	4.342
	.0603 x .30		
	.0603 x .10		

$CN_{19} = 50.998$

WEIGHTED CURVE NUMBERS
UNDER PROPOSED CONDITIONS

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WATERSHED

1 PRESENT CN = 49.688

YR '86 → 0.

YR '87 → P627

YR '88 → P626

ALL REMAINING YRS → 0

FY '87 P627 COVERS 15.43% OF WHOLE ~~new~~ AREA → 10% IS U, 90% IS P

1 U WEIGHTED CN = 30.60

(77 × .05) + (55 × .1) + (25 × .85)

3.85 + 5.5 + 21.25

1P CN = (85 × .05) + (70 × .10) + (54 × .85)

4.25 + 7 + 45.9 = 57.15

U = 23.50% of WATERSHED

P = 66.43% OF WATERSHED

for U 34129.6 new Area / 519700 old area = 6.57%

∴ 6.57% × 98 = 6.44

93.43% × 30.60 = 28.59

new CN_U = 35.03

for P 307166 new area / 1468800 old area = 20.91

∴ 20.91% × 98 = 20.49

79.09% × 57.15 = 57.94

CN_P = 78.43

for 87 $CN_1 = (.235)(35.03) + (.6643)(78.43) + 4.532$

$CN_1 = 64.86$

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for 88 P626 5% goes to IP = 4470 sq ft

CN_p in '87 = 78.43

AREA new 4470 / 1468800 total area = 0.304%

CN_p = .304% × 98 = 0.2983

99.696% × 78.43 = 78.19

CN_p = 78.49

CN_1 for 88 = (78.49)(.6643) + 8.23 + 4.532

CN_1 = 64.91

WATERSHED 2 REMAINS THE SAME

WATERSHED 3

FY '86 P840

FY '89 P837

CN_p = 52.56

FY '86 P840 → 3U

WEIGHTED CN_u = 2.5 + 7.7 + 11.0 + 15 = 36.20

new area 2100 / 21440×10² = 0.0979%

.0979% × 98 = 0.0959

99.902 × 36.2 = 36.16

CN_u = 36.26

CN_3 = (36.26)(.6788) + (52.56)(.3212)

= 36 CN_3 = 41.50

FY 89 P837 → 3P = 6000 sq ft 6000 / 10144×10² = 0.592

0.592% × 98 = 0.5797

99.408 × 52.56 = 52.2488 } CN_p = 52.829

for '89 CN_3 = (36.26)(.6788) + (52.829)(.3212) = 41.58

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WATERSHED 4

P259

FY '87 P027 → 4U

FY '88 P065 → 4U

FY '91 P227 → 4P

P844 < 3/4 U, 1/4 P

$CN_u = 37.3$ $CN_p = 68.6$

FY '87 P027 = 16120 ft² } 34445 ft² / 4595200 = 0.750%
P259 = 18325 ft² }

CN_u = 0.750% × 98 = 0.7346 > 37.755
99.25% × 37.3 = 37.02

'87 $CN_4 = (68.6)(0.3999) + (37.76)(.6001)$
$= 50.09$

FY '88 => P065 = 21000 ft² / 4595200 = 0.457%

CN_u = 98 × .457% = 0.4479 > 38.035
99.543% × 37.76 = 37.587

'88 $CN_4 = (38.035)(.6001) + (68.6)(.3999) = 50.26$

FY '91 P { P 227 = 12527 ft² } 15710.75 / 3062400 = 0.513%
{ ¼ P844 = 3183.75 ft² }

u – ¾ P844 = 955125 / 4595200 = 0.208%

CN_p = .513% × 98 = .5027 > 68.751
99.487% × 68.6 = 68.248

CN_u = 0.208% × 98 = .2038 > 38.160
99.792% × 38.035 = 37.956

'91 $CN_4 = (38.160)(.6001) + (.3999)(68.751)$

$CN_4 = 50.39$

WATERSHED 5

FY 86 P 631 = 95% SU, 5% SP

P806 - 5U

P527 - 5P

FY 88 P 626 - 95% SP

FY 90 P 843 70% SF, 30% SU

P 445 5F

FY 91 P 567 5F

FY 92 P 859 5F

P 511 30% SF

P 533 20% SF

FY '86 CN_F = 98 22.903 CN_P = 61.1 CN_u = 54

u → P 631 179062 ft² × .95 = } 247010.9 247010.9 / 3388800

P 806 76902 ft² = }

new u = 7.289%

P P 631 .05 × 179062 ft² > 38728.1 / 787200

P 527 29775 ft²

new P = 4.9197%

new u = 7.289% × 98 = 7.1432 > 57.949

54.8 × 92.711 = 50.806

new P = 4.9197% × 98 = 4.8213 > 62.92

61.1 × 95.08% = 58.094

'86 $CN_5 = (22.903) + (62.92)(.145) + (57.95)(.6218)$

$CN_5 = 68.06$

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FY 88 P 626 89408 × .95 = 84937.6 ft² / 787200

new P = 10.79%

new CN_p = 10.79% × 98 = 10.574

89.21% × 62.92 = 56.131 > 66.705

CN_S = 22.903 + (66.705)(.145) + (57.95)(.6218)

'88 CN_S = 68.61

FY '90

F { P843 .7 × 66080 / P445 23621 ft² } > 69877 / 5449600 = 1.282

u P843 .3 × 66080 = 19824 / 33888 = 0.58

CN_F = 1.282% × 98 = 1.256

22.903 × 98.712 = 22.609 > 23.865

CN_u = .585% × 98 = .5733

57.95 × 99.415% = 57.611 > 58.18

'90 CN_S = 23.865 + .6218 (58.18) + .145 (66.705)

CN_S = 69.71

FY '91 P567 24360 / 5449600 = 0.447%

new CN_F = .447% × 98 + 23.865 = 24.303

'91 new CN_S = 24.303 + (.6218)(58.18) + .145 (66.705

CN_S = 70.15

FY '92 P 859 43560 ft²

P 511 .3 × 61400 ft²

P533 .2 × 43560 ft² > 170692 ft² / 5449600

= 1.297

CN_F = 1.297 × 98 + 24.303 = 25.574

'92 CN_S = 25.574 + .6218 (58.18) + .145 (66.705)

CN_S = 71.42

WATERSHED 6

FY '89 P 229 – 6S

FY 90 P 773 6P

P 794 6P

FY '91 P510 – 10% 6F
90% 6S

FY 92 P 533 30% 6F

P511 70% 6F

$CN_u = 28.0$ $CN_S = 46.05$ $CN_p = 39$ $CN_F = 98$

Fy '89 P.229 44524 ft² / 192300 = 23.153

CN_S = 23.153% × 98 = 22.69

76.847% × 46.05 = 35.388 } 58.08

'89 $CN_6 = (58.08)(.0405) + 33.349 + 9.933 + (28.0)(.364$

$CN_6 = 55.84$

FY '90 P 773 = 40104 ft²

P 794 = 42000 ft² } 82104 ft² / 1209600 = 6.79

CN_P = 6.79% × 98 = 6.652 } 43.00

93.21 × 39 = 36.35

'90 CN_6 = 33.349 + 10.206 + (58.08)(.0405) + (43.00)(.254

$CN_6 = 56.91$

FY '91 P 510 85438 × .9 = 76894.2 / 1616000 = 4.76

85438 × .1 = 8543.8 / 192300 = 4.44

CN_F = 4.76% × 98 + 33.349 = 38.01

CN_S = 4.44 × 98 = 4.354

95.56 × 58.08 = 55.50 } 59.86

'91 $CN_6 = (59.86)(.0405) + 38.01 + (10.206) + (43.00)(.25$

$CN_6 = 61.59$

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FY 92 P533 .8 × 43560 ft² > 77828 ft² = 4.82

P511 .7 × 61400 ft² > 1616000 ft²

$CN_F = 4.82\% \times 98 + 38.01 = 42.73$

'92 $CN_6 = 42.73 + 10.206 + (43.00)(.2547) + (59.86)(.0405)$

$CN_6 = 66.31$

WATERSHED 7 FY '92 P121 257.7D

$CN_D = 74.35$ P121 $75120 ft^2 \times .25 = 18780 ft^2 / 243200 = 7.72\%$

$CN_D = 7.72\% \times 98 = 7.57$

$= 74.35 \times 92.28\% = 68.61 > 76.18$

'92 $CN_7 = (76.18)(.1693) + 8.947 + 43.34 + 9.06$

$CN_7 = 74.25$

WATERSHEDS 8, 9, 10 R.T.S

WATERSHED 11 FY 88 P 678 → 80% 11F

$CN_F = 59.144$

P 678 $76210 ft^2 \times .8 = 60968 / 4310400 = 1.4$

$CN_F = 1.414\% \times 98 + 59.144 = 60.53$

$CN_{11} = 60.53 + 6.332 + .9210 + 6.861$

'88 $CN_{11} = 74.64$

WATERSHED 12

FY 88 P678 20% 12u

FY 89 P853 12 < 50% P 50% F

FY 91 P786 12 < 90% S 10% F

$CN_F = 96.40$ $CN_P = 90.38$

$CN_u = 28$ $CN_S = 82.1$

FY '88 P678 76210 ft² × .2 = 15242 / 1388200 = 1.

CN_u = 1.098% × 98 = 1.076

= 98.902% × 28 = 27.693 > 28.77

'88 CN_{12} = (28.77).1389 + (96.40).6034 + (90.38).16

+ 82.1 - (0.0926) = 84.70

FY '89 P853 125664 ft² × .5 = 62832

P = 62832 / 1651200 = 3.81% F = 62832 / 6032000 = 1.0

CN_P = 3.81% × 98 = 3.73

90.38 × 96.19% = 86.94 > 90.67

CN_F = 1.042 × 98 = 1.021

98.958 × 96.40 = 95.396 > 96.42

89 CN_{12} = (90.67).1652 + (96.42)(.6034) + 28.77 (.1389)

+ 82.1 (.0926) = 84.76

FY 91 P 786 ≤ 36096 ft² × .9 = 32486.4 / 925400 = 3.

F 36096 × .1 = 3609.6 / 4310400 = 0.084

CN_S = 3.51% × 98 = 3.44

82.1 × 96.49% = 79.22 > 82.66

CN_F = 0.084% × 98 = .0823

96.42 × 99.916% = 96.339 > 96.4

'91 CN_{12} = (82.66) .0926 + (96.42)(.6034) + 28.77 (.1389)

+ 90.67 (.1652) = 84.81

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WATERSHED 13 - RTS

WATERSHED 14

CN_D = 73.9

CN_F = 73.2

CN_u = 33.2

CN_P = 45 - 3.636

FY '86	P517	$< 14^{1/4\,D}_{3/4\,u}$
FY '87	P257	3/4 14D
FY '89	P804	37.5% 14D
	P564	14u
FY '90	P805	10% 14D
	P266	14D
	P542	14F
FY '92	P552	14U
	P121	3/4 14D
	P548	14F

FY '86 P517 23460 ft² × .25 = 5865 / 2985600 = .1
× .75 = 17595 / 4518400 = 0.38

CN_D = .196% × 98 = .193
99.804% × 73.9 = 73.76 > 73.95

CN_u = .389% × 98 = .3812
99.611% × 33.2 = 33.071 > 33.45

B6 CN_{14} = (73.95) .2934 + (33.45) .444 + 3.636 +
(73.2)(.1818) = 53.49

FY '87 P257 60540 × .75 = 45405 ft² / 2985600 = 1.52

CN_D = 1.521% × 98 = 1.49
73.95 × 98.479% = 72.83 > 74.32

'87 CN_{14} = (74.32) .2934 + (33.45) .444 + 3.636 +
73.2 (.1818) = 53.60

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FY '89 D P804 210300 ft² x .375 = 78862.5 / 298560

u P564 6100 ft² / 4518400 = 0.1357%

CN_D = 2.647% x 98 = 2.587 > 74.95

74.32 x 97.367% = 72.36

CN_u = .1357% x 98 = .1323 > 33.53

99.865 x 33.45 = 33.40

'89 CN_{14} = (33.53) .444 + (74.95) .2934 + 3.636 (73.2) .1818

= 53.82

FY '90 D P805 110,000 ft² x .1 = 11,000 / 2985600 = 2.C

D P266 49818 ft² 49818 / 2985600 =

F P542 4760 ft² / 184960 ft² = .257%

CN_D = 2.04% x 98 = 1.999 > 75.42

97.96% x 74.95 = 73.421

CN_F = .257% x 98 = .252 > 73.26

73.2 x 99.743 = 73.012

'90 CN_{14} = (75.42) .2934 + 73.26 (.1818) + (33.53) .444 + 3.636

= 53.97

FY '92 P552 u 104000 ft² / 4518400 = 2.30%

P121 D 75120 ft² x .75 / 2985600 = 1.887%

P548 F 43560 ft² / 184960 = 2.355%

CN_u = 2.30% x 98 = 2.254 > 35.013

97.7% x 33.53 = 32.759

CN_D = 1.887% x 98 = 1.849 > 75.85

75.42 x 98.113% = 73.997

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CN_F = 2.355% × 98 = 2.308 > 73.84

73.26 × 97.6459% = 71.535

'92 CN_{14} = (35.01).444 + (75.85).2934 + (73.84).1818 + 3.636 = 54.86

WATERSHED 15

FY 87	P257	$\frac{1}{4}$ 15 < 95% D, 5% u
FY 88	P803	15U
	P256	15U
FY89	P804	$\frac{1}{2}$ 15 < ½ D, ½ u
	P679	15U
FY 90	P541	15U
FY 92	550	15U
	553	15U
	512	¼ 15U
	513	15U

FY 87 P 257 60540 ft² × .25 = 15135 ft²

CN_D = 82 D 15135 × .95 = 14378.25 / 403200 = 3.57%

CN_u = 30.6 u = 15135 × .05 = 756.75 / 3459200 = 0.022

CN_F = 98 → 9.063

CN_D = 3.57% × 98 = 3.499

82 × 96.43% = 79.073 > 82.57

CN_u = 0.022% × 98 = 0.0216

30.6 × 99.978% = 30.593 > 30.61

'87 CN_{15} = (82.57).0947 + (30.61).8128 + 9.063 = 41.76

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FY '88 P803 $48000 ft^2 / 3459200 > = 1.79\%$

P256 $13760 ft^2 / 3459200$

$CN_u = 1.79\% \times 98 = 1.75 > 31.81$

$98.21\% \times 30.61 = 30.06$

'88 $CN_{15} = (31.81).8128 + (82.57)(.0947) + 9.063$

$CN_{15} = 42.74$

FY '89 P 804 $210,300 \times .5 = 105150 ft^2$

D $105150 \times \frac{1}{2} = 52575 / 403200 = 13.04$

$u = 105150 \times 1/2 = 52575 / 3459200 > 2.096\%$

P 679 $19912 ft^2 / 3459200$

$CN_D = 13.04\% \times 98 = 12.78 > 84.58$

$82.57 \times 86.96\% = 71.80$

$CN_u = 2.096\% \times 98 = 2.054 > 33.197$

$31.81 \times 97.904\% = 31,143$

'89 $CN_{15} = (33.197).8128 + (84.58).0947 + 9.063$

$= 44.06$

FY '90 P541 $u \rightarrow 3300 ft^2 / 3459200 = 0.095\%$

$CN_u = .095\% \times 98 = 0.0935 > 33.26$

$33.197 \times 99.905\% = 33.166$

'90 $CN_{15} = (33.26)(.8128) + (84.58).0947 + 9.063$

$= 44.11$

FY '92 $u \rightarrow$ P550 $= 38800 ft^2 / 3459200$

P553 $= 104000 ft^2 / 3459200$

P512 $= \frac{1}{4} \times 104000 ft^2 / 3459200$ } 7.89%

P513 $= 104000 ft^2 / 3459200$

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CN_u = 7.89% × 98 = 7.729 > 38.365

33.26 × 92.11% = 30.636

'92 CN_{15} = (38.365) .8128 + (84.58) .0947 + 9.063

CN_{15} = 48.26

WATERSHED 16 FY '92 P 551 16u

P 512 $\frac{3}{4}$ 16u

CN_P = 73.4 CN_u = 34.0

FY '92 u → P 551 53160 ft²/2931200 > 4.475%

P 512 $\frac{3}{4}$ × 104000 ft²/2931200

CN_u = 4.475% × 98 = 4.385 > 36.86

34.0 × 95.525% = 32.479

'92 CN_{16} = (36.86) .9734 + (73.4) .0266

= 37.84

Appendix B

COMPUTER PRINTOUT FROM TR-20 HYDROGEOLOGY ANALYSES FOR FY85 THROUGH FY92

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FISCAL YEAR 85

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

JOB TR-20                          FULLPRINT PASS=001  SUMMARY                    10
TITLE 002 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM          20
TITLE     ALT  85                                                                 30
 3 STRUCT      10                                                                 40
 8                    7.00        0.00        4.33                              50
 8                    7.4         2.5         5.01                              60
 8                    7.6         5.0         5.36                              70
 8                    7.8         10.0        5.70                              80
 8                    8.2         22.0        6.38                              90
 8                    8.6         52.0        7.07                             100
 8                    9.0         62.0        7.75                             110
 8                    9.5         96.0        8.61                             120
 8                    10.0        126.0       9.47                             130
 8                    11.0        198.0       11.18                            140
 8                    12.0        280.0       12.89                            150
 8                    13.00       360.0       14.79                            160
 8                    14.00       440.0       16.68                            170
 8                    15.00       500.0       18.58                            180
 8                    15.1        600.00      18.60                            190
 9 ENDTBL                                                                       200
 3 STRUCT      20                                                               210
 8                    4.5         0.00        6.80                             220
 8                    4.9         1.5         7.88                             230
 8                    5.1         3.7         8.42                             240
 8                    5.5         11.0        9.51                             250
 8                    5.7         15.0        10.13                            260
 8                    6.1         25.0        11.13                            270
 8                    6.5         40.0        12.21                            280
 8                    7.1         60.0        13.84                            290
 8                    7.9         78.0        16.01                            300
 8                    8.5         79.0        17.63                            310
 8                    9.5         100.0       20.34                            320
 8                    10.5        126.0       23.06                            330
 8                    11.5        150.0       25.76                            340
 8                    11.6        300.0       26.04                            350
 9 ENDTBL                                                                       360
 3 STRUCT      30                                                               370
 8                    21.0        0.00        0.10                             380
 8                    21.4        0.6         0.61                             390
 8                    21.6        1.5         0.86                             400
 8                    21.8        2.5         1.12                             410
 8                    22.2        5.2         1.62                             420
 8                    22.6        8.2         2.13                             430
 8                    23.0        11.0        2.64                             440
 8                    23.5        20.0        3.27                             450
 8                    24.0        27.0        3.91                             460
```

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

```
8                    25.0       39.0       5.18                    470
8                    26.0       49.0       6.45                    480
8                    27.0       57.0       7.72                    490
8                    27.1       200.00     7.74                    500
9 ENDTBL                                                           510
3 STRUCT      40                                                   520
8                    9.0        0.0        0.38                    530
8                    9.4        2.2        0.47                    540
8                    9.6        5.0        0.52                    550
8                    10.0       14.0       0.62                    560
8                    10.2       21.0       0.67                    570
8                    10.6       36.0       0.77                    580
8                    11.0       55.0       0.86                    590
8                    11.6       82.0       1.01                    600
8                    12.4       120.0      1.21                    610
8                    13.0       121.0      1.35                    620
8                    14.0       122.0      1.60                    630
8                    15.0       126.0      1.84                    640
8                    16.0       150.00     2.08                    650
8                    16.1       300.0      2.11                    660
9 ENDTBL                                                           670
3 STRUCT      50                                                   680
8                    2.4        0.00       22.00                   690
8                    2.8        2.0        26.86                   700
8                    3.0        7.0        29.29                   710
8                    3.4        16.0       34.16                   720
8                    3.6        24.0       36.59                   730
8                    4.0        40.0       41.46                   740
8                    4.4        60.0       46.32                   750
8                    5.0        90.0       53.62                   760
8                    5.8        120.0      63.35                   770
8                    6.4        121.0      70.65                   780
8                    7.4        210.0      82.81                   790
8                    8.4        250.00     94.98                   800
8                    10.4       334.0      119.31                  810
8                    12.4       400.0      143.63                  820
8                    12.5       800.0      143.70                  830
9 ENDTBL                                                           840
3 STRUCT      60                                                   850
8                    2.0        0.0        22.20                   860
8                    2.4        3.0        27.41                   870
8                    2.6        10.5       30.02                   880
8                    3.0        22.5       35.24                   890
8                    3.2        36.0       37.85                   900
8                    3.6        60.0       43.06                   910
8                    4.0        90.0       48.28                   920
```


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

8                    4.6        135.0      56.11                        930
8                    5.4        180.0      66.55                        940
8                    6.0        181.0      74.38                        950
8                    7.0        315.0      87.42                        960
8                    8.0        375.0      100.47                       970
8                    8.1        700.0      100.50                       980
9 ENDTBL                                                                990
6 RUNOFF 1    10     6 0.84     51.        7.50       1                1000
6 RESVOR 2    10 6   7 7.0                            1                1010
6 REACH  3 010   7   5 1750.    1.2        1.10       1                1020
6 RUNOFF 1 010       6 0.20     42.        0.19       1                1030
6 ADDHYD 4 010   5 6 7                                1 1              1040
6 SAVMOV 5 010   7   6                                                 1050
6 RESVOR 2    20 6   7 4.5                            1                1060
6 REACH  3 020   7   5 2900.    0.28       1.94       1                1070
6 RUNOFF 1 020       6 0.28     53.        1.02       1                1080
6 ADDHYD 4 020   5 6 7                                1 1              1090
6 SAVMOV 5 020   7   1                                                 1100
6 RUNOFF 1    30     6 0.37     49.        3.90       1                1110
6 RESVOR 2    30 6   7 21.0                           1                1120
6 REACH  3 040   7   5 1300.    0.88       1.10       1                1130
6 RUNOFF 1 040       6 0.06     40.        1.00       1                1140
6 ADDHYD 4 040   5 6 7                                1                1150
6 SAVMOV 5 040   7   6                                                 1160
6 RESVOR 2    40 6   7 9.0                            1                1170
6 REACH  3 050   7   5 1700.    1.6        1.45       1                1180
6 RUNOFF 1 049       6 0.11     40.        1.67       1                1190
6 ADDHYD 4 050   5 6 7                                1                1200
6 SAVMOV 5 050   7   5                                                 1210
6 RUNOFF 1 050       6 0.36     85.        0.42       1                1220
6 ADDHYD 4 050   5 6 7                                1                1230
6 REACH  3 060   7   5 1400.    0.44       1.94       1                1240
6 RUNOFF 1 060       6 0.05     45.        0.90       1                1250
6 ADDHYD 4 060   5 6 7                                1 1              1260
6 SAVMOV 5 070   7   5                                                 1270
6 SAVMOV 5 070   1   6                                                 1280
6 ADDHYD 4 070   5 6 7                                1 1              1290
6 REACH  3 080   7   5 700.     0.30       1.94       1                1300
6 RUNOFF 1 080       6 0.02     64.        0.12       1                1310
6 ADDHYD 4 080   5 6 7                                1                1320
6 SAVMOV 5 100   7   5                                                 1330
6 RUNOFF 1 090       6 0.24     73.        0.62       1                1340
6 ADDHYD 4 100   5 6 7                                1                1350
6 REACH  3 110   7   5 500.     0.30       1.94       1                1360
6 SAVMOV 5 120   5   7                                                 1370
6 REACH  3 120   7   5 500.     0.30       1.94       1                1380
```

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

 6 RUNOFF 1 120       6 0.19        56.        0.74        1                1390
 6 ADDHYD 4 120   5 6 7                                    1 1              1400
 6 SAVMOV 5    50 7   6                                                      1410
 6 RESVOR 2    50 6   7 2.4                                1 1 1            1420
 6 REACH  3 130   7   5 1000.       0.30       1.94        1                1430
 6 RUNOFF 1 130       6 0.05        74.        0.19        1                1440
 6 ADDHYD 4 130   5 6 7                                    1                1450
 6 SAVMOV 5 130   7   6                                                      1460
 6 RESVOR 2    60 6   7 2.0                                1 1 1            1470
 6 REACH  3 140   7   5 2500.       0.21       1.48        1                1480
 6 RUNOFF 1 140       6 0.20        66.        1.15        1                1490
 6 ADDHYD 4 140   5 6 7                                    1                1500
 6 SAVMOV 5 150   7   5                                                      1510
 6 RUNOFF 1 149       6 0.08        50.        0.42        1                1520
 6 ADDHYD 4 150   5 6 7                                                      1530
 6 REACH  3 150   7   5 300.        0.21       1.48        1                1540
 6 RUNOFF 1 150       6 0.01        40.        0.15        1                1550
 6 ADDHYD 4 150   5 6 7                                    1                1560
 6 SAVMOV 5 180   7   5                                                      1570
 6 RUNOFF 1 180       6 0.28        50.        0.61        1                1580
 6 ADDHYD 4 180   5 6 7                                    1                1590
 6 REACH  3 180   7   5 1700.0      0.21       1.48        1                1600
 6 RUNOFF 1 180       6 0.11        41.        0.48        1                1610
 6 ADDHYD 4 180   5 6 7                                    1 1   1   1      1620
   ENDATA                                                                    1630
 7 LIST                                                                      1640
 7 BASFLO 5             3.0                                                  1650
 7 INCREM 6             0.1                                                  1660
 7 COMPUT 7    10 180   0.0         7.0        1.0         2 2  85  01      1670
   ENDCMP 1                                                                  1680
   ENDJOB 2                                                                  1690
0*********************************END OF 80-80 LIST*********************************
```


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EXECUTIVE CONTROL OPERATION LIST RECORD ID 1640

LISTING OF CURRENT DATA

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	10			
8		7.00	.00	4.33
8		7.40	2.50	5.01
8		7.60	5.00	5.36
8		7.80	10.00	5.70
8		8.20	22.00	6.38
8		8.60	52.00	7.07
8		9.00	62.00	7.75
8		9.50	96.00	8.61
8		10.00	126.00	9.47
8		11.00	198.00	11.18
8		12.00	280.00	12.89
8		13.00	360.00	14.79
8		14.00	440.00	16.68
8		15.00	500.00	18.58
8		15.10	600.00	18.60
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	20			
8		4.50	.00	6.80
8		4.90	1.50	7.88
8		5.10	3.70	8.42
8		5.50	11.00	9.51
8		5.70	15.00	10.13
8		6.10	25.00	11.13
8		6.50	40.00	12.21
8		7.10	60.00	13.84
8		7.90	78.00	16.01
8		8.50	79.00	17.63
8		9.50	100.00	20.34
8		10.50	126.00	23.06
8		11.50	150.00	25.76
8		11.60	300.00	26.04
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	30			
8		21.00	.00	.10
8		21.40	.60	.61
8		21.60	1.50	.86
8		21.80	2.50	1.12
8		22.20	5.20	1.62
8		22.60	8.20	2.13
8		23.00	11.00	2.64
8		23.50	20.00	3.27
8		24.00	27.00	3.91
8		25.00	39.00	5.18
8		26.00	49.00	6.45
8		27.00	57.00	7.72
8		27.10	200.00	7.74
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	40			
8		9.00	.00	.38
8		9.40	2.20	.47
8		9.60	5.00	.52
8		10.00	14.00	.62
8		10.20	21.00	.67
8		10.60	36.00	.77
8		11.00	55.00	.86
8		11.60	82.00	1.01
8		12.40	120.00	1.21
8		13.00	121.00	1.35
8		14.00	122.00	1.60
8		15.00	126.00	1.84
8		16.00	150.00	2.08
8		16.10	300.00	2.11
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	50			
8		2.40	.00	22.00
8		2.80	2.00	26.86
8		3.00	7.00	29.29
8		3.40	16.00	34.16
8		3.60	24.00	36.59
8		4.00	40.00	41.46
8		4.40	60.00	46.32
8		5.00	90.00	53.62

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8                    5.80      120.00      63.35
8                    6.40      121.00      70.65
8                    7.40      210.00      82.81
8                    8.40      250.00      94.98
8                   10.40      334.00     119.31
8                   12.40      400.00     143.63
8                   12.50      800.00     143.70
9 ENDTBL

          STRUCT NO.     ELEVATION   DISCHARGE     STORAGE
3 STRUCT      60

8                    2.00         .00      22.20
8                    2.40        3.00      27.41
8                    2.60       10.50      30.02
8                    3.00       22.50      35.24
8                    3.20       36.00      37.85
8                    3.60       60.00      43.06
8                    4.00       90.00      48.28
8                    4.60      135.00      56.11
8                    5.40      180.00      66.55
8                    6.00      181.00      74.38
8                    7.00      315.00      87.42
8                    8.00      375.00     100.47
8                    8.10      700.00     100.50
9 ENDTBL

                TIME INCREMENT
4 DIMHYD              .0200

8              .0000     .0300     .1000     .1900     .3100
8              .4700     .6600     .8200     .9300     .9900
8             1.0000     .9900     .9300     .8600     .7800
8              .6800     .5600     .4600     .3900     .3300
8              .2800     .2410     .2070     .1740     .1470
8              .1260     .1070     .0910     .0770     .0660
8              .0550     .0470     .0400     .0340     .0290
8              .0250     .0210     .0180     .0150     .0130
8              .0110     .0090     .0080     .0070     .0060
8              .0050     .0040     .0030     .0020     .0010
8              .0000     .0000     .0000     .0000     .0000
9 ENDTBL

 COMPUTED PEAK RATE FACTOR =  484.00
```

TR20 XEQ 05-05-86 08:09 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM 20 JOB 1 PASS 1

REV PC 09/83(.2) ALT 85 30 PAGE 4

	TABLE NO.	TIME INCREMENT				
5	RAINFL 1		.5000			
8		.0000	.0080	.0170	.0260	.0350
8		.0450	.0550	.0650	.0760	.0870
8		.0990	.1120	.1260	.1400	.1560
8		.1740	.1940	.2190	.2540	.3030
8		.5150	.5830	.6240	.6550	.6820
8		.7060	.7280	.7480	.7660	.7830
8		.7990	.8150	.8300	.8440	.8570
8		.8700	.8820	.8930	.9050	.9160
8		.9260	.9360	.9460	.9560	.9650
8		.9740	.9830	.9920	1.0000	1.0000
9	ENDTBL					

	TABLE NO.	TIME INCREMENT				
5	RAINFL 2		.2500			
8		.0000	.0020	.0050	.0080	.0110
8		.0140	.0170	.0200	.0230	.0260
8		.0290	.0320	.0350	.0380	.0410
8		.0440	.0480	.0520	.0560	.0600
8		.0640	.0680	.0720	.0760	.0800
8		.0850	.0900	.0950	.1000	.1050
8		.1100	.1150	.1200	.1260	.1330
8		.1400	.1470	.1550	.1630	.1720
8		.1810	.1910	.2030	.2180	.2360
8		.2570	.2830	.3870	.6630	.7070
8		.7350	.7580	.7760	.7910	.8040
8		.8150	.8250	.8340	.8420	.8490
8		.8560	.8630	.8690	.8750	.8810
8		.8870	.8930	.8980	.9030	.9080
8		.9130	.9180	.9220	.9260	.9300
8		.9340	.9380	.9420	.9460	.9500
8		.9530	.9560	.9590	.9620	.9650
8		.9680	.9710	.9740	.9770	.9800
8		.9830	.9860	.9890	.9920	.9950
8		.9980	1.0000	1.0000	1.0000	1.0000
9	ENDTBL					

	TABLE NO.	TIME INCREMENT				
5	RAINFL 3		.5000			
8		.0000	.0100	.0220	.0360	.0510
8		.0670	.0830	.0990	.1160	.1350

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8              .1560     .1790     .2040     .2330     .2680
8              .3100     .4250     .4800     .5200     .5500
8              .5770     .6010     .6230     .6440     .6640
8              .6830     .7010     .7190     .7360     .7530
8              .7690     .7850     .8000     .8150     .8300
8              .8440     .8580     .8710     .8840     .8960
8              .9080     .9200     .9320     .9440     .9560
8              .9670     .9780     .9890    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 4                .5000

8              .0000     .0040     .0080     .0120     .0160
8              .0200     .0250     .0300     .0350     .0400
8              .0450     .0500     .0550     .0600     .0650
8              .0700     .0750     .0810     .0870     .0930
8              .0990     .1050     .1110     .1180     .1250
8              .1320     .1400     .1480     .1560     .1650
8              .1740     .1840     .1950     .2070     .2200
8              .2360     .2550     .2770     .3030     .4090
8              .5150     .5490     .5830     .6050     .6240
8              .6400     .6550     .6690     .6820     .6940
8              .7050     .7160     .7270     .7380     .7480
8              .7580     .7670     .7760     .7840     .7920
8              .8000     .8080     .8160     .8230     .8300
8              .8370     .8440     .8510     .8580     .8640
8              .8700     .8760     .8820     .8880     .8940
8              .9000     .9060     .9110     .9160     .9210
8              .9260     .9310     .9360     .9410     .9460
8              .9510     .9560     .9610     .9660     .9710
8              .9760     .9800     .9840     .9880     .9920
8              .9960    1.0000    1.0000    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 5                .5000

8              .0000     .0020     .0050     .0080     .0110
8              .0140     .0170     .0200     .0230     .0260
8              .0290     .0320     .0350     .0380     .0410
8              .0440     .0470     .0510     .0550     .0590
8              .0630     .0670     .0710     .0750     .0790
8              .0840     .0890     .0940     .0990     .1040
8              .1090     .1140     .1200     .1260     .1330
8              .1400     .1470     .1540     .1620     .1710
8              .1810     .1920     .2040     .2170     .2330
```

```
8              .2520      .2770      .3180      .6380      .6980
8              .7290      .7520      .7700      .7850      .7980
8              .8090      .8190      .8290      .8380      .8460
8              .8540      .8610      .8680      .8740      .8800
8              .8860      .8920      .8970      .9020      .9070
8              .9120      .9170      .9210      .9250      .9290
8              .9330      .9370      .9410      .9450      .9490
8              .9530      .9570      .9600      .9630      .9660
8              .9690      .9720      .9750      .9780      .9810
8              .9840      .9870      .9900      .9930      .9960
8              .9980     1.0000     1.0000     1.0000     1.0000
9 ENDTBL

    TABLE NO.      TIME INCREMENT
5 RAINFL 6                .0200

8              .0000      .0080      .0162      .0246      .0333
8              .0425      .0524      .0630      .0743      .0863
8              .0990      .1124      .1265      .1420      .1595
8              .1800      .2050      .2550      .3450      .4370
8              .5300      .6030      .6330      .6600      .6840
8              .7050      .7240      .7420      .7590      .7750
8              .7900      .8043      .8180      .8312      .8439
8              .8561      .8678      .8790      .8898      .9002
8              .9103      .9201      .9297      .9391      .9483
8              .9573      .9661      .9747      .9832      .9916
8             1.0000     1.0000     1.0000     1.0000     1.0000
9 ENDTBL
```


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0 STANDARD CONTROL INSTRUCTIONS

6	RUNOFF	1	10		6	.8400	51.0000	7.50001	0	0	1	0	1
6	RESVOR	2	10	6	7	7.0000		1	0	0	1	0	1
6	REACH	3	10	7	5	1750.0000	1.2000	1.10001	0	0	1	0	1
6	RUNOFF	1	10		6	.2000	42.0000	.19001	0	0	1	0	1
6	ADDHYD	4	10	5	6	7		1	1	0	1	0	1
6	SAVMOV	5	10	7	6								
6	RESVOR	2	20	6	7	4.5000		1	0	0	1	0	1
6	REACH	3	20	7	5	2900.0000	.2800	1.94001	0	0	1	0	1
6	RUNOFF	1	20		6	.2800	53.0000	1.02001	0	0	1	0	1
6	ADDHYD	4	20	5	6	7		1	1	0	1	0	1
6	SAVMOV	5	20	7	1								
6	RUNOFF	1	30		6	.3700	49.0000	3.90001	0	0	1	0	1
6	RESVOR	2	30	6	7	21.0000		1	0	0	1	0	1
6	REACH	3	40	7	5	1300.0000	.8800	1.10001	0	0	1	0	1
6	RUNOFF	1	40		6	.0600	40.0000	1.00001	0	0	1	0	1
6	ADDHYD	4	40	5	6	7		1	0	0	1	0	1
6	SAVMOV	5	40	7	6								
6	RESVOR	2	40	6	7	9.0000		1	0	0	1	0	1
6	REACH	3	50	7	5	1700.0000	1.6000	1.45001	0	0	1	0	1
6	RUNOFF	1	49		6	.1100	40.0000	1.67001	0	0	1	0	1
6	ADDHYD	4	50	5	6	7		1	0	0	1	0	1
6	SAVMOV	5	50	7	5								
6	RUNOFF	1	50		6	.3600	85.0000	.42001	0	0	1	0	1
6	ADDHYD	4	50	5	6	7		1	0	0	1	0	1
6	REACH	3	60	7	5	1400.0000	.4400	1.94001	0	0	1	0	1
6	RUNOFF	1	60		6	.0500	45.0000	.90001	0	0	1	0	1
6	ADDHYD	4	60	5	6	7		1	1	0	1	0	1
6	SAVMOV	5	70	7	5								
6	SAVMOV	5	70	1	6								
6	ADDHYD	4	70	5	6	7		1	1	0	1	0	1
6	REACH	3	80	7	5	700.0000	.3000	1.94001	0	0	1	0	1
6	RUNOFF	1	80		6	.0200	64.0000	.12001	0	0	1	0	1
6	ADDHYD	4	80	5	6	7		1	0	0	1	0	1
6	SAVMOV	5	100	7	5								
6	RUNOFF	1	90		6	.2400	73.0000	.62001	0	0	1	0	1
6	ADDHYD	4	100	5	6	7		1	0	0	1	0	1
6	REACH	3	110	7	5	500.0000	.3000	1.94001	0	0	1	0	1
6	SAVMOV	5	120	5	7								
6	REACH	3	120	7	5	500.0000	.3000	1.94001	0	0	1	0	1
6	RUNOFF	1	120		6	.1900	56.0000	.74001	0	0	1	0	1
6	ADDHYD	4	120	5	6	7		1	1	0	1	0	1
6	SAVMOV	5	50	7	6								
6	RESVOR	2	50	6	7	2.4000		1	1	1	1	0	1
6	REACH	3	130	7	5	1000.0000	.3000	1.94001	0	0	1	0	1
6	RUNOFF	1	130		6	.0500	74.0000	.19001	0	0	1	0	1

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TR20 XEQ 05-05-86  08:09      COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM     20          JOB  1   PASS   1

     REV PC 09/83(.2)         ALT  85                                                            30                  PAGE   8


6 ADDHYD 4 130   5 6 7                                        1 0 0 1 0 1
6 SAVMOV 5 130   7   6
6 RESVOR 2    60 6   7       2.0000                           1 1 1 1 0 1
6 REACH  3 140   7   5    2500.0000       .2100      1.48001 0 0 1 0 1
6 RUNOFF 1 140       6        .2000     66.0000      1.15001 0 0 1 0 1
6 ADDHYD 4 140   5 6 7                                        1 0 0 1 0 1
6 SAVMOV 5 150   7   5
6 RUNOFF 1 149       6        .0800     50.0000       .42001 0 0 1 0 1
6 ADDHYD 4 150   5 6 7                                        1 0 0 1 0 1
6 REACH  3 150   7   5     300.0000       .2100      1.48001 0 0 1 0 1
6 RUNOFF 1 150       6        .0100     40.0000       .15001 0 0 1 0 1
6 ADDHYD 4 150   5 6 7                                        1 0 0 1 0 1
6 SAVMOV 5 180   7   5
6 RUNOFF 1 180       6        .2800     50.0000       .61001 0 0 1 0 1
6 ADDHYD 4 180   5 6 7                                        1 0 0 1 0 1
6 REACH  3 180   7   5    1700.0000       .2100      1.48001 0 0 1 0 1
6 RUNOFF 1 180       6        .1100     41.0000       .48001 0 0 1 0 1
6 ADDHYD 4 180   5 6 7                                        1 1 0 1 0 1
  ENDATA


END OF LISTING
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TR20 XEQ 05-05-86  08:09       COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM      20          JOB  1   PASS   1
     REV PC 09/83(.2)          ALT  85                                                            30                PAGE   9


EXECUTIVE CONTROL OPERATION BASFLO                                                                          RECORD ID     1650

+                                    NEW BASEFLOW =   3.00 CFS


EXECUTIVE CONTROL OPERATION INCREM                                                                          RECORD ID     1660

+                                    MAIN TIME INCREMENT =   .10 HOURS


EXECUTIVE CONTROL OPERATION COMPUT                                                                          RECORD ID     1670

+                                    FROM STRUCTURE 10
+                                                  TO XSECTION 180
        STARTING TIME =   .00    RAIN DEPTH =  7.00    RAIN DURATION=  1.00    RAIN TABLE NO.= 2    ANT. MOIST. COND= 2
        ALTERNATE NO.=85         STORM NO.= 1    MAIN TIME INCREMENT =   .10 HOURS


OPERATION RUNOFF   STRUCTURE 10
          OUTPUT HYDROGRAPH=  6
          AREA=    .84 SQ MI   INPUT RUNOFF CURVE= 51.    TIME OF CONCENTRATION=  7.50 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .1000 HOURS

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             17.80                          96.56                        (RUNOFF)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.67 WATERSHED INCHES,    906.24 CFS-HRS,    74.89 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION RESVOR   STRUCTURE 10
          INPUT HYDROGRAPH= 6     OUTPUT HYDROGRAPH= 7
          SURFACE ELEVATION=    7.00

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             18.14                          96.09                         9.50

  RUNOFF VOLUME ABOVE BASEFLOW =  1.63 WATERSHED INCHES,    884.09 CFS-HRS,    73.06 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION REACH    CROSS SECTION  10
          INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5
          LENGTH =   1750.00 FEET      INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA,  X=  1.20,   M= 1.10
0         MODIFIED ATT-KIN ROUTING COEFFICIENT =  .34      PEAK TRAVEL TIME =    .40 HOURS
0    *** WARNING - REACH  10 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT      18.15 CFS,  18.88 % OF PEAK.

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             18.47                          98.84                        (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.62 WATERSHED INCHES,    878.37 CFS-HRS,    72.59 ACRE-FEET;   BASEFLOW =   3.00 CFS
```

```
OPERATION RUNOFF   CROSS SECTION  10
         OUTPUT HYDROGRAPH=  6
         AREA=    .20 SQ MI   INPUT RUNOFF CURVE= 42.    TIME OF CONCENTRATION=   .19 HOURS
         INTERNAL HYDROGRAPH TIME INCREMENT=  .0253 HOURS
```


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TR20 XEQ 05-05-86 08:09 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM 20 JOB 1 PASS 1

REV PC 09/83(.2) ALT 85 30 PAGE 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.08	121.81	(RUNOFF)
15.20	8.69	(RUNOFF)
16.46	7.85	(RUNOFF)
17.67	6.75	(RUNOFF)
19.66	5.63	(RUNOFF)
23.66	4.48	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.00 WATERSHED INCHES, 128.54 CFS-HRS, 10.62 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 10
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.08	124.81	(NULL)
18.48	104.33	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.04 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.92	32.22
12.00	DISCHG	103.79	122.67	68.37	48.48	36.93	31.73	29.33	27.26	26.59	24.26
13.00	DISCHG	23.05	22.09	20.81	20.53	19.65	19.34	18.92	18.32	18.54	18.63
14.00	DISCHG	19.37	20.36	21.44	23.10	24.57	26.43	28.32	30.58	34.13	38.16
15.00	DISCHG	42.29	46.34	50.23	53.88	56.65	58.95	61.10	63.08	64.97	66.81
16.00	DISCHG	68.65	71.17	74.19	77.35	80.46	83.41	85.78	87.66	89.73	91.75
17.00	DISCHG	93.63	95.35	96.91	98.34	99.64	100.81	101.85	102.75	103.42	103.37
18.00	DISCHG	103.47	103.75	104.01	104.19	104.30	104.32	104.27	104.13	103.93	103.65
19.00	DISCHG	103.31	102.89	102.39	101.82	101.18	100.46	99.66	98.79	97.73	95.99
20.00	DISCHG	94.45	93.18	91.97	90.75	89.51	88.27	87.03	85.81	84.61	83.43
21.00	DISCHG	82.27	81.14	80.03	78.94	77.87	76.82	75.80	74.79	73.81	72.84
22.00	DISCHG	71.90	71.02	70.32	69.71	69.16	68.63	68.11	67.58	67.04	66.49
23.00	DISCHG	65.93	65.36	64.77	64.17	63.56	62.94	62.32	61.69	60.95	59.41
24.00	DISCHG	57.89	55.77	53.21	51.69	50.62	49.72	48.91	48.18	47.50	46.85
25.00	DISCHG	46.24	45.66	45.10	44.55	44.02	43.50	42.98	42.48	41.98	41.49
26.00	DISCHG	41.00	40.51	40.03	39.55	39.07	38.60	38.12	37.63	37.15	36.66
27.00	DISCHG	36.16	35.66	35.15	34.64	34.13	33.61	33.09	32.57	32.04	31.51
28.00	DISCHG	30.97	30.44	29.90	29.36	28.82	28.28	27.74	27.21	26.67	26.13
29.00	DISCHG	25.68	25.30	24.94	24.59	24.24	23.89	23.52	23.14	22.75	22.35

RUNOFF VOLUME ABOVE BASEFLOW = 1.50 WATERSHED INCHES, 1006.91 CFS-HRS, 83.21 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 10
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 20
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 4.50

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TR20 XEQ 05-05-86  08:09      COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM      20          JOB  1   PASS   1

     REV PC 09/83(.2)         ALT  85                                                            30                  PAGE  11


          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             12.90                          24.55                         6.08
             20.10                          93.18                         9.18

  RUNOFF VOLUME ABOVE BASEFLOW =  1.45 WATERSHED INCHES,    970.12 CFS-HRS,    80.17 ACRE-FEET;   BASEFLOW =   3.00 CFS


 OPERATION REACH    CROSS SECTION  20
          INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5
          LENGTH =   2900.00 FEET      INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA,  X=   .28,   M= 1.94
0         MODIFIED ATT-KIN ROUTING COEFFICIENT =  .72      PEAK TRAVEL TIME =    .10 HOURS

     ***  WARNING  REACH  20 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
0    *** WARNING - REACH  20 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT      23.17 CFS,  25.69 % OF PEAK.

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             13.04                          24.51                        (NULL)
             20.25                          93.15                        (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.44 WATERSHED INCHES,    966.86 CFS-HRS,    79.90 ACRE-FEET;   BASEFLOW =   3.00 CFS


 OPERATION RUNOFF   CROSS SECTION  20
          OUTPUT HYDROGRAPH=  6
          AREA=    .28 SQ MI   INPUT RUNOFF CURVE= 53.    TIME OF CONCENTRATION=  1.02 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .0971 HOURS

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             12.61                         158.20                        (RUNOFF)
             23.72                           9.09                        (RUNOFF)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.94 WATERSHED INCHES,    349.97 CFS-HRS,    28.92 ACRE-FEET;   BASEFLOW =    .00 CFS


 OPERATION ADDHYD   CROSS SECTION  20
          INPUT HYDROGRAPHS= 5,6     OUTPUT HYDROGRAPH= 7

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             12.62                         181.14                        (NULL)
             20.06                         104.53                        (NULL)

TIME(HRS)        FIRST HYDROGRAPH POINT =   .00 HOURS      TIME INCREMENT =  .10 HOURS      DRAINAGE AREA =   1.32 SQ.MI.
  11.00    DISCHG       3.00      3.00      3.00      3.01      3.04      3.18      3.66      4.96      8.46     16.82
  12.00    DISCHG      32.71     58.78     93.52    129.45    157.98    175.05    181.01    178.06    168.44    154.55
  13.00    DISCHG     139.59    126.35    115.40    106.04     97.88     90.63     84.33     78.80     73.90     69.58
  14.00    DISCHG      65.79     62.51     59.66     57.22     55.16     53.43     52.00     50.86     49.97     49.33
  15.00    DISCHG      49.00     49.28     50.11     51.39     53.03     54.89     56.83     58.77     60.51     62.20
  16.00    DISCHG      63.90     65.63     67.41     69.31     71.35     73.52     75.77     77.59     79.19     80.69
  17.00    DISCHG      82.13     83.56     84.99     86.44     87.91     89.41     90.93     92.19     92.57     92.70
```

18.00	DISCH6	92.72	92.66	92.54	92.37	92.18	92.40	93.37	94.52	95.68	96.81
19.00	DISCH6	97.89	98.91	99.86	100.73	101.53	102.25	102.90	103.46	103.93	104.29
20.00	DISCH6	104.50	104.52	104.37	104.07	103.68	103.22	102.72	102.19	101.65	101.11
21.00	DISCH6	100.55	99.97	99.37	98.75	98.11	97.45	96.77	96.07	95.35	94.62
22.00	DISCH6	93.88	93.13	92.36	91.60	90.84	90.09	89.35	88.62	88.17	88.01
23.00	DISCH6	87.92	87.85	87.79	87.73	87.67	87.60	87.53	87.46	87.38	87.26
24.00	DISCH6	87.08	86.61	85.17	83.27	81.07	78.71	76.31	73.97	71.75	69.69
25.00	DISCH6	67.80	66.08	64.52	63.07	61.72	60.26	58.69	57.18	55.76	54.44
26.00	DISCH6	53.20	52.04	50.95	49.93	48.95	48.03	47.15	46.32	45.51	44.74
27.00	DISCH6	44.00	43.28	42.59	41.91	41.26	40.61	39.96	39.28	38.60	37.94
28.00	DISCH6	37.29	36.66	36.04	35.42	34.82	34.22	33.63	33.04	32.46	31.88
29.00	DISCH6	31.31	30.74	30.19	29.66	29.14	28.64	28.16	27.69	27.23	26.78

RUNOFF VOLUME ABOVE BASEFLOW = 1.55 WATERSHED INCHES, 1316.83 CFS-HRS, 108.82 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 1

OPERATION RUNOFF STRUCTURE 30
OUTPUT HYDROGRAPH= 6
AREA= .37 SQ MI INPUT RUNOFF CURVE= 49. TIME OF CONCENTRATION= 3.90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
14.95	60.58	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.57 WATERSHED INCHES, 375.61 CFS-HRS, 31.04 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 30
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 21.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.21	48.05	25.91

RUNOFF VOLUME ABOVE BASEFLOW = 1.51 WATERSHED INCHES, 360.28 CFS-HRS, 29.77 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1300.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .88, M= 1.10
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .32 PEAK TRAVEL TIME = .30 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.55	47.70	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.50 WATERSHED INCHES, 358.97 CFS-HRS, 29.67 ACRE-FEET; BASEFLOW = .00 CFS

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TR20 XEQ 05-05-86  08:09       COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM      20            JOB  1   PASS   1

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OPERATION RUNOFF   CROSS SECTION  40
          OUTPUT HYDROGRAPH=  6
          AREA=    .06 SQ MI   INPUT RUNOFF CURVE= 40.    TIME OF CONCENTRATION=  1.00 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .0952 HOURS

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             12.72                          10.21                      (RUNOFF)
             23.76                           1.21                      (RUNOFF)

  RUNOFF VOLUME ABOVE BASEFLOW =   .84 WATERSHED INCHES,     32.57 CFS-HRS,     2.69 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION ADDHYD   CROSS SECTION  40
          INPUT HYDROGRAPHS= 5,6     OUTPUT HYDROGRAPH= 7

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             12.73                          10.35                      (NULL)
             16.54                          49.80                      (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.41 WATERSHED INCHES,    391.54 CFS-HRS,    32.36 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION SAVMOV   CROSS SECTION  40
          INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 6


OPERATION RESVOR   STRUCTURE 40
          INPUT HYDROGRAPH= 6     OUTPUT HYDROGRAPH= 7
          SURFACE ELEVATION=    9.00

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             12.90                           9.83                       9.81
             16.60                          49.78                      10.89

  RUNOFF VOLUME ABOVE BASEFLOW =  1.41 WATERSHED INCHES,    389.94 CFS-HRS,    32.22 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION REACH    CROSS SECTION  50
          INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5
          LENGTH =   1700.00 FEET      INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA,  X=  1.60,   M= 1.45
0         MODIFIED ATT-KIN ROUTING COEFFICIENT =  .83      PEAK TRAVEL TIME =    .10 HOURS

    ### WARNING  REACH  50 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ###

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             13.02                           9.78                      (NULL)
             16.72                          49.77                      (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.40 WATERSHED INCHES,    389.36 CFS-HRS,    32.18 ACRE-FEET;   BASEFLOW =    .00 CFS
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OPERATION RUNOFF CROSS SECTION 49
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= 1.67 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1012 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)	
13.33	13.76	(RUNOFF)	
23.80	2.20	(RUNOFF)	
+	*		* FIRST POINT OF FLAT PEAK

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 59.78 CFS-HRS, 4.94 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 50
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.16	22.91	(NULL)
16.65	53.98	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.29 WATERSHED INCHES, 449.14 CFS-HRS, 37.12 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 50
OUTPUT HYDROGRAPH= 6
AREA= .36 SQ MI INPUT RUNOFF CURVE= 85. TIME OF CONCENTRATION= .42 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0560 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1078.73	(RUNOFF)
19.65	24.75	(RUNOFF)
23.65	18.64	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 5.25 WATERSHED INCHES, 1220.14 CFS-HRS, 100.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 50
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1079.95	(NULL)
16.49	90.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.87 WATERSHED INCHES, 1669.27 CFS-HRS, 137.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 60
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1400.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .44, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 60 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1079.95	(NULL)
16.49	90.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.87 WATERSHED INCHES, 1669.27 CFS-HRS, 137.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 60
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 45. TIME OF CONCENTRATION= .90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.56	16.56	(RUNOFF)
23.72	1.26	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.24 WATERSHED INCHES, 39.88 CFS-HRS, 3.30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 60
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1086.21	(NULL)
16.49	93.02	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .95 SQ.MI.

4.00	DISCHG	.00	.00	.00	.02	.10	.26	.49	.75	1.04	1.33
5.00	DISCHG	1.62	1.91	2.20	2.49	2.77	3.04	3.32	3.58	3.84	4.10
6.00	DISCHG	4.36	4.67	5.18	5.80	6.40	6.89	7.32	7.71	8.07	8.41
7.00	DISCHG	8.75	9.07	9.38	9.69	9.99	10.29	10.58	10.86	11.14	11.41
8.00	DISCHG	11.68	12.08	12.82	13.80	14.96	16.27	17.48	18.44	19.17	19.76
9.00	DISCHG	20.27	20.91	21.91	23.16	24.29	25.16	26.02	27.23	28.66	29.92
10.00	DISCHG	30.90	31.86	33.18	34.84	37.10	40.08	43.57	47.95	52.84	58.21
11.00	DISCHG	64.10	70.07	76.45	83.02	90.75	101.27	130.10	208.30	333.15	539.50
12.00	DISCHG	836.25	1068.68	1030.91	805.58	576.69	421.03	324.82	265.51	227.09	199.69
13.00	DISCHG	178.52	161.72	147.53	136.12	127.20	119.75	113.25	107.02	101.45	96.86
14.00	DISCHG	93.29	90.54	88.31	86.99	86.63	86.30	86.13	85.74	85.37	85.47
15.00	DISCHG	86.26	87.42	88.85	90.29	90.92	90.62	90.19	90.11	90.41	90.86
16.00	DISCHG	91.35	91.83	92.25	92.60	92.86	93.02	92.76	91.64	89.95	88.43
17.00	DISCHG	87.35	86.55	85.87	85.24	84.63	84.03	83.43	82.82	82.11	80.76
18.00	DISCHG	78.62	76.40	74.60	73.30	72.20	71.21	70.27	69.38	68.51	67.67

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19.00	DISCHG	66.86	66.07	65.33	64.68	63.99	63.30	62.62	61.96	61.19	59.85
20.00	DISCHG	57.76	55.58	53.88	52.62	51.60	50.72	49.94	49.23	48.56	47.93
21.00	DISCHG	47.34	46.79	46.26	45.76	45.28	44.83	44.40	43.97	43.53	.43.10
22.00	DISCHG	42.70	42.29	41.89	41.51	41.15	40.80	40.46	40.14	39.84	39.55
23.00	DISCHG	39.27	39.01	38.75	38.51	38.28	38.06	37.85	37.65	37.37	36.46
24.00	DISCHG	34.72	32.26	28.67	24.55	21.18	18.97	17.56	16.54	15.77	15.13
25.00	DISCHG	14.59	14.12	13.71	13.34	13.02	12.72	12.45	12.20	11.96	11.76
26.00	DISCHG	11.57	11.41	11.25	11.11	10.97	10.84	10.71	10.57	10.42	10.28
27.00	DISCHG	10.13	9.97	9.81	9.64	9.47	9.29	9.11	8.93	8.74	8.54
28.00	DISCHG	8.34	8.13	7.93	7.72	7.51	7.29	7.08	6.87	6.67	6.46
29.00	DISCHG	6.26	6.06	5.87	5.68	5.49	5.32	5.14	4.99	4.87	4.74

RUNOFF VOLUME ABOVE BASEFLOW = 2.79 WATERSHED INCHES, 1709.15 CFS-HRS, 141.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 1 OUTPUT HYDROGRAPH= 6

OPERATION ADDHYD CROSS SECTION 70
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.15	1158.66	(NULL)
17.72	175.02	(NULL)
19.49	165.55	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.27 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.41
7.00	DISCHG	11.75	12.07	12.38	12.69	12.99	13.29	13.58	13.86	14.14	14.41
8.00	DISCHG	14.68	15.08	15.82	16.80	17.96	19.27	20.48	21.44	22.17	22.76
9.00	DISCHG	23.27	23.91	24.91	26.16	27.29	28.16	29.02	30.23	31.66	32.92
10.00	DISCHG	33.90	34.86	36.18	37.84	40.10	43.08	46.57	50.95	55.84	61.21
11.00	DISCHG	67.10	73.07	79.45	86.03	93.79	104.45	133.75	213.27	341.60	556.32
12.00	DISCHG	868.96	1127.46	1124.43	935.03	734.67	596.08	505.83	443.57	395.53	354.25
13.00	DISCHG	318.11	288.08	262.93	242.15	225.08	210.38	197.58	185.82	175.35	166.44
14.00	DISCHG	159.07	153.05	147.97	144.21	141.78	139.73	138.13	136.60	135.34	134.80
15.00	DISCHG	135.26	136.70	138.96	141.68	143.95	145.50	147.02	148.88	150.91	153.06
16.00	DISCHG	155.25	157.46	159.66	161.91	164.21	166.54	168.53	169.24	169.14	169.11
17.00	DISCHG	169.48	170.11	170.86	171.68	172.55	173.45	174.36	175.01	174.68	173.45
18.00	DISCHG	171.34	169.06	167.14	165.67	164.38	163.61	163.65	163.90	164.19	164.49
19.00	DISCHG	164.75	164.98	165.19	165.41	165.52	165.55	165.52	165.42	165.13	164.14
20.00	DISCHG	162.26	160.11	158.25	156.69	155.28	153.94	152.66	151.42	150.21	149.04

21.00	DISCH6	147.89	146.76	145.63	144.51	143.39	142.28	141.16	140.03	138.89	137.73
22.00	DISCH6	136.58	135.42	134.26	133.11	131.98	130.88	129.81	128.77	128.01	127.55
23.00	DISCH6	127.19	126.86	126.55	126.24	125.95	125.66	125.39	125.11	124.75	123.71
24.00	DISCH6	121.79	118.87	113.84	107.82	102.25	97.68	93.87	90.52	87.52	84.82
25.00	DISCH6	82.39	80.20	78.23	76.41	74.74	72.98	71.14	69.38	67.73	66.20
26.00	DISCH6	64.77	63.45	62.21	61.03	59.93	58.87	57.86	56.88	55.94	55.02
27.00	DISCH6	54.13	53.25	52.40	51.56	50.73	49.91	49.07	48.20	47.34	46.48
28.00	DISCH6	45.63	44.79	43.96	43.14	42.32	41.51	40.71	39.91	39.12	38.34
29.00	DISCH6	37.57	36.81	36.06	35.34	34.64	33.96	33.31	32.68	32.10	31.52

RUNOFF VOLUME ABOVE BASEFLOW = 2.07 WATERSHED INCHES, 3025.98 CFS-HRS, 250.07 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 80
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 80 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.15	1158.66	(NULL)
17.72	175.02	(NULL)
19.49	165.55	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.07 WATERSHED INCHES, 3025.98 CFS-HRS, 250.07 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 80
OUTPUT HYDROGRAPH= 6
AREA= .02 SQ MI INPUT RUNOFF CURVE= 64. TIME OF CONCENTRATION= .12 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0160 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.98	54.99	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.98 WATERSHED INCHES, 38.49 CFS-HRS, 3.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 80
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1178.53	(NULL)
17.71	176.34	(NULL)
19.50	166.63	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.07 WATERSHED INCHES, 3064.46 CFS-HRS, 253.25 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 100

INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 90
OUTPUT HYDROGRAPH= 6
AREA= .24 SQ MI INPUT RUNOFF CURVE= 73. TIME OF CONCENTRATION= .62 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0827 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.27	434.61	(RUNOFF)
19.66	14.73	(RUNOFF)
23.66	11.19	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.93 WATERSHED INCHES, 608.63 CFS-HRS, 50.30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 100
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	1568.41	(NULL)
16.68	191.99	(NULL)
17.71	194.67	(NULL)
19.50	181.35	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.25 WATERSHED INCHES, 3673.10 CFS-HRS, 303.54 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 110
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 110 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	1568.41	(NULL)
16.68	191.99	(NULL)
17.71	194.67	(NULL)
19.50	181.35	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.25 WATERSHED INCHES, 3673.10 CFS-HRS, 303.54 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 120
INPUT HYDROGRAPH= 5 OUTPUT HYDROGRAPH= 7

OPERATION REACH CROSS SECTION 120
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94

0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

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*** WARNING REACH 120 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	1568.41	(NULL)
16.68	191.99	(NULL)
17.71	194.67	(NULL)
19.50	181.35	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.25 WATERSHED INCHES, 3673.10 CFS-HRS, 303.54 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 120
OUTPUT HYDROGRAPH= 6
AREA= .19 SQ MI INPUT RUNOFF CURVE= 56. TIME OF CONCENTRATION= .74 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0987 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.38	159.29	(RUNOFF)
19.68	8.61	(RUNOFF)
23.67	6.65	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.22 WATERSHED INCHES, 271.72 CFS-HRS, 22.45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 120
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	1694.07	(NULL)
16.67	204.32	(NULL)
17.71	205.28	(NULL)
19.50	189.95	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.41
7.00	DISCHG	11.75	12.07	12.38	12.69	12.99	13.30	13.62	13.96	14.33	14.71
8.00	DISCHG	15.11	15.65	16.55	17.73	19.11	20.68	22.18	23.45	24.48	25.36
9.00	DISCHG	26.17	27.10	28.43	30.05	31.57	32.84	34.14	35.80	37.74	39.53
10.00	DISCHG	41.03	42.53	44.41	46.70	49.75	53.63	58.32	64.09	70.62	77.95
11.00	DISCHG	85.99	94.52	103.69	113.46	125.12	140.52	184.35	288.39	464.76	777.16
12.00	DISCHG	1225.66	1602.56	1691.52	1531.24	1289.14	1069.33	892.07	758.07	655.62	572.79
13.00	DISCHG	505.98	451.24	406.61	370.12	340.17	315.27	293.67	274.49	257.50	242.87
14.00	DISCHG	230.84	220.76	212.19	205.36	200.07	195.53	191.41	187.52	184.04	181.53
15.00	DISCHG	180.37	180.56	181.94	183.98	185.44	186.16	186.68	187.52	188.66	190.12
16.00	DISCHG	191.85	193.74	195.74	197.87	200.09	202.36	204.05	204.28	203.45	202.52
17.00	DISCHG	202.00	201.87	202.07	202.53	203.16	203.89	204.70	205.28	204.81	203.14
18.00	DISCHG	200.42	197.28	194.42	192.09	190.14	188.90	188.62	188.66	188.81	189.01

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19.00	DISCHG	189.22	189.41	189.60	189.81	189.92	189.95	189.92	189.83	189.45	188.06
20.00	DISCHG	185.58	182.55	179.74	177.32	175.23	173.41	171.81	170.35	168.99	167.72
21.00	DISCHG	166.50	165.32	164.17	163.03	161.90	160.78	159.67	158.54	157.40	156.25
22.00	DISCHG	155.10	153.95	152.80	151.66	150.54	149.45	148.38	147.35	146.60	146.15
23.00	DISCHG	145.80	145.48	145.17	144.87	144.59	144.31	144.04	143.77	143.31	141.85
24.00	DISCHG	139.27	134.85	127.84	119.41	111.23	104.26	98.51	93.72	89.73	86.36
25.00	DISCHG	83.46	80.94	78.74	76.76	74.98	73.14	71.24	69.45	67.77	66.22
26.00	DISCHG	64.79	63.46	62.21	61.03	59.93	58.87	57.86	56.88	55.94	55.02
27.00	DISCHG	54.13	53.25	52.40	51.56	50.73	49.91	49.07	48.20	47.34	46.48
28.00	DISCHG	45.63	44.79	43.96	43.14	42.32	41.51	40.71	39.91	39.12	38.34
29.00	DISCHG	37.57	36.81	36.06	35.34	34.64	33.96	33.31	32.68	32.10	31.52

RUNOFF VOLUME ABOVE BASEFLOW = 2.25 WATERSHED INCHES, 3944.82 CFS-HRS, 326.00 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV STRUCTURE 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 50
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.36	351.28	10.92

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

9.00	DISCHG	3.00	3.00	3.00	3.43	3.89	4.37	4.86	5.37	5.90	6.45
9.00	ELEV	2.84	2.84	2.84	2.86	2.88	2.89	2.91	2.93	2.96	2.98
10.00	DISCHG	7.02	7.55	8.09	8.66	9.26	9.90	10.60	11.37	12.21	13.16
10.00	ELEV	3.00	3.02	3.05	3.07	3.10	3.13	3.16	3.19	3.23	3.27
11.00	DISCHG	14.20	15.35	17.10	19.55	22.23	25.20	28.87	34.43	44.49	63.77
11.00	ELEV	3.32	3.37	3.43	3.49	3.56	3.63	3.72	3.86	4.09	4.48
12.00	DISCHG	93.83	120.32	175.19	232.60	264.86	290.59	310.00	324.49	334.98	341.18
12.00	ELEV	5.10	5.99	7.01	7.96	8.75	9.37	9.83	10.17	10.43	10.62
13.00	DISCHG	345.57	348.52	350.31	351.15	351.24	350.72	349.69	348.24	346.41	344.28
13.00	ELEV	10.75	10.84	10.89	10.92	10.92	10.91	10.88	10.83	10.78	10.71
14.00	DISCHG	341.89	339.32	336.60	333.70	330.01	326.29	322.56	318.81	315.07	311.35
14.00	ELEV	10.64	10.56	10.48	10.39	10.31	10.22	10.13	10.04	9.95	9.86
15.00	DISCHG	307.68	304.10	300.64	297.33	294.17	291.12	288.17	285.33	282.59	279.97
15.00	ELEV	9.77	9.69	9.61	9.53	9.45	9.38	9.31	9.24	9.18	9.11
16.00	DISCHG	277.47	275.09	272.83	270.69	268.67	266.77	264.98	263.27	261.60	259.95
16.00	ELEV	9.05	9.00	8.94	8.89	8.84	8.80	8.76	8.72	8.68	8.64
17.00	DISCHG	258.33	256.74	255.20	253.71	252.28	250.91	249.62	248.42	247.26	246.10
17.00	ELEV	8.60	8.56	8.52	8.49	8.45	8.42	8.39	8.36	8.33	8.30
18.00	DISCHG	244.91	243.68	242.40	241.08	239.74	238.39	237.06	235.77	234.51	233.28
18.00	ELEV	8.27	8.24	8.21	8.18	8.14	8.11	8.08	8.04	8.01	7.98
19.00	DISCHG	232.10	230.95	229.84	228.77	227.72	226.71	225.73	224.77	223.82	222.88
19.00	ELEV	7.95	7.92	7.90	7.87	7.84	7.82	7.79	7.77	7.75	7.72
20.00	DISCHG	221.92	220.90	219.84	218.73	217.59	216.43	215.26	214.08	212.89	211.69

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20.00	ELEV	7.70	7.67	7.65	7.62	7.59	7.56	7.53	7.50	7.47	7.44
21.00	DISCHG	210.50	208.47	205.90	203.42	201.02	198.69	196.43	194.24	192.11	190.04
21.00	ELEV	7.41	7.38	7.35	7.33	7.30	7.27	7.25	7.22	7.20	7.18
22.00	DISCHG	188.02	186.05	184.13	182.26	180.43	178.64	176.90	175.19	173.54	171.94
22.00	ELEV	7.15	7.13	7.11	7.09	7.07	7.05	7.03	7.01	6.99	6.97
23.00	DISCHG	170.42	168.96	167.57	166.25	164.99	163.78	162.63	161.53	160.47	159.42
23.00	ELEV	6.96	6.94	6.92	6.91	6.89	6.88	6.87	6.86	6.84	6.83
24.00	DISCHG	158.32	157.07	155.56	153.68	151.43	148.87	146.08	143.14	140.13	137.07
24.00	ELEV	6.82	6.81	6.79	6.77	6.74	6.71	6.68	6.65	6.61	6.58
25.00	DISCHG	134.01	130.96	127.96	125.01	122.13	120.97	120.91	120.85	120.80	120.73
25.00	ELEV	6.55	6.51	6.48	6.45	6.41	6.38	6.35	6.31	6.28	6.24
26.00	DISCHG	120.67	120.61	120.54	120.48	120.41	120.34	120.27	120.20	120.13	120.05
26.00	ELEV	6.20	6.17	6.13	6.09	6.05	6.00	5.96	5.92	5.88	5.83
27.00	DISCHG	119.53	117.87	116.24	114.62	113.02	111.44	109.89	108.34	106.82	105.31
27.00	ELEV	5.79	5.74	5.70	5.66	5.61	5.57	5.53	5.49	5.45	5.41
28.00	DISCHG	103.82	102.35	100.89	99.45	98.02	96.61	95.21	93.83	92.46	91.11
28.00	ELEV	5.37	5.33	5.29	5.25	5.21	5.18	5.14	5.10	5.07	5.03
29.00	DISCHG	89.70	87.95	86.23	84.54	82.88	81.26	79.67	78.11	76.58	75.09
29.00	ELEV	4.99	4.96	4.92	4.89	4.86	4.83	4.79	4.76	4.73	4.70

RUNOFF VOLUME ABOVE BASEFLOW = 2.07 WATERSHED INCHES, 3627.56 CFS-HRS, 299.78 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1000.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 130 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 130 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 72.09 CFS, 20.70 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.36	351.28	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.07 WATERSHED INCHES, 3627.56 CFS-HRS, 299.78 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 130
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 74. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	160.37	(RUNOFF)
23.65	2.37	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 4.05 WATERSHED INCHES, 130.79 CFS-HRS, 10.81 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 130

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INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.06	256.05	(NULL)
13.28	362.33	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.10 WATERSHED INCHES, 3758.35 CFS-HRS, 310.59 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 60
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.49	271.55	6.68

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.77 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	4.63	7.79
11.00	ELEV	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.44	2.53
12.00	DISCHG	12.25	16.80	21.13	29.28	39.45	49.28	59.43	72.12	84.87	97.35
12.00	ELEV	2.66	2.81	2.95	3.10	3.26	3.42	3.59	3.76	3.93	4.10
13.00	DISCHG	109.43	121.07	132.22	140.95	148.69	156.12	163.25	170.06	176.56	180.08
13.00	ELEV	4.26	4.41	4.56	4.71	4.84	4.98	5.10	5.22	5.34	5.45
14.00	DISCHG	180.26	180.44	180.61	180.78	180.95	189.65	201.12	211.32	220.36	228.36
14.00	ELEV	5.56	5.66	5.77	5.87	5.97	6.06	6.15	6.23	6.29	6.35
15.00	DISCHG	235.41	241.58	246.97	251.63	255.64	259.05	261.91	264.31	266.29	267.88
15.00	ELEV	6.41	6.45	6.49	6.53	6.56	6.58	6.60	6.62	6.64	6.65
16.00	DISCHG	269.14	270.09	270.78	271.23	271.48	271.55	271.45	271.20	270.80	270.30
16.00	ELEV	6.66	6.66	6.67	6.67	6.68	6.68	6.68	6.67	6.67	6.67
17.00	DISCHG	269.71	269.03	268.28	267.47	266.60	265.69	264.75	263.78	262.80	261.78
17.00	ELEV	6.66	6.66	6.65	6.65	6.64	6.63	6.62	6.62	6.61	6.60
18.00	DISCHG	260.72	259.64	258.54	257.42	256.29	255.14	253.97	252.79	251.61	250.42
18.00	ELEV	6.59	6.59	6.58	6.57	6.56	6.55	6.54	6.54	6.53	6.52
19.00	DISCHG	249.23	248.04	246.85	245.68	244.51	243.35	242.21	241.08	239.97	238.85
19.00	ELEV	6.51	6.50	6.49	6.48	6.47	6.47	6.46	6.45	6.44	6.43
20.00	DISCHG	237.71	236.58	235.45	234.33	233.20	232.07	230.94	229.80	228.67	227.52
20.00	ELEV	6.42	6.41	6.41	6.40	6.39	6.38	6.37	6.36	6.36	6.35
21.00	DISCHG	226.37	225.19	223.91	222.54	221.07	219.53	217.93	216.28	214.59	212.87
21.00	ELEV	6.34	6.33	6.32	6.31	6.30	6.29	6.28	6.26	6.25	6.24
22.00	DISCHG	211.12	209.35	207.56	205.77	203.97	202.17	200.37	198.58	196.80	195.03
22.00	ELEV	6.22	6.21	6.20	6.18	6.17	6.16	6.14	6.13	6.12	6.10
23.00	DISCHG	193.28	191.55	189.85	188.17	186.53	184.91	183.34	181.80	180.99	180.97
23.00	ELEV	6.09	6.08	6.07	6.05	6.04	6.03	6.02	6.01	5.99	5.98
24.00	DISCHG	180.95	180.93	180.90	180.87	180.84	180.81	180.78	180.74	180.70	180.65
24.00	ELEV	5.97	5.96	5.94	5.92	5.91	5.89	5.87	5.84	5.82	5.79
25.00	DISCHG	180.60	180.55	180.50	180.44	180.38	180.32	180.26	180.20	180.13	180.07

25.00	ELEV	5.76	5.73	5.70	5.67	5.63	5.59	5.56	5.52	5.48	5.44
26.00	DISCHG	180.01	178.19	176.17	174.23	172.34	170.52	168.77	167.07	165.43	163.84
26.00	ELEV	5.40	5.37	5.33	5.30	5.26	5.23	5.20	5.17	5.14	5.11
27.00	DISCHG	162.30	160.77	159.24	157.71	156.17	154.63	153.10	151.56	150.02	148.48
27.00	ELEV	5.09	5.06	5.03	5.00	4.98	4.95	4.92	4.89	4.87	4.84
28.00	DISCHG	146.94	145.41	143.87	142.34	140.82	139.30	137.78	136.26	134.67	132.68
28.00	ELEV	4.81	4.79	4.76	4.73	4.70	4.68	4.65	4.62	4.60	4.57
29.00	DISCHG	130.72	128.78	126.84	124.92	123.01	121.11	119.22	117.35	115.50	113.66
29.00	ELEV	4.54	4.52	4.49	4.47	4.44	4.41	4.39	4.36	4.34	4.32

RUNOFF VOLUME ABOVE BASEFLOW = 1.91 WATERSHED INCHES, 3418.29 CFS-HRS, 282.49 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 140
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .37 PEAK TRAVEL TIME = .30 HOURS
0 *** WARNING - REACH 140 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 110.66 CFS, 41.21 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.79	271.09	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.89 WATERSHED INCHES, 3387.38 CFS-HRS, 279.93 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 140
OUTPUT HYDROGRAPH= 6
AREA= .20 SQ MI INPUT RUNOFF CURVE= 66. TIME OF CONCENTRATION= 1.15 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0958 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.64	190.96	(RUNOFF)
23.69	8.47	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.20 WATERSHED INCHES, 413.16 CFS-HRS, 34.14 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 140
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.81	236.37	(NULL)
14.02	222.79	(NULL)
16.70	287.70	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.98 WATERSHED INCHES, 3800.54 CFS-HRS, 314.08 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 150
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

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 OPERATION RUNOFF   CROSS SECTION 149
          OUTPUT HYDROGRAPH=  6
          AREA=    .08 SQ MI   INPUT RUNOFF CURVE= 50.    TIME OF CONCENTRATION=   .42 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .0560 HOURS

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            12.19                          67.90                      (RUNOFF)
            23.67                           2.40                      (RUNOFF)

   RUNOFF VOLUME ABOVE BASEFLOW =  1.67 WATERSHED INCHES,     86.04 CFS-HRS,     7.11 ACRE-FEET;   BASEFLOW =    .00 CFS


 OPERATION ADDHYD   CROSS SECTION 150
          INPUT HYDROGRAPHS= 5,6     OUTPUT HYDROGRAPH= 7

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            12.74                         255.42                      (NULL)
            13.99                         230.18                      (NULL)
            16.64                         291.96                      (NULL)

   RUNOFF VOLUME ABOVE BASEFLOW =  1.97 WATERSHED INCHES,   3886.58 CFS-HRS,   321.19 ACRE-FEET;   BASEFLOW =   3.00 CFS


 OPERATION REACH    CROSS SECTION 150
          INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5
          LENGTH =    300.00 FEET      INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA,  X=   .21,   M= 1.48
0         MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00      PEAK TRAVEL TIME =    .00 HOURS

     ### WARNING  REACH 150 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ###
0    ### WARNING - REACH 150 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT     115.66 CFS,  40.03 % OF PEAK.

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            12.74                         255.42                      (NULL)
            13.99                         230.18                      (NULL)
            16.64                         291.96                      (NULL)

   RUNOFF VOLUME ABOVE BASEFLOW =  1.97 WATERSHED INCHES,   3886.58 CFS-HRS,   321.19 ACRE-FEET;   BASEFLOW =   3.00 CFS


 OPERATION RUNOFF   CROSS SECTION 150
          OUTPUT HYDROGRAPH=  6
          AREA=    .01 SQ MI   INPUT RUNOFF CURVE= 40.    TIME OF CONCENTRATION=   .15 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .0200 HOURS

 ### WARNING-MAIN TIME INCREMENT MAY BE TOO LARGE.
         COMPUTED PEAK(      4.99) AT              EXCEEDS MAX. ADJACENT HYDROGRAPH COORDINATE BY   8 %.
+                               XSECTION 150

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
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TIME(HRS)		FIRST HYDROGRAPH POINT = .00 HOURS				TIME INCREMENT = .10 HOURS			DRAINAGE AREA =		.01 SQ.MI.
11.00	DISCH6	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.05
12.00	DISCH6	4.60	4.46	2.17	1.71	1.28	1.17	1.09	1.02	1.00	.87
13.00	DISCH6	.84	.78	.73	.71	.66	.64	.60	.56	.55	.52
14.00	DISCH6	.52	.50	.48	.47	.44	.43	.41	.38	.38	.38
15.00	DISCH6	.38	.39	.39	.38	.35	.34	.34	.34	.34	.34
16.00	DISCH6	.34	.34	.35	.35	.35	.35	.32	.30	.30	.30
17.00	DISCH6	.30	.30	.30	.30	.30	.30	.30	.30	.30	.26
18.00	DISCH6	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25
19.00	DISCH6	.25	.25	.25	.25	.25	.25	.25	.25	.25	.21
20.00	DISCH6	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19
21.00	DISCH6	.19	.20	.20	.20	.20	.20	.20	.20	.20	.20
22.00	DISCH6	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
23.00	DISCH6	.20	.20	.20	.20	.20	.20	.20	.20	.20	.15
24.00	DISCH6	.14	.08	.01	.00						

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 5.41 CFS-HRS, .45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 150
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.74	256.43	(NULL)
13.99	230.70	(NULL)
16.63	292.27	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.97 WATERSHED INCHES, 3891.99 CFS-HRS, 321.63 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 180
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 180
OUTPUT HYDROGRAPH= 6
AREA= .28 SQ MI INPUT RUNOFF CURVE= 50. TIME OF CONCENTRATION= .61 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0813 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.31	185.48	(RUNOFF)
16.46	15.27	(RUNOFF)
19.69	10.72	(RUNOFF)
23.68	8.37	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.67 WATERSHED INCHES, 301.04 CFS-HRS, 24.88 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 180

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INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.40	402.41	(NULL)
16.59	307.48	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.95 WATERSHED INCHES, 4193.03 CFS-HRS, 346.51 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 180

INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

LENGTH = 1700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48

0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .55 PEAK TRAVEL TIME = .20 HOURS

0 *** WARNING - REACH 180 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 115.66 CFS, 28.96 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.61	385.65	(NULL)
16.76	307.22	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.94 WATERSHED INCHES, 4171.69 CFS-HRS, 344.75 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 180

OUTPUT HYDROGRAPH= 6

AREA= .11 SQ MI INPUT RUNOFF CURVE= 41. TIME OF CONCENTRATION= .48 HOURS

INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.28	34.74	(RUNOFF)
23.69	2.34	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 65.08 CFS-HRS, 5.38 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 180

INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.58	406.20	(NULL)
16.73	311.11	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 3.45 SQ.MI.

9.00	DISCHG	3.00	3.00	3.00	3.00	3.01	3.02	3.04	3.08	3.14	3.23
10.00	DISCHG	3.34	3.48	3.64	3.83	4.05	4.29	4.56	4.87	5.23	5.64
11.00	DISCHG	6.13	6.69	7.36	8.12	9.01	10.03	11.22	13.08	17.23	29.29
12.00	DISCHG	65.60	138.39	233.33	319.90	375.64	401.45	406.02	397.09	382.75	366.99
13.00	DISCHG	350.58	334.12	318.32	304.76	294.23	286.21	280.24	275.68	272.19	269.61
14.00	DISCHG	267.87	266.41	264.42	261.87	258.96	255.83	252.66	251.24	252.36	255.53
15.00	DISCHG	260.08	265.43	271.13	276.82	282.22	287.07	291.25	294.81	297.86	300.53
16.00	DISCHG	302.85	304.86	306.57	307.99	309.16	310.08	310.75	311.09	311.00	310.53

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17.00	DISCH6	309.80	308.91	307.95	306.96	305.97	304.97	303.97	302.96	301.94	300.84
18.00	DISCH6	299.54	297.98	296.25	294.45	292.66	290.93	289.29	287.73	286.22	284.76
19.00	DISCH6	283.36	282.00	280.68	279.40	278.14	276.90	275.69	274.49	273.30	272.05
20.00	DISCH6	270.60	268.91	267.05	265.15	263.27	261.48	259.79	258.19	256.67	255.22
21.00	DISCH6	253.82	252.49	251.19	249.93	248.66	247.37	246.03	244.63	243.18	241.67
22.00	DISCH6	240.11	238.51	236.86	235.17	233.46	231.73	229.98	228.22	226.45	224.68
23.00	DISCH6	222.91	221.14	219.38	217.63	215.90	214.18	212.49	210.83	209.18	207.48
24.00	DISCH6	205.73	203.98	202.03	199.75	197.22	194.66	192.30	190.20	188.42	186.92
25.00	DISCH6	185.67	184.64	183.79	183.09	182.54	182.09	181.73	181.43	181.17	180.96
26.00	DISCH6	180.77	180.61	180.48	179.99	179.09	177.85	176.38	174.77	173.09	171.39
27.00	DISCH6	169.68	168.01	166.36	164.75	163.17	161.60	160.04	158.49	156.95	155.40
28.00	DISCH6	153.86	152.32	150.78	149.24	147.71	146.17	144.64	143.11	141.58	140.06
29.00	DISCH6	138.52	136.89	135.16	133.37	131.52	129.64	127.75	125.85	123.96	122.07

RUNOFF VOLUME ABOVE BASEFLOW = 1.90 WATERSHED INCHES, 4236.78 CFS-HRS, 350.13 ACRE-FEET; BASEFLOW = 3.00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID 1680

COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION ENDJOB RECORD ID 1690

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SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 85 STORM 1													
STRUCTURE 10	RUNOFF	.84	2	2	.10	.0	7.00	24.00	1.67	---	17.80	96.56	114.9
STRUCTURE 10	RESVOR	.84	2	2	.10	.0	7.00	24.00	1.63	9.50	18.14	96.09	114.4
XSECTION 10	REACH	.84	2	2	.10	.0	7.00	24.00	1.62	---	18.47	98.84	117.7
XSECTION 10	RUNOFF	.20	2	2	.10	.0	7.00	24.00	1.00	---	12.08	121.81	609.0
XSECTION 10	ADDHYD	1.04	2	2	.10	.0	7.00	24.00	1.50	---	12.08	124.81	120.0
STRUCTURE 20	RESVOR	1.04	2	2	.10	.0	7.00	24.00	1.45	9.18	20.10	93.18	89.6
XSECTION 20	REACH	1.04	2	2	.10	.0	7.00	24.00	1.44	---	20.25	93.15	89.6
XSECTION 20	RUNOFF	.28	2	2	.10	.0	7.00	24.00	1.94	---	12.61	158.20	565.0
XSECTION 20	ADDHYD	1.32	2	2	.10	.0	7.00	24.00	1.55	---	12.62	181.14	137.2
STRUCTURE 30	RUNOFF	.37	2	2	.10	.0	7.00	24.00	1.57	---	14.95	60.58	163.7
STRUCTURE 30	RESVOR	.37	2	2	.10	.0	7.00	24.00	1.51	25.91	16.21	48.05	129.9
XSECTION 40	REACH	.37	2	2	.10	.0	7.00	24.00	1.50	---	16.55	47.70	128.9
XSECTION 40	RUNOFF	.06	2	2	.10	.0	7.00	24.00	.84	---	12.72	10.21	170.2
XSECTION 40	ADDHYD	.43	2	2	.10	.0	7.00	24.00	1.41	---	16.54	49.80	115.8
STRUCTURE 40	RESVOR	.43	2	2	.10	.0	7.00	24.00	1.41	10.89	16.60	49.78	115.8
XSECTION 50	REACH	.43	2	2	.10	.0	7.00	24.00	1.40	---	16.72	49.77	115.7
XSECTION 49	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.84	---	13.33	13.76	125.1
XSECTION 50	ADDHYD	.54	2	2	.10	.0	7.00	24.00	1.29	---	16.65	53.98	100.0
XSECTION 50	RUNOFF	.36	2	2	.10	.0	7.00	24.00	5.25	---	12.13	1078.73	2996.5
XSECTION 50	ADDHYD	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	REACH	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	RUNOFF	.05	2	2	.10	.0	7.00	24.00	1.24	---	12.56	16.56	331.2
XSECTION 60	ADDHYD	.95	2	2	.10	.0	7.00	24.00	2.79	---	12.14	1086.21	1143.4
XSECTION 70	ADDHYD	2.27	2	2	.10	.0	7.00	24.00	2.07	---	12.15	1158.66	510.4
XSECTION 80	REACH	2.27	2	2	.10	.0	7.00	24.00	2.07	---	12.15	1158.66	510.4
XSECTION 80	RUNOFF	.02	2	2	.10	.0	7.00	24.00	2.98	---	11.98	54.99	2749.6
XSECTION 80	ADDHYD	2.29	2	2	.10	.0	7.00	24.00	2.07	---	12.14	1178.53	514.6
XSECTION 90	RUNOFF	.24	2	2	.10	.0	7.00	24.00	3.93	---	12.27	434.61	1810.9
XSECTION 100	ADDHYD	2.53	2	2	.10	.0	7.00	24.00	2.25	---	12.17	1568.41	619.9
XSECTION 110	REACH	2.53	2	2	.10	.0	7.00	24.00	2.25	---	12.17	1568.41	619.9
XSECTION 120	REACH	2.53	2	2	.10	.0	7.00	24.00	2.25	---	12.17	1568.41	619.9
XSECTION 120	RUNOFF	.19	2	2	.10	.0	7.00	24.00	2.22	---	12.38	159.29	838.4

TR20 XEQ 05-05-86 08:09 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM 20 JOB 1 SUMMARY
REV PC 09/83(.2) ALT 85 30 PAGE 29

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 85 STORM 1													
XSECTION 120	ADDHYD	2.72	2	2	.10	.0	7.00	24.00	2.25	---	12.19	1694.07	622.8
STRUCTURE 50	RESVOR	2.72	2	2	.10	.0	7.00	24.00	2.07	10.92	13.36	351.28	129.1
XSECTION 130	REACH	2.72	2	2	.10	.0	7.00	24.00	2.07	---	13.36	351.28	129.1
XSECTION 130	RUNOFF	.05	2	2	.10	.0	7.00	24.00	4.05	---	12.01	160.37	3207.4
XSECTION 130	ADDHYD	2.77	2	2	.10	.0	7.00	24.00	2.10	---	13.28	362.33	130.8
STRUCTURE 60	RESVOR	2.77	2	2	.10	.0	7.00	24.00	1.91	6.68	16.49	271.55	98.0
XSECTION 140	REACH	2.77	2	2	.10	.0	7.00	24.00	1.89	---	16.79	271.09	97.9
XSECTION 140	RUNOFF	.20	2	2	.10	.0	7.00	24.00	3.20	---	12.64	190.96	954.8
XSECTION 140	ADDHYD	2.97	2	2	.10	.0	7.00	24.00	1.98	---	16.70	287.70	96.9
XSECTION 149	RUNOFF	.08	2	2	.10	.0	7.00	24.00	1.67	---	12.19	67.90	848.7
XSECTION 150	ADDHYD	3.05	2	2	.10	.0	7.00	24.00	1.97	---	16.64	291.96	95.7
XSECTION 150	REACH	3.05	2	2	.10	.0	7.00	24.00	1.97	---	16.64	291.96	95.7
XSECTION 150	RUNOFF	.01	2	2	.10	.0	7.00	24.00	.84	---	12.05	4.99	499.3
XSECTION 150	ADDHYD	3.06	2	2	.10	.0	7.00	24.00	1.97	---	16.63	292.27	95.5
XSECTION 180	RUNOFF	.28	2	2	.10	.0	7.00	24.00	1.67	---	12.31	185.48	662.4
XSECTION 180	ADDHYD	3.34	2	2	.10	.0	7.00	24.00	1.95	---	12.40	402.41	120.5
XSECTION 180	REACH	3.34	2	2	.10	.0	7.00	24.00	1.94	---	12.61	385.65	115.5
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.92	---	12.28	34.74	315.8
XSECTION 180	ADDHYD	3.45	2	2	.10	.0	7.00	24.00	1.90	---	12.58	406.20	117.7

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TR20 XEQ 05-05-86 08:09 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM 20 JOB 1 SUMMARY
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SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

	HYDROGRAPH INFORMATION								ROUTING PARAMETERS									PEAK TRAVEL TIME	
						OUTFLOW+			VOLUME	MAIN	ITER-	Q AND A			PEAK	S/Q	ATT-		
XSEC	REACH	INFLOW		OUTFLOW		INTERV.AREA		BASE-	ABOVE	TIME	ATION	EQUATION		LENGTH	RATIO	@PEAK	KIN	STOR-	KINE-
ID	LENGTH	PEAK	TIME	PEAK	TIME	PEAK	TIME	FLOW	BASE	INCR	#	COEFF (X)	POWER (M)	FACTOR (K*)	O/I (Q*)	(K) (SEC)	COEFF (C)	AGE (HR)	MATIC (HR)
	(FT)	(CFS)	(HR)	(CFS)	(HR)	(CFS)	(HR)	(CFS)	(IN)	(HR)									
	ALTERNATE 85 STORM 1																		
10	1750	99	18.1	99	18.5			3	1.63*	.10	1	1.20	1.10	.021	.997	888	.34	.40	.25
						123	12.1												
20	2900	93	20.1	93	20.2			3	1.45*	.10	1	.280	1.94	.000	1.000	320	.72?	.10	.09
						181	12.6												
40	1300	48	16.2	48	16.5			0	1.51	.10	1	.880	1.10	.027	.992	934	.32	.30	.26
						50	16.5												
50	1700	50	16.6	50	16.7			0	1.41	.10	1	1.60	1.45	.002	1.000	252	.83?	.10	.07
						54	16.6												
60	1400	1064	12.1	1064	12.1			0	2.87	.10	0	.440	1.94	.000	1.000	38	1.00?	.00	.00
						1069	12.1												
80	700	1127	12.1	1127	12.1			3	2.07	.10	0	.300	1.94	.000	1.000	22	1.00?	.00	.00
						1156	12.1												
110	500	1559	12.2	1559	12.2			3	2.25	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						---	---												
												.300							

+120	500	1559	12.2	1559	12.2			3	2.25	.10	0		1.94	.000	1.000	14	1.00?	.00	.00
+						1692	12.2					.300							
+130	1000	351	13.4	351	13.4			3	2.07‡	.10	0		1.94	.000	1.000	56	1.00?	.00	.00
+						362	13.3					.210							
+140	2500	272	16.5	271	16.8			3	1.91‡	.10	1		1.48	.004	.998	788	.37	.30	.22
+						288	16.7					.210							
+150	300	292	16.6	292	16.6			3	1.97‡	.10	0		1.48	.000	1.000	92	1.00?	.00	.00
+						292	16.6					.210							
+180	1700	402	12.4	386	12.6			3	1.95‡	.10	1		1.48	.003	.958	471	.55	.20	.13
+						406	12.6												

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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 STRUCTURE 60	2.77	
ALTERNATE 85		271.55
0 STRUCTURE 50	2.72	
ALTERNATE 85		351.28
0 STRUCTURE 40	.43	
ALTERNATE 85		49.78
0 STRUCTURE 30	.37	
ALTERNATE 85		48.05
0 STRUCTURE 20	1.04	
ALTERNATE 85		93.18
0 STRUCTURE 10	.84	
ALTERNATE 85		96.09
0 XSECTION 10	1.04	
ALTERNATE 85		124.81
0 XSECTION 20	1.32	
ALTERNATE 85		181.14
0 XSECTION 40	.43	
ALTERNATE 85		49.80
0 XSECTION 49	.11	
ALTERNATE 85		13.76
0 XSECTION 50	.90	
ALTERNATE 85		1079.95
0 XSECTION 60	.95	
ALTERNATE 85		1086.21
0 XSECTION 70	2.27	
ALTERNATE 85		1158.66
0 XSECTION 80	2.29	
ALTERNATE 85		1178.53

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 XSECTION 90	.24	
+ ALTERNATE 85		434.61
0 XSECTION 100	2.53	
+ ALTERNATE 85		1568.41
0 XSECTION 110	2.53	
+ ALTERNATE 85		1568.41
0 XSECTION 120	2.72	
+ ALTERNATE 85		1694.07
XSECTION 130	2.77	
+ ALTERNATE 85		362.33
0 XSECTION 140	2.97	
+ ALTERNATE 85		287.70
0 XSECTION 149	.08	
+ ALTERNATE 85		67.90
0 XSECTION 150	3.06	
+ ALTERNATE 85		292.27
0 XSECTION 180	3.45	
+ ALTERNATE 85		406.20

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

JOB TR-20                    FULLPRINT PASS=001  SUMMARY                    10
TITLE 002 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM    20
TITLE     ALT  86                                                           30
 3 STRUCT      10                                                           40
 8                    7.00        0.00        4.33                          50
 8                    7.4         2.5         5.01                          60
 8                    7.6         5.0         5.36                          70
 8                    7.8         10.0        5.70                          80
 8                    8.2         22.0        6.38                          90
 8                    8.6         52.0        7.07                         100
 8                    9.0         62.0        7.75                         110
 8                    9.5         96.0        8.61                         120
 8                    10.0        126.0       9.47                         130
 8                    11.0        198.0       11.18                        140
 8                    12.0        280.0       12.89                        150
 8                    13.00       360.0       14.79                        160
 8                    14.00       440.0       16.68                        170
 8                    15.00       500.0       18.58                        180
 8                    15.1        600.00      18.60                        190
 9 ENDTBL                                                                  200
 3 STRUCT      20                                                          210
 8                    4.5         0.00        6.80                         220
 8                    4.9         1.5         7.88                         230
 8                    5.1         3.7         8.42                         240
 8                    5.5         11.0        9.51                         250
 8                    5.7         15.0        10.13                        260
 8                    6.1         25.0        11.13                        270
 8                    6.5         40.0        12.21                        280
 8                    7.1         60.0        13.84                        290
 8                    7.9         78.0        16.01                        300
 8                    8.5         79.0        17.63                        310
 8                    9.5         100.0       20.34                        320
 8                    10.5        126.0       23.06                        330
 8                    11.5        150.0       25.76                        340
 8                    11.6        300.0       26.04                        350
 9 ENDTBL                                                                  360
 3 STRUCT      30                                                          370
 8                    21.0        0.00        0.10                         380
 8                    21.4        0.6         0.61                         390
 8                    21.6        1.5         0.86                         400
 8                    21.8        2.5         1.12                         410
 8                    22.2        5.2         1.62                         420
 8                    22.6        8.2         2.13                         430
 8                    23.0        11.0        2.64                         440
 8                    23.5        20.0        3.27                         450
 8                    24.0        27.0        3.91                         460
```

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

```
8                    25.0      39.0      5.18                    470
8                    26.0      49.0      6.45                    480
8                    27.0      57.0      7.72                    490
8                    27.1      200.00    7.74                    500
9 ENDTBL                                                        510
3 STRUCT      40                                                520
8                    9.0       0.0       0.38                    530
8                    9.4       2.2       0.47                    540
8                    9.6       5.0       0.52                    550
8                    10.0      14.0      0.62                    560
8                    10.2      21.0      0.67                    570
8                    10.6      36.0      0.77                    580
8                    11.0      55.0      0.86                    590
8                    11.6      82.0      1.01                    600
8                    12.4      120.0     1.21                    610
8                    13.0      121.0     1.35                    620
8                    14.0      122.0     1.60                    630
8                    15.0      126.0     1.84                    640
8                    16.0      150.00    2.08                    650
8                    16.1      300.0     2.11                    660
9 ENDTBL                                                        670
3 STRUCT      50                                                680
8                    2.4       0.00      22.00                   690
8                    2.8       2.0       26.86                   700
8                    3.0       7.0       29.29                   710
8                    3.4       16.0      34.16                   720
8                    3.6       24.0      36.59                   730
8                    4.0       40.0      41.46                   740
8                    4.4       60.0      46.32                   750
8                    5.0       90.0      53.62                   760
8                    5.8       120.0     63.35                   770
8                    6.4       121.0     70.65                   780
8                    7.4       210.0     82.81                   790
8                    8.4       250.00    94.98                   800
8                    10.4      334.0     119.31                  810
8                    12.4      400.0     143.63                  820
8                    12.5      800.0     143.70                  830
9 ENDTBL                                                        840
3 STRUCT      60                                                850
8                    2.0       0.0       22.20                   860
8                    2.4       3.0       27.41                   870
8                    2.6       10.5      30.02                   880
8                    3.0       22.5      35.24                   890
8                    3.2       36.0      37.85                   900
8                    3.6       60.0      43.06                   910
8                    4.0       90.0      48.28                   920
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**********************80-80 LIST OF INPUT DATA (CONTINUED)**********************

8                    4.6        135.0      56.11                        930
8                    5.4        180.0      66.55                        940
8                    6.0        181.0      74.38                        950
8                    7.0        315.0      87.42                        960
8                    8.0        375.0      100.47                       970
8                    8.1        700.0      100.50                       980
9 ENDTBL                                                                990
6 RUNOFF 1    10     6 0.84     51.        7.50       1                1000
6 RESVOR 2    10 6   7 7.0                            1                1010
6 REACH  3 010   7   5 1750.    1.2        1.10       1                1020
6 RUNOFF 1 010       6 0.20     42.        0.19       1                1030
6 ADDHYD 4 010   5 6 7                                1 1              1040
6 SAVMOV 5 010   7   6                                                 1050
6 RESVOR 2    20 6   7 4.5                            1                1060
6 REACH  3 020   7   5 2900.    0.28       1.94       1                1070
6 RUNOFF 1 020       6 0.28     53.        1.02       1                1080
6 ADDHYD 4 020   5 6 7                                1 1              1090
6 SAVMOV 5 020   7   1                                                 1100
6 RUNOFF 1    30     6 0.37     49.        3.90       1                1110
6 RESVOR 2    30 6   7 21.0                           1                1120
6 REACH  3 040   7   5 1300.    0.88       1.10       1                1130
6 RUNOFF 1 040       6 0.06     40.        1.00       1                1140
6 ADDHYD 4 040   5 6 7                                1                1150
6 SAVMOV 5 040   7   6                                                 1160
6 RESVOR 2    40 6   7 9.0                            1                1170
6 REACH  3 050   7   5 1700.    1.6        1.45       1                1180
6 RUNOFF 1 049       6 0.11     40.        1.67       1                1190
6 ADDHYD 4 050   5 6 7                                1                1200
6 SAVMOV 5 050   7   5                                                 1210
6 RUNOFF 1 050       6 0.36     85.        0.42       1                1220
6 ADDHYD 4 050   5 6 7                                1                1230
6 REACH  3 060   7   5 1400.    0.44       1.94       1                1240
6 RUNOFF 1 060       6 0.05     45.        0.90       1                1250
6 ADDHYD 4 060   5 6 7                                1 1              1260
6 SAVMOV 5 070   7   5                                                 1270
6 SAVMOV 5 070   1   6                                                 1280
6 ADDHYD 4 070   5 6 7                                1 1              1290
6 REACH  3 080   7   5 700.     0.30       1.94       1                1300
6 RUNOFF 1 080       6 0.02     64.        0.12       1                1310
6 ADDHYD 4 080   5 6 7                                1                1320
6 SAVMOV 5 100   7   5                                                 1330
6 RUNOFF 1 090       6 0.24     73.        0.62       1                1340
6 ADDHYD 4 100   5 6 7                                1                1350
6 REACH  3 110   7   5 500.     0.30       1.94       1                1360
6 SAVMOV 5 120   5   7                                                 1370
6 REACH  3 120   7   5 500.     0.30       1.94       1                1380
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**********************80-80 LIST OF INPUT DATA (CONTINUED)**********************

 6 RUNOFF 1 120       6 0.19        56.         0.74        1                1390
 6 ADDHYD 4 120   5 6 7                                     1 1              1400
 6 SAVMOV 5    50 7   6                                                      1410
 6 RESVOR 2    50 6   7 2.4                                 1 1 1            1420
 6 REACH  3 130   7   5 1000.       0.30        1.94        1                1430
 6 RUNOFF 1 130       6 0.05        74.         0.19        1                1440
 6 ADDHYD 4 130   5 6 7                                     1                1450
 6 SAVMOV 5 130   7   6                                                      1460
 6 RESVOR 2    60 6   7 2.0                                 1 1 1            1470
 6 REACH  3 140   7   5 2500.       0.21        1.48        1                1480
 6 RUNOFF 1 140       6 0.20        66.         1.15        1                1490
 6 ADDHYD 4 140   5 6 7                                     1                1500
 6 SAVMOV 5 150   7   5                                                      1510
 6 RUNOFF 1 149       6 0.08        50.         0.42        1                1520
 6 ADDHYD 4 150   5 6 7                                                      1530
 6 REACH  3 150   7   5 300.        0.21        1.48        1                1540
 6 RUNOFF 1 150       6 0.01        40.         0.15        1                1550
 6 ADDHYD 4 150   5 6 7                                     1                1560
 6 SAVMOV 5 180   7   5                                                      1570
 6 RUNOFF 1 180       6 0.28        50.         0.61        1                1580
 6 ADDHYD 4 180   5 6 7                                     1                1590
 6 REACH  3 180   7   5 1700.0      0.21        1.48        1                1600
 6 RUNOFF 1 180       6 0.11        41.         0.48        1                1610
 6 ADDHYD 4 180   5 6 7                                     1 1   1   1      1620
   ENDATA                                                                    1630
 7 ALTER  3                                                                  1690
 6 RUNOFF 1 020       6 0.28        54.0        1.02                         1700
 6 RUNOFF 1 140       6 0.20        68.0        0.19                         1710
 6 RUNOFF 1 180       6 0.11        42.0        0.48                         1720
 7 LIST                                                                      1730
 7 BASFLO 5             3.0                                                  1740
 7 INCREM 6             0.1                                                  1750
 7 COMPUT 7    10 180   0.0         7.0         1.0         2 2  86  01      1760
   ENDCMP 1                                                                  1770
   ENDJOB 2                                                                  1690
0*******************************END OF 80-80 LIST*******************************
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TR20 XEQ 05-05-86 08:16 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM 20 JOB 1 PASS 1

REV PC 09/83(.2) ALT 86 30 PAGE 1

0CHANGES TO STANDARD CONTROL LIST FOLLOW

EXECUTIVE CONTROL OPERATION ALTER RECORD ID 1690

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 20 RECORD ID 1700

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2800 54.0000 1.0200

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 140 RECORD ID 1710

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2000 68.0000 .1900

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 180 RECORD ID 1720

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .1100 42.0000 .4800

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

TR20 XEQ 05-05-86 08:16 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM 20 JOB 1 PASS 1

REV PC 09/83(.2) ALT 86 30 PAGE 2

EXECUTIVE CONTROL OPERATION LIST RECORD ID 1730

LISTING OF CURRENT DATA

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	10			
8		7.00	.00	4.33
8		7.40	2.50	5.01
8		7.60	5.00	5.36
8		7.80	10.00	5.70
8		8.20	22.00	6.38
8		8.60	52.00	7.07
8		9.00	62.00	7.75
8		9.50	96.00	8.61
8		10.00	126.00	9.47
8		11.00	198.00	11.18
8		12.00	280.00	12.89
8		13.00	360.00	14.79
8		14.00	440.00	16.68
8		15.00	500.00	18.58
8		15.10	600.00	18.60
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	20			
8		4.50	.00	6.80
8		4.90	1.50	7.88
8		5.10	3.70	8.42
8		5.50	11.00	9.51
8		5.70	15.00	10.13
8		6.10	25.00	11.13
8		6.50	40.00	12.21
8		7.10	60.00	13.84
8		7.90	78.00	16.01
8		8.50	79.00	17.63
8		9.50	100.00	20.34
8		10.50	126.00	23.06
8		11.50	150.00	25.76
8		11.60	300.00	26.04
9 ENDTBL				

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	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	30			
8		21.00	.00	.10
8		21.40	.60	.61
8		21.60	1.50	.86
8		21.80	2.50	1.12
8		22.20	5.20	1.62
8		22.60	8.20	2.13
8		23.00	11.00	2.64
8		23.50	20.00	3.27
8		24.00	27.00	3.91
8		25.00	39.00	5.18
8		26.00	49.00	6.45
8		27.00	57.00	7.72
8		27.10	200.00	7.74
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	40			
8		9.00	.00	.38
8		9.40	2.20	.47
8		9.60	5.00	.52
8		10.00	14.00	.62
8		10.20	21.00	.67
8		10.60	36.00	.77
8		11.00	55.00	.86
8		11.60	82.00	1.01
8		12.40	120.00	1.21
8		13.00	121.00	1.35
8		14.00	122.00	1.60
8		15.00	126.00	1.84
8		16.00	150.00	2.08
8		16.10	300.00	2.11
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	50			
8		2.40	.00	22.00
8		2.80	2.00	26.86
8		3.00	7.00	29.29
8		3.40	16.00	34.16
8		3.60	24.00	36.59
8		4.00	40.00	41.46
8		4.40	60.00	46.32
8		5.00	90.00	53.62

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8                    5.80      120.00      63.35
8                    6.40      121.00      70.65
8                    7.40      210.00      82.81
8                    8.40      250.00      94.98
8                   10.40      334.00     119.31
8                   12.40      400.00     143.63
8                   12.50      800.00     143.70
9 ENDTBL

          STRUCT NO.     ELEVATION   DISCHARGE     STORAGE
3 STRUCT      60

8                    2.00         .00      22.20
8                    2.40        3.00      27.41
8                    2.60       10.50      30.02
8                    3.00       22.50      35.24
8                    3.20       36.00      37.85
8                    3.60       60.00      43.06
8                    4.00       90.00      48.28
8                    4.60      135.00      56.11
8                    5.40      180.00      66.55
8                    6.00      181.00      74.38
8                    7.00      315.00      87.42
8                    8.00      375.00     100.47
8                    8.10      700.00     100.50
9 ENDTBL

                TIME INCREMENT
4 DIMHYD                .0200

8              .0000     .0300     .1000     .1900     .3100
8              .4700     .6600     .8200     .9300     .9900
8             1.0000     .9900     .9300     .8600     .7800
8              .6800     .5600     .4600     .3900     .3300
8              .2800     .2410     .2070     .1740     .1470
8              .1260     .1070     .0910     .0770     .0660
8              .0550     .0470     .0400     .0340     .0290
8              .0250     .0210     .0180     .0150     .0130
8              .0110     .0090     .0080     .0070     .0060
8              .0050     .0040     .0030     .0020     .0010
8              .0000     .0000     .0000     .0000     .0000
9 ENDTBL

  COMPUTED PEAK RATE FACTOR =  484.00
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     TABLE NO.      TIME INCREMENT
5 RAINFL 1                .5000

8              .0000     .0080     .0170     .0260     .0350
8              .0450     .0550     .0650     .0760     .0870
8              .0990     .1120     .1260     .1400     .1560
8              .1740     .1940     .2190     .2540     .3030
8              .5150     .5830     .6240     .6550     .6820
8              .7060     .7280     .7480     .7660     .7830
8              .7990     .8150     .8300     .8440     .8570
8              .8700     .8820     .8930     .9050     .9160
8              .9260     .9360     .9460     .9560     .9650
8              .9740     .9830     .9920    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 2                .2500

8              .0000     .0020     .0050     .0080     .0110
8              .0140     .0170     .0200     .0230     .0260
8              .0290     .0320     .0350     .0380     .0410
8              .0440     .0480     .0520     .0560     .0600
8              .0640     .0680     .0720     .0760     .0800
8              .0850     .0900     .0950     .1000     .1050
8              .1100     .1150     .1200     .1260     .1330
8              .1400     .1470     .1550     .1630     .1720
8              .1810     .1910     .2030     .2180     .2360
8              .2570     .2830     .3870     .6630     .7070
8              .7350     .7580     .7760     .7910     .8040
8              .8150     .8250     .8340     .8420     .8490
8              .8560     .8630     .8690     .8750     .8810
8              .8870     .8930     .8980     .9030     .9080
8              .9130     .9180     .9220     .9260     .9300
8              .9340     .9380     .9420     .9460     .9500
8              .9530     .9560     .9590     .9620     .9650
8              .9680     .9710     .9740     .9770     .9800
8              .9830     .9860     .9890     .9920     .9950
8              .9980    1.0000    1.0000    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 3                .5000

8              .0000     .0100     .0220     .0360     .0510
8              .0670     .0830     .0990     .1160     .1350
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8              .1560     .1790     .2040     .2330     .2680
8              .3100     .4250     .4800     .5200     .5500
8              .5770     .6010     .6230     .6440     .6640
8              .6830     .7010     .7190     .7360     .7530
8              .7690     .7850     .8000     .8150     .8300
8              .8440     .8580     .8710     .8840     .8960
8              .9080     .9200     .9320     .9440     .9560
8              .9670     .9780     .9890    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 4                .5000

8              .0000     .0040     .0080     .0120     .0160
8              .0200     .0250     .0300     .0350     .0400
8              .0450     .0500     .0550     .0600     .0650
8              .0700     .0750     .0810     .0870     .0930
8              .0990     .1050     .1110     .1180     .1250
8              .1320     .1400     .1480     .1560     .1650
8              .1740     .1840     .1950     .2070     .2200
8              .2360     .2550     .2770     .3030     .4090
8              .5150     .5490     .5830     .6050     .6240
8              .6400     .6550     .6690     .6820     .6940
8              .7050     .7160     .7270     .7380     .7480
8              .7580     .7670     .7760     .7840     .7920
8              .8000     .8080     .8160     .8230     .8300
8              .8370     .8440     .8510     .8580     .8640
8              .8700     .8760     .8820     .8880     .8940
8              .9000     .9060     .9110     .9160     .9210
8              .9260     .9310     .9360     .9410     .9460
8              .9510     .9560     .9610     .9660     .9710
8              .9760     .9800     .9840     .9880     .9920
8              .9960    1.0000    1.0000    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 5                .5000

8              .0000     .0020     .0050     .0080     .0110
8              .0140     .0170     .0200     .0230     .0260
8              .0290     .0320     .0350     .0380     .0410
8              .0440     .0470     .0510     .0550     .0590
8              .0630     .0670     .0710     .0750     .0790
8              .0840     .0890     .0940     .0990     .1040
8              .1090     .1140     .1200     .1260     .1330
8              .1400     .1470     .1540     .1620     .1710
8              .1810     .1920     .2040     .2170     .2330
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8              .2520     .2770     .3180     .6380     .6980
8              .7290     .7520     .7700     .7850     .7980
8              .8090     .8190     .8290     .8380     .8460
8              .8540     .8610     .8680     .8740     .8800
8              .8860     .8920     .8970     .9020     .9070
8              .9120     .9170     .9210     .9250     .9290
8              .9330     .9370     .9410     .9450     .9490
8              .9530     .9570     .9600     .9630     .9660
8              .9690     .9720     .9750     .9780     .9810
8              .9840     .9870     .9900     .9930     .9960
8              .9980    1.0000    1.0000    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 6                .0200

8              .0000     .0080     .0162     .0246     .0333
8              .0425     .0524     .0630     .0743     .0863
8              .0990     .1124     .1265     .1420     .1595
8              .1800     .2050     .2550     .3450     .4370
8              .5300     .6030     .6330     .6600     .6840
8              .7050     .7240     .7420     .7590     .7750
8              .7900     .8043     .8180     .8312     .8439
8              .8561     .8678     .8790     .8898     .9002
8              .9103     .9201     .9297     .9391     .9483
8              .9573     .9661     .9747     .9832     .9916
8             1.0000    1.0000    1.0000    1.0000    1.0000
9 ENDTBL
```

0 STANDARD CONTROL INSTRUCTIONS

```
6 RUNOFF 1   10    6      .8400    51.0000    7.50001 0 0 1 0 1
6 RESVOR 2   10 6  7     7.0000               1 0 0 1 0 1
6 REACH  3 10  7   5  1750.0000     1.2000    1.10001 0 0 1 0 1
6 RUNOFF 1 10      6      .2000    42.0000     .19001 0 0 1 0 1
6 ADDHYD 4 10  5 6 7                         1 1 0 1 0 1
6 SAVMOV 5 10  7   6
6 RESVOR 2   20 6  7     4.5000               1 0 0 1 0 1
6 REACH  3 20  7   5  2900.0000      .2800    1.94001 0 0 1 0 1
6 RUNOFF 1 20      6      .2800    54.0000    1.02001 0 0 1 0 1
6 ADDHYD 4 20  5 6 7                         1 1 0 1 0 1
6 SAVMOV 5 20  7   1
6 RUNOFF 1   30    6      .3700    49.0000    3.90001 0 0 1 0 1
6 RESVOR 2   30 6  7    21.0000               1 0 0 1 0 1
6 REACH  3 40  7   5  1300.0000      .8800    1.10001 0 0 1 0 1
6 RUNOFF 1 40      6      .0600    40.0000    1.00001 0 0 1 0 1
6 ADDHYD 4 40  5 6 7                         1 0 0 1 0 1
6 SAVMOV 5 40  7   6
6 RESVOR 2   40 6  7     9.0000               1 0 0 1 0 1
6 REACH  3 50  7   5  1700.0000     1.6000    1.45001 0 0 1 0 1
6 RUNOFF 1 49      6      .1100    40.0000    1.67001 0 0 1 0 1
6 ADDHYD 4 50  5 6 7                         1 0 0 1 0 1
6 SAVMOV 5 50  7   5
6 RUNOFF 1 50      6      .3600    85.0000     .42001 0 0 1 0 1
6 ADDHYD 4 50  5 6 7                         1 0 0 1 0 1
6 REACH  3 60  7   5  1400.0000      .4400    1.94001 0 0 1 0 1
6 RUNOFF 1 60      6      .0500    45.0000     .90001 0 0 1 0 1
6 ADDHYD 4 60  5 6 7                         1 1 0 1 0 1
6 SAVMOV 5 70  7   5
6 SAVMOV 5 70  1   6
6 ADDHYD 4 70  5 6 7                         1 1 0 1 0 1
6 REACH  3 80  7   5   700.0000      .3000    1.94001 0 0 1 0 1
6 RUNOFF 1 80      6      .0200    64.0000     .12001 0 0 1 0 1
6 ADDHYD 4 80  5 6 7                         1 0 0 1 0 1
6 SAVMOV 5 100 7   5
6 RUNOFF 1 90      6      .2400    73.0000     .62001 0 0 1 0 1
6 ADDHYD 4 100 5 6 7                         1 0 0 1 0 1
6 REACH  3 110 7   5   500.0000      .3000    1.94001 0 0 1 0 1
6 SAVMOV 5 120 5   7
6 REACH  3 120 7   5   500.0000      .3000    1.94001 0 0 1 0 1
6 RUNOFF 1 120     6      .1900    56.0000     .74001 0 0 1 0 1
6 ADDHYD 4 120 5 6 7                         1 1 0 1 0 1
6 SAVMOV 5   50 7  6
6 RESVOR 2   50 6  7     2.4000               1 1 1 1 0 1
6 REACH  3 130 7   5  1000.0000      .3000    1.94001 0 0 1 0 1
6 RUNOFF 1 130     6      .0500    74.0000     .19001 0 0 1 0 1
```


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```
6 ADDHYD 4 130   5 6 7                                  1 0 0 1 0 1
6 SAVMOV 5 130   7   6
6 RESVOR 2    60 6   7      2.0000                      1 1 1 1 0 1
6 REACH  3 140   7   5   2500.0000       .2100      1.48001 0 0 1 0 1
6 RUNOFF 1 140       6      .2000      68.0000       .19001 0 0 1 0 1
6 ADDHYD 4 140   5 6 7                                  1 0 0 1 0 1
6 SAVMOV 5 150   7   5
6 RUNOFF 1 149       6      .0800      50.0000       .42001 0 0 1 0 1
6 ADDHYD 4 150   5 6 7                                  1 0 0 1 0 1
6 REACH  3 150   7   5    300.0000       .2100      1.48001 0 0 1 0 1
6 RUNOFF 1 150       6      .0100      40.0000       .15001 0 0 1 0 1
6 ADDHYD 4 150   5 6 7                                  1 0 0 1 0 1
6 SAVMOV 5 180   7   5
6 RUNOFF 1 180       6      .1100      42.0000       .48001 0 0 1 0 1
6 ADDHYD 4 180   5 6 7                                  1 0 0 1 0 1
6 REACH  3 180   7   5   1700.0000       .2100      1.48001 0 0 1 0 1
6 RUNOFF 1 180       6      .1100      41.0000       .48001 0 0 1 0 1
6 ADDHYD 4 180   5 6 7                                  1 1 0 1 0 1
  ENDATA

END OF LISTING
```

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EXECUTIVE CONTROL OPERATION BASFLO RECORD ID 1740

\+ NEW BASEFLOW = 3.00 CFS

EXECUTIVE CONTROL OPERATION INCREM RECORD ID 1750

\+ MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT RECORD ID 1760

\+ FROM STRUCTURE 10
\+ TO XSECTION 180
STARTING TIME = .00 RAIN DEPTH = 7.00 RAIN DURATION= 1.00 RAIN TABLE NO.= 2 ANT. MOIST. COND= 2
ALTERNATE NO.=86 STORM NO.= 1 MAIN TIME INCREMENT = .10 HOURS

OPERATION RUNOFF STRUCTURE 10
OUTPUT HYDROGRAPH= 6
AREA= .84 SQ MI INPUT RUNOFF CURVE= 51. TIME OF CONCENTRATION= 7.50 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
17.80	96.56	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.67 WATERSHED INCHES, 906.24 CFS-HRS, 74.89 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 10
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 7.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
18.14	96.09	9.50

RUNOFF VOLUME ABOVE BASEFLOW = 1.63 WATERSHED INCHES, 884.09 CFS-HRS, 73.06 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 10
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1750.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= 1.20, M= 1.10
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .34 PEAK TRAVEL TIME = .40 HOURS
0 *** WARNING - REACH 10 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 18.15 CFS, 18.88 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
18.47	98.84	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.62 WATERSHED INCHES, 878.37 CFS-HRS, 72.59 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 10
OUTPUT HYDROGRAPH= 2

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OUTPUT HYDROGRAPH= 3

AREA= .20 SQ MI INPUT RUNOFF CURVE= 42. TIME OF CONCENTRATION= .19 HOURS

INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.08	121.81	(RUNOFF)
15.20	8.69	(RUNOFF)
16.46	7.85	(RUNOFF)
17.67	6.75	(RUNOFF)
19.66	5.63	(RUNOFF)
23.66	4.48	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.00 WATERSHED INCHES, 128.54 CFS-HRS, 10.62 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 10
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.08	124.81	(NULL)
18.48	104.33	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.04 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.92	32.22
12.00	DISCHG	103.79	122.67	68.37	48.48	36.93	31.73	29.33	27.26	26.59	24.26
13.00	DISCHG	23.05	22.09	20.81	20.53	19.65	19.34	18.92	18.32	18.54	18.63
14.00	DISCHG	19.37	20.36	21.44	23.10	24.57	26.43	28.32	30.58	34.13	38.16
15.00	DISCHG	42.29	46.34	50.23	53.88	56.65	58.95	61.10	63.08	64.97	66.81
16.00	DISCHG	68.65	71.17	74.19	77.35	80.46	83.41	85.78	87.66	89.73	91.75
17.00	DISCHG	93.63	95.35	96.91	98.34	99.64	100.81	101.85	102.75	103.42	103.37
18.00	DISCHG	103.47	103.75	104.01	104.19	104.30	104.32	104.27	104.13	103.93	103.65
19.00	DISCHG	103.31	102.89	102.39	101.82	101.18	100.46	99.66	98.79	97.73	95.99
20.00	DISCHG	94.45	93.18	91.97	90.75	89.51	88.27	87.03	85.81	84.61	83.43
21.00	DISCHG	82.27	81.14	80.03	78.94	77.87	76.82	75.80	74.79	73.81	72.84
22.00	DISCHG	71.90	71.02	70.32	69.71	69.16	68.63	68.11	67.58	67.04	66.49
23.00	DISCHG	65.93	65.36	64.77	64.17	63.56	62.94	62.32	61.69	60.95	59.41
24.00	DISCHG	57.89	55.77	53.21	51.69	50.62	49.72	48.91	48.18	47.50	46.85
25.00	DISCHG	46.24	45.66	45.10	44.55	44.02	43.50	42.98	42.48	41.98	41.49
26.00	DISCHG	41.00	40.51	40.03	39.55	39.07	38.60	38.12	37.63	37.15	36.66
27.00	DISCHG	36.16	35.66	35.15	34.64	34.13	33.61	33.09	32.57	32.04	31.51
28.00	DISCHG	30.97	30.44	29.90	29.36	28.82	28.28	27.74	27.21	26.67	26.13
29.00	DISCHG	25.68	25.30	24.94	24.59	24.24	23.89	23.52	23.14	22.75	22.35

RUNOFF VOLUME ABOVE BASEFLOW = 1.50 WATERSHED INCHES, 1006.91 CFS-HRS, 83.21 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVHOV CROSS SECTION 10
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 20
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 4.50

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.90	24.55	6.08
20.10	93.18	9.18

RUNOFF VOLUME ABOVE BASEFLOW = 1.45 WATERSHED INCHES, 970.12 CFS-HRS, 80.17 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2900.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .28, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .72 PEAK TRAVEL TIME = .10 HOURS

*** WARNING REACH 20 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 20 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 23.17 CFS, 25.69 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.04	24.51	(NULL)
20.25	93.15	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.44 WATERSHED INCHES, 966.86 CFS-HRS, 79.90 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 20
OUTPUT HYDROGRAPH= 6
AREA= .28 SQ MI INPUT RUNOFF CURVE= 54. TIME OF CONCENTRATION= 1.02 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0971 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.60	168.04	(RUNOFF)
23.72	9.33	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.03 WATERSHED INCHES, 366.66 CFS-HRS, 30.30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 20
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.61	190.93	(NULL)
20.06	104.86	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.32 SQ.MI.

11.00	DISCHG	3.00	3.00	3.01	3.04	3.14	3.39	4.10	5.77	9.85	19.17
12.00	DISCHG	36.40	64.15	100.69	138.20	167.76	185.17	190.87	187.22	176.62	161.62
13.00	DISCHG	145.61	131.49	119.84	109.90	101.25	93.59	86.94	81.13	75.98	71.45
14.00	DISCHG	67.48	64.04	61.07	58.52	56.36	54.54	53.05	51.84	50.88	50.19
15.00	DISCHG	49.81	50.04	50.84	52.09	53.70	55.54	57.46	59.38	61.10	62.78
16.00	DISCHG	64.47	66.18	67.96	69.85	71.88	74.04	76.29	78.11	79.70	81.18
17.00	DISCHG	82.62	84.03	85.46	86.90	88.36	89.85	91.37	92.62	93.00	93.12

18.00	DISCHG	93.13	93.07	92.94	92.76	92.56	92.77	93.74	94.87	96.03	97.16
19.00	DISCHG	98.24	99.25	100.20	101.07	101.86	102.58	103.23	103.79	104.26	104.62
20.00	DISCHG	104.82	104.84	104.68	104.38	103.97	103.50	102.99	102.46	101.92	101.37
21.00	DISCHG	100.81	100.23	99.62	99.00	98.36	97.69	97.01	96.31	95.60	94.87
22.00	DISCHG	94.12	93.37	92.61	91.84	91.08	90.33	89.59	88.87	88.41	88.25
23.00	DISCHG	88.16	88.09	88.03	87.97	87.91	87.84	87.77	87.70	87.61	87.49
24.00	DISCHG	87.31	86.84	85.39	83.47	81.26	78.87	76.45	74.08	71.84	69.76
25.00	DISCHG	67.86	66.13	64.55	63.10	61.74	60.27	58.70	57.19	55.77	54.45
26.00	DISCHG	53.21	52.05	50.96	49.93	48.95	48.03	47.15	46.32	45.51	44.74
27.00	DISCHG	44.00	43.28	42.59	41.91	41.26	40.61	39.96	39.28	38.60	37.94
28.00	DISCHG	37.29	36.66	36.04	35.42	34.82	34.22	33.63	33.04	32.46	31.88
29.00	DISCHG	31.31	30.74	30.19	29.66	29.14	28.64	28.16	27.69	27.23	26.78

RUNOFF VOLUME ABOVE BASEFLOW = 1.57 WATERSHED INCHES, 1333.52 CFS-HRS, 110.20 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 1

OPERATION RUNOFF STRUCTURE 30
OUTPUT HYDROGRAPH= 6
AREA= .37 SQ MI INPUT RUNOFF CURVE= 49. TIME OF CONCENTRATION= 3.90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
14.95	60.58	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.57 WATERSHED INCHES, 375.61 CFS-HRS, 31.04 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 30
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 21.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.21	48.05	25.91

RUNOFF VOLUME ABOVE BASEFLOW = 1.51 WATERSHED INCHES, 360.28 CFS-HRS, 29.77 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1300.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .88, M= 1.10
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .32 PEAK TRAVEL TIME = .30 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.55	47.70	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.50 WATERSHED INCHES, 358.97 CFS-HRS, 29.67 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 40
OUTPUT HYDROGRAPH= 6
AREA= .06 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= 1.00 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0952 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.72	10.21	(RUNOFF)
23.76	1.21	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 32.57 CFS-HRS, 2.69 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 40
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.73	10.35	(NULL)
16.54	49.80	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 391.54 CFS-HRS, 32.36 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 40
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 9.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.90	9.83	9.81
16.60	49.78	10.89

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 389.94 CFS-HRS, 32.22 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= 1.60, M= 1.45
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .83 PEAK TRAVEL TIME = .10 HOURS

*** WARNING REACH 50 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.02	9.78	(NULL)
16.72	49.77	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.40 WATERSHED INCHES, 389.36 CFS-HRS, 32.18 ACRE-FEET; BASEFLOW = .00 CFS

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TR20 XEQ 05-05-86  08:16      COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM     20          JOB  1  PASS   1

    REV PC 09/83(.2)          ALT  86                                                           30              PAGE  15



OPERATION RUNOFF   CROSS SECTION  49
          OUTPUT HYDROGRAPH=  6
          AREA=    .11 SQ MI   INPUT RUNOFF CURVE= 40.    TIME OF CONCENTRATION=  1.67 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .1012 HOURS

          PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             13.33                        13.76                      (RUNOFF)
             23.80                         2.20                      (RUNOFF)
+                                          *                                  * FIRST POINT OF FLAT PEAK

  RUNOFF VOLUME ABOVE BASEFLOW =   .84 WATERSHED INCHES,     59.78 CFS-HRS,     4.94 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION ADDHYD   CROSS SECTION  50
          INPUT HYDROGRAPHS= 5,6     OUTPUT HYDROGRAPH= 7

          PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             13.16                        22.91                      (NULL)
             16.65                        53.98                      (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.29 WATERSHED INCHES,    449.14 CFS-HRS,    37.12 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION SAVMOV   CROSS SECTION  50
          INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5


OPERATION RUNOFF   CROSS SECTION  50
          OUTPUT HYDROGRAPH=  6
          AREA=    .36 SQ MI   INPUT RUNOFF CURVE= 85.    TIME OF CONCENTRATION=   .42 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .0560 HOURS

          PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             12.13                      1078.73                      (RUNOFF)
             19.65                        24.75                      (RUNOFF)
             23.65                        18.64                      (RUNOFF)

  RUNOFF VOLUME ABOVE BASEFLOW =  5.25 WATERSHED INCHES,   1220.14 CFS-HRS,   100.83 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION ADDHYD   CROSS SECTION  50
          INPUT HYDROGRAPHS= 5,6     OUTPUT HYDROGRAPH= 7

          PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             12.13                      1079.95                      (NULL)
             16.49                        90.76                      (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  2.87 WATERSHED INCHES,   1669.27 CFS-HRS,   137.95 ACRE-FEET;   BASEFLOW =    .00 CFS
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OPERATION REACH CROSS SECTION 60
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1400.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .44, M= 1.94.
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 60 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1079.95	(NULL)
16.49	90.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.87 WATERSHED INCHES, 1669.27 CFS-HRS, 137.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 60
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 45. TIME OF CONCENTRATION= .90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.56	16.56	(RUNOFF)
23.72	1.26	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.24 WATERSHED INCHES, 39.88 CFS-HRS, 3.30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 60
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1086.21	(NULL)
16.49	93.02	(NULL)

TIME(HRS)		FIRST HYDROGRAPH POINT = .00 HOURS			TIME INCREMENT = .10 HOURS				DRAINAGE AREA = .95 SQ.MI.		
4.00	DISCHG	.00	.00	.00	.02	.10	.26	.49	.75	1.04	1.33
5.00	DISCHG	1.62	1.91	2.20	2.49	2.77	3.04	3.32	3.58	3.84	4.10
6.00	DISCHG	4.36	4.67	5.18	5.80	6.40	6.89	7.32	7.71	8.07	8.41
7.00	DISCHG	8.75	9.07	9.38	9.69	9.99	10.29	10.58	10.86	11.14	11.41
8.00	DISCHG	11.68	12.08	12.82	13.80	14.96	16.27	17.48	18.44	19.17	19.76
9.00	DISCHG	20.27	20.91	21.91	23.16	24.29	25.16	26.02	27.23	28.66	29.92
10.00	DISCHG	30.90	31.86	33.18	34.84	37.10	40.08	43.57	47.95	52.84	58.21
11.00	DISCHG	64.10	70.07	76.45	83.02	90.75	101.27	130.10	208.30	333.15	539.50
12.00	DISCHG	836.25	1068.68	1030.91	805.58	576.69	421.03	324.82	265.51	227.09	199.69
13.00	DISCHG	178.52	161.72	147.53	136.12	127.20	119.75	113.25	107.02	101.45	96.86
14.00	DISCHG	93.29	90.54	88.31	86.99	86.63	86.30	86.13	85.74	85.37	85.47
15.00	DISCHG	86.26	87.42	88.85	90.29	90.92	90.62	90.19	90.11	90.41	90.86
16.00	DISCHG	91.35	91.83	92.25	92.60	92.86	93.02	92.76	91.64	89.95	88.43
17.00	DISCHG	87.35	86.55	85.87	85.24	84.63	84.03	83.43	82.82	82.11	80.76
18.00	DISCHG	78.62	76.40	74.60	73.30	72.20	71.21	70.27	69.38	68.51	67.67

19.00	DISCHG	66.86	66.07	65.33	64.68	63.99	63.30	62.62	61.96	61.19	59.85
20.00	DISCHG	57.76	55.58	53.88	52.62	51.60	50.72	49.94	49.23	48.56	47.93
21.00	DISCHG	47.34	46.79	46.26	45.76	45.28	44.83	44.40	43.97	43.53	43.10
22.00	DISCHG	42.70	42.29	41.89	41.51	41.15	40.80	40.46	40.14	39.84	39.55
23.00	DISCHG	39.27	39.01	38.75	38.51	38.28	38.06	37.85	37.65	37.37	36.46
24.00	DISCHG	34.72	32.26	28.67	24.55	21.18	18.97	17.56	16.54	15.77	15.13
25.00	DISCHG	14.59	14.12	13.71	13.34	13.02	12.72	12.45	12.20	11.96	11.76
26.00	DISCHG	11.57	11.41	11.25	11.11	10.97	10.84	10.71	10.57	10.42	10.28
27.00	DISCHG	10.13	9.97	9.81	9.64	9.47	9.29	9.11	8.93	8.74	8.54
28.00	DISCHG	8.34	8.13	7.93	7.72	7.51	7.29	7.08	6.87	6.67	6.46
29.00	DISCHG	6.26	6.06	5.87	5.68	5.49	5.32	5.14	4.99	4.87	4.74

RUNOFF VOLUME ABOVE BASEFLOW = 2.79 WATERSHED INCHES, 1709.15 CFS-HRS, 141.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 1 OUTPUT HYDROGRAPH= 6

OPERATION ADDHYD CROSS SECTION 70
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.15	1164.89	(NULL)
17.72	175.45	(NULL)
19.49	165.88	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.27 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.41
7.00	DISCHG	11.75	12.07	12.38	12.69	12.99	13.29	13.58	13.86	14.14	14.41
8.00	DISCHG	14.68	15.08	15.82	16.80	17.96	19.27	20.48	21.44	22.17	22.76
9.00	DISCHG	23.27	23.91	24.91	26.16	27.29	28.16	29.02	30.23	31.66	32.92
10.00	DISCHG	33.90	34.86	36.18	37.84	40.10	43.08	46.57	50.95	55.84	61.21
11.00	DISCHG	67.10	73.07	79.46	86.06	93.89	104.67	134.20	214.07	343.00	558.67
12.00	DISCHG	872.65	1132.82	1131.60	943.78	744.44	606.20	515.69	452.73	403.70	361.31
13.00	DISCHG	324.13	293.22	267.37	246.01	228.46	213.34	200.20	188.14	177.42	168.31
14.00	DISCHG	160.76	154.59	149.38	145.51	142.98	140.84	139.17	137.58	136.25	135.66
15.00	DISCHG	136.07	137.46	139.69	142.38	144.62	146.15	147.65	149.50	151.51	153.64
16.00	DISCHG	155.82	158.01	160.21	162.45	164.74	167.06	169.05	169.75	169.64	169.61
17.00	DISCHG	169.97	170.58	171.32	172.14	173.00	173.89	174.80	175.44	175.11	173.88
18.00	DISCHG	171.75	169.47	167.54	166.06	164.76	163.98	164.01	164.25	164.54	164.83
19.00	DISCHG	165.09	165.32	165.52	165.74	165.85	165.88	165.84	165.75	165.45	164.47
20.00	DISCHG	162.58	160.42	158.56	157.00	155.57	154.23	152.94	151.68	150.47	149.30

21.00	DISCHG	148.15	147.01	145.88	144.76	143.64	142.52	141.41	140.28	139.13	137.97
22.00	DISCHG	136.82	135.66	134.50	133.35	132.22	131.12	130.05	129.01	128.25	127.79
23.00	DISCHG	127.43	127.10	126.79	126.48	126.19	125.90	125.62	125.35	124.99	123.95
24.00	DISCHG	122.03	119.10	114.06	108.02	102.44	97.84	94.01	90.63	87.61	84.89
25.00	DISCHG	82.45	80.25	78.26	76.44	74.76	72.99	71.15	69.39	67.74	66.20
26.00	DISCHG	64.78	63.45	62.21	61.04	59.93	58.87	57.86	56.88	55.94	55.02
27.00	DISCHG	54.13	53.25	52.40	51.56	50.73	49.91	49.07	48.20	47.34	46.48
28.00	DISCHG	45.63	44.79	43.96	43.14	42.32	41.51	40.71	39.91	39.12	38.34
29.00	DISCHG	37.57	36.81	36.06	35.34	34.64	33.96	33.31	32.68	32.10	31.52

RUNOFF VOLUME ABOVE BASEFLOW = 2.08 WATERSHED INCHES, 3042.67 CFS-HRS, 251.45 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 80
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 80 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.15	1164.89	(NULL)
17.72	175.45	(NULL)
19.49	165.88	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.08 WATERSHED INCHES, 3042.67 CFS-HRS, 251.45 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 80
OUTPUT HYDROGRAPH= 6
AREA= .02 SQ MI INPUT RUNOFF CURVE= 64. TIME OF CONCENTRATION= .12 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0160 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.98	54.99	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.98 WATERSHED INCHES, 38.49 CFS-HRS, 3.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 80
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1184.64	(NULL)
17.71	176.77	(NULL)
19.49	166.96	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.08 WATERSHED INCHES, 3081.15 CFS-HRS, 254.63 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVHOV CROSS SECTION 100

INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 90
OUTPUT HYDROGRAPH= 6
AREA= .24 SQ MI INPUT RUNOFF CURVE= 73. TIME OF CONCENTRATION= .62 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0827 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.27	434.61	(RUNOFF)
19.66	14.73	(RUNOFF)
23.66	11.19	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.93 WATERSHED INCHES, 608.63 CFS-HRS, 50.30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 100
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	1575.11	(NULL)
16.68	192.50	(NULL)
17.71	195.10	(NULL)
19.50	181.68	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.26 WATERSHED INCHES, 3689.79 CFS-HRS, 304.92 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 110
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 110 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	1575.11	(NULL)
16.68	192.50	(NULL)
17.71	195.10	(NULL)
19.50	181.68	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.26 WATERSHED INCHES, 3689.79 CFS-HRS, 304.92 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 120
INPUT HYDROGRAPH= 5 OUTPUT HYDROGRAPH= 7

OPERATION REACH CROSS SECTION 120
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

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*** WARNING REACH 120 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	1575.11	(NULL)
16.68	192.50	(NULL)
17.71	195.10	(NULL)
19.50	181.68	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.26 WATERSHED INCHES, 3689.79 CFS-HRS, 304.92 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 120
OUTPUT HYDROGRAPH= 6
AREA= .19 SQ MI INPUT RUNOFF CURVE= 56. TIME OF CONCENTRATION= .74 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0987 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.38	159.29	(RUNOFF)
19.68	8.61	(RUNOFF)
23.67	6.65	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.22 WATERSHED INCHES, 271.72 CFS-HRS, 22.45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 120
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	1701.00	(NULL)
16.67	204.84	(NULL)
17.70	205.71	(NULL)
19.50	190.28	(NULL)

FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

TIME(HRS)											
4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.41
7.00	DISCHG	11.75	12.07	12.38	12.69	12.99	13.30	13.62	13.96	14.33	14.71
8.00	DISCHG	15.11	15.65	16.55	17.73	19.11	20.68	22.18	23.45	24.48	25.36
9.00	DISCHG	26.17	27.10	28.43	30.05	31.57	32.84	34.14	35.80	37.74	39.53
10.00	DISCHG	41.03	42.53	44.41	46.70	49.75	53.63	58.32	64.09	70.62	77.95
11.00	DISCHG	85.99	94.52	103.70	113.50	125.22	140.74	184.79	289.19	466.16	779.51
12.00	DISCHG	1229.34	1607.92	1698.69	1539.99	1298.92	1079.45	901.93	767.23	663.80	579.86
13.00	DISCHG	512.00	456.38	411.05	373.98	343.54	318.23	296.28	276.82	259.58	244.73
14.00	DISCHG	232.53	222.30	213.60	206.65	201.28	196.65	192.46	188.50	184.96	182.39
15.00	DISCHG	181.17	181.32	182.67	184.68	186.11	186.81	187.31	188.14	189.26	190.70
16.00	DISCHG	192.41	194.29	196.29	198.40	200.62	202.88	204.57	204.79	203.95	203.02
17.00	DISCHG	202.48	202.34	202.54	202.99	203.61	204.33	205.14	205.71	205.23	203.56
18.00	DISCHG	200.84	197.69	194.82	192.49	190.52	189.27	188.98	189.02	189.16	189.36

19.00	DISCHG	189.56	189.75	189.93	190.14	190.25	190.28	190.25	190.16	189.78	188.38
20.00	DISCHG	185.91	182.87	180.05	177.62	175.52	173.70	172.09	170.62	169.25	167.98
21.00	DISCHG	166.76	165.57	164.42	163.28	162.15	161.03	159.91	158.78	157.64	156.49
22.00	DISCHG	155.34	154.19	153.04	151.90	150.78	149.69	148.62	147.59	146.84	146.39
23.00	DISCHG	146.04	145.72	145.41	145.11	144.83	144.55	144.28	144.01	143.55	142.08
24.00	DISCHG	139.50	135.08	128.06	119.61	111.41	104.43	98.65	93.83	89.82	86.43
25.00	DISCHG	83.51	80.99	78.77	76.79	75.00	73.16	71.26	69.46	67.78	66.22
26.00	DISCHG	64.79	63.46	62.21	61.04	59.93	58.87	57.86	56.88	55.94	55.02
27.00	DISCHG	54.13	53.25	52.40	51.56	50.73	49.91	49.07	48.20	47.34	46.48
28.00	DISCHG	45.63	44.79	43.96	43.14	42.32	41.51	40.71	39.91	39.12	38.34
29.00	DISCHG	37.57	36.81	36.06	35.34	34.64	33.96	33.31	32.68	32.10	31.52

RUNOFF VOLUME ABOVE BASEFLOW = 2.26 WATERSHED INCHES, 3961.51 CFS-HRS, 327.38 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV STRUCTURE 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 50
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.37	353.22	10.98

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

9.00	DISCHG	3.00	3.00	3.00	3.43	3.89	4.37	4.86	5.37	5.90	6.45
9.00	ELEV	2.84	2.84	2.84	2.86	2.88	2.89	2.91	2.93	2.96	2.98
10.00	DISCHG	7.02	7.55	8.09	8.66	9.26	9.90	10.60	11.37	12.21	13.16
10.00	ELEV	3.00	3.02	3.05	3.07	3.10	3.13	3.16	3.19	3.23	3.27
11.00	DISCHG	14.20	15.35	17.10	19.56	22.23	25.21	28.89	34.46	44.57	63.90
11.00	ELEV	3.32	3.37	3.43	3.49	3.56	3.63	3.72	3.86	4.09	4.48
12.00	DISCHG	94.00	120.33	176.22	233.26	265.79	291.77	311.43	326.15	336.45	342.78
12.00	ELEV	5.11	6.00	7.02	7.98	8.78	9.39	9.86	10.21	10.47	10.67
13.00	DISCHG	347.28	350.32	352.17	353.06	353.19	352.69	351.69	350.24	348.42	346.29
13.00	ELEV	10.80	10.89	10.95	10.98	10.98	10.97	10.94	10.89	10.84	10.77
14.00	DISCHG	343.90	341.32	338.58	335.73	332.49	328.73	324.96	321.17	317.39	313.63
14.00	ELEV	10.70	10.62	10.54	10.45	10.36	10.27	10.18	10.09	10.00	9.91
15.00	DISCHG	309.92	306.30	302.80	299.45	296.24	293.16	290.17	287.29	284.52	281.86
15.00	ELEV	9.83	9.74	9.66	9.58	9.50	9.43	9.36	9.29	9.22	9.16
16.00	DISCHG	279.32	276.90	274.60	272.43	270.38	268.45	266.63	264.88	263.18	261.50
16.00	ELEV	9.10	9.04	8.99	8.93	8.89	8.84	8.80	8.75	8.71	8.67
17.00	DISCHG	259.85	258.23	256.66	255.15	253.69	252.29	250.95	249.69	248.50	247.32
17.00	ELEV	8.63	8.60	8.56	8.52	8.49	8.45	8.42	8.39	8.36	8.33
18.00	DISCHG	246.11	244.85	243.55	242.22	240.86	239.49	238.14	236.82	235.54	234.30
18.00	ELEV	8.30	8.27	8.24	8.21	8.17	8.14	8.10	8.07	8.04	8.01
19.00	DISCHG	233.10	231.94	230.81	229.72	228.66	227.63	226.63	225.65	224.70	223.74
19.00	ELEV	7.98	7.95	7.92	7.89	7.87	7.84	7.82	7.79	7.77	7.74
20.00	DISCHG	222.76	221.73	220.65	219.53	218.38	217.21	216.02	214.82	213.62	212.41

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20.00	ELEV	7.72	7.69	7.67	7.64	7.61	7.58	7.55	7.52	7.49	7.46
21.00	DISCHG	211.21	210.00	207.36	204.80	202.33	199.94	197.62	195.37	193.19	191.07
21.00	ELEV	7.43	7.40	7.37	7.34	7.31	7.29	7.26	7.24	7.21	7.19
22.00	DISCHG	189.01	187.00	185.04	183.12	181.26	179.44	177.66	175.92	174.24	172.62
22.00	ELEV	7.16	7.14	7.12	7.10	7.08	7.06	7.04	7.02	7.00	6.98
23.00	DISCHG	171.07	169.59	168.18	166.83	165.55	164.32	163.15	162.04	160.97	159.90
23.00	ELEV	6.96	6.95	6.93	6.91	6.90	6.89	6.87	6.86	6.85	6.84
24.00	DISCHG	158.78	157.52	155.99	154.11	151.84	149.26	146.46	143.51	140.48	137.40
24.00	ELEV	6.82	6.81	6.79	6.77	6.75	6.72	6.69	6.65	6.62	6.58
25.00	DISCHG	134.32	131.27	128.25	125.29	122.39	120.97	120.92	120.86	120.80	120.74
25.00	ELEV	6.55	6.52	6.48	6.45	6.42	6.38	6.35	6.32	6.28	6.24
26.00	DISCHG	120.68	120.61	120.55	120.48	120.41	120.34	120.27	120.20	120.13	120.06
26.00	ELEV	6.21	6.17	6.13	6.09	6.05	6.01	5.96	5.92	5.88	5.83
27.00	DISCHG	119.63	117.97	116.33	114.72	113.12	111.54	109.97	108.43	106.91	105.40
27.00	ELEV	5.79	5.75	5.70	5.66	5.62	5.57	5.53	5.49	5.45	5.41
28.00	DISCHG	103.90	102.43	100.97	99.52	98.09	96.68	95.28	93.90	92.53	91.18
28.00	ELEV	5.37	5.33	5.29	5.25	5.22	5.18	5.14	5.10	5.07	5.03
29.00	DISCHG	89.78	88.03	86.30	84.61	82.96	81.33	79.74	78.18	76.65	75.15
29.00	ELEV	5.00	4.96	4.93	4.89	4.86	4.83	4.79	4.76	4.73	4.70

RUNOFF VOLUME ABOVE BASEFLOW = 2.08 WATERSHED INCHES, 3644.05 CFS-HRS, 301.14 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1000.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 130 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 130 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 72.15 CFS, 20.60 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.37	353.22	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.08 WATERSHED INCHES, 3644.05 CFS-HRS, 301.14 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 130
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 74. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	160.37	(RUNOFF)
23.65	2.37	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 4.05 WATERSHED INCHES, 130.79 CFS-HRS, 10.81 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 130

INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.06	255.99	(NULL)
13.29	364.23	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.11 WATERSHED INCHES, 3774.84 CFS-HRS, 311.95 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 60
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.47	273.66	6.69

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.77 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	4.63	7.80
11.00	ELEV	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.44	2.53
12.00	DISCHG	12.26	16.81	21.15	29.36	39.55	49.41	59.61	72.40	85.21	97.75
12.00	ELEV	2.66	2.81	2.95	3.10	3.26	3.42	3.59	3.77	3.94	4.10
13.00	DISCHG	109.88	121.58	132.80	141.43	149.22	156.70	163.88	170.74	177.28	180.11
13.00	ELEV	4.27	4.42	4.57	4.71	4.85	4.99	5.11	5.24	5.35	5.46
14.00	DISCHG	180.29	180.47	180.64	180.82	180.98	192.46	203.90	214.07	223.08	231.04
14.00	ELEV	5.57	5.68	5.79	5.89	5.99	6.09	6.17	6.25	6.31	6.37
15.00	DISCHG	238.05	244.19	249.54	254.18	258.15	261.51	264.35	266.71	268.64	270.20
15.00	ELEV	6.43	6.47	6.51	6.55	6.58	6.60	6.62	6.64	6.65	6.67
16.00	DISCHG	271.42	272.34	272.99	273.41	273.62	273.65	273.52	273.23	272.80	272.26
16.00	ELEV	6.67	6.68	6.69	6.69	6.69	6.69	6.69	6.69	6.69	6.68
17.00	DISCHG	271.63	270.92	270.13	269.29	268.39	267.45	266.47	265.47	264.45	263.40
17.00	ELEV	6.68	6.67	6.67	6.66	6.65	6.65	6.64	6.63	6.62	6.61
18.00	DISCHG	262.31	261.19	260.06	258.91	257.75	256.57	255.38	254.17	252.96	251.74
18.00	ELEV	6.61	6.60	6.59	6.58	6.57	6.56	6.56	6.55	6.54	6.53
19.00	DISCHG	250.52	249.31	248.10	246.90	245.71	244.53	243.37	242.22	241.08	239.94
19.00	ELEV	6.52	6.51	6.50	6.49	6.48	6.47	6.47	6.46	6.45	6.44
20.00	DISCHG	238.79	237.64	236.49	235.34	234.20	233.05	231.90	230.75	229.60	228.44
20.00	ELEV	6.43	6.42	6.41	6.41	6.40	6.39	6.38	6.37	6.36	6.35
21.00	DISCHG	227.27	226.11	224.88	223.54	222.10	220.58	219.00	217.36	215.67	213.94
21.00	ELEV	6.35	6.34	6.33	6.32	6.31	6.30	6.28	6.27	6.26	6.25
22.00	DISCHG	212.19	210.41	208.61	206.80	204.99	203.17	201.36	199.55	197.75	195.96
22.00	ELEV	6.23	6.22	6.21	6.19	6.18	6.17	6.15	6.14	6.12	6.11
23.00	DISCHG	194.19	192.43	190.71	189.01	187.34	185.71	184.11	182.55	181.03	180.98
23.00	ELEV	6.10	6.09	6.07	6.06	6.05	6.04	6.02	6.01	6.00	5.99
24.00	DISCHG	180.96	180.94	180.91	180.89	180.86	180.82	180.79	180.75	180.71	180.67
24.00	ELEV	5.98	5.96	5.95	5.93	5.91	5.89	5.87	5.85	5.83	5.80
25.00	DISCHG	180.62	180.57	180.52	180.46	180.40	180.34	180.27	180.21	180.15	180.09

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25.00	ELEV	5.77	5.74	5.71	5.68	5.64	5.60	5.56	5.53	5.49	5.45
26.00	DISCHG	180.02	178.71	176.68	174.71	172.81	170.98	169.20	167.49	165.83	164.23
26.00	ELEV	5.41	5.38	5.34	5.31	5.27	5.24	5.21	5.18	5.15	5.12
27.00	DISCHG	162.68	161.14	159.60	158.06	156.52	154.97	153.42	151.87	150.33	148.78
27.00	ELEV	5.09	5.06	5.04	5.01	4.98	4.95	4.93	4.90	4.87	4.84
28.00	DISCHG	147.24	145.69	144.15	142.62	141.08	139.55	138.03	136.51	134.99	132.99
28.00	ELEV	4.82	4.79	4.76	4.74	4.71	4.68	4.65	4.63	4.60	4.57
29.00	DISCHG	131.02	129.06	127.12	125.19	123.27	121.36	119.46	117.58	115.72	113.87
29.00	ELEV	4.55	4.52	4.49	4.47	4.44	4.42	4.39	4.37	4.34	4.32

RUNOFF VOLUME ABOVE BASEFLOW = 1.92 WATERSHED INCHES, 3434.39 CFS-HRS, 283.82 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 140
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .37 PEAK TRAVEL TIME = .30 HOURS
0 *** WARNING - REACH 140 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 110.87 CFS, 40.97 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.77	273.19	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.90 WATERSHED INCHES, 3403.42 CFS-HRS, 281.26 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 140
OUTPUT HYDROGRAPH= 6
AREA= .20 SQ MI INPUT RUNOFF CURVE= 68. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	543.51	(RUNOFF)
15.16	19.42	(RUNOFF)
16.45	16.95	(RUNOFF)
17.66	14.20	(RUNOFF)
19.65	11.51	(RUNOFF)
23.65	8.78	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.42 WATERSHED INCHES, 441.34 CFS-HRS, 36.47 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 140
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	549.11	(NULL)
16.51	289.38	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.01 WATERSHED INCHES, 3844.76 CFS-HRS, 317.73 ACRE-FEET; BASEFLOW = 3.00 CFS

```
TR20 XEQ 05-05-86  08:16      COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM     20          JOB  1  PASS   1

    REV PC 09/83(.2)          ALT  86                                                           30               PAGE  25


OPERATION SAVMOV   CROSS SECTION 150
          INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5


OPERATION RUNOFF   CROSS SECTION 149
          OUTPUT HYDROGRAPH=  6
          AREA=    .08 SQ MI   INPUT RUNOFF CURVE= 50.    TIME OF CONCENTRATION=   .42 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .0560 HOURS

          PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            12.19                         67.90                      (RUNOFF)
            23.67                          2.40                      (RUNOFF)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.67 WATERSHED INCHES,     86.04 CFS-HRS,     7.11 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION ADDHYD   CROSS SECTION 150
          INPUT HYDROGRAPHS= 5,6     OUTPUT HYDROGRAPH= 7

          PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            12.03                        592.40                      (NULL)
            14.30                        209.30                      (NULL)
            16.51                        293.74                      (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  2.00 WATERSHED INCHES,   3930.79 CFS-HRS,   324.84 ACRE-FEET;   BASEFLOW =   3.00 CFS


OPERATION REACH    CROSS SECTION 150
          INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5
          LENGTH =    300.00 FEET      INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA,  X=   .21,   M= 1.48
0         MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00      PEAK TRAVEL TIME =    .00 HOURS

     *** WARNING  REACH 150 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT  ***
0    *** WARNING - REACH 150 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT     115.89 CFS,  20.01 % OF PEAK.

          PEAK TIME(HRS)            PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            12.03                        592.40                      (NULL)
            14.30                        209.30                      (NULL)
            16.51                        293.74                      (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  2.00 WATERSHED INCHES,   3930.79 CFS-HRS,   324.84 ACRE-FEET;   BASEFLOW =   3.00 CFS


OPERATION RUNOFF   CROSS SECTION 150
          OUTPUT HYDROGRAPH=  6
          AREA=    .01 SQ MI   INPUT RUNOFF CURVE= 40.    TIME OF CONCENTRATION=   .15 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .0200 HOURS
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*** WARNING-MAIN TIME INCREMENT MAY BE TOO LARGE.
COMPUTED PEAK(4.99) AT EXCEEDS MAX. ADJACENT HYDROGRAPH COORDINATE BY 8 %.
+ XSECTION 150

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.05	4.99	(RUNOFF)

TIME(HRS)		FIRST HYDROGRAPH POINT = .00 HOURS				TIME INCREMENT = .10 HOURS			DRAINAGE AREA = .01 SQ.MI.		
11.00	DISCHG	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.05
12.00	DISCHG	4.60	4.46	2.17	1.71	1.28	1.17	1.09	1.02	1.00	.87
13.00	DISCHG	.84	.78	.73	.71	.66	.64	.60	.56	.55	.52
14.00	DISCHG	.52	.50	.48	.47	.44	.43	.41	.38	.38	.38
15.00	DISCHG	.38	.39	.39	.38	.35	.34	.34	.34	.34	.34
16.00	DISCHG	.34	.34	.35	.35	.35	.35	.32	.30	.30	.30
17.00	DISCHG	.30	.30	.30	.30	.30	.30	.30	.30	.30	.26
18.00	DISCHG	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25
19.00	DISCHG	.25	.25	.25	.25	.25	.25	.25	.25	.25	.21
20.00	DISCHG	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19
21.00	DISCHG	.19	.20	.20	.20	.20	.20	.20	.20	.20	.20
22.00	DISCHG	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
23.00	DISCHG	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
24.00	DISCHG	.14	.08	.01	.00						

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 5.41 CFS-HRS, .45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 150
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	597.34	(NULL)
14.30	209.77	(NULL)
16.51	294.09	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.99 WATERSHED INCHES, 3936.21 CFS-HRS, 325.29 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVHOV CROSS SECTION 180
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 180
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 42. TIME OF CONCENTRATION= .48 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.27	39.64	(RUNOFF)
23.68	2.45	(RUNOFF)

```
TR20 XEQ 05-05-86  08:16      COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM     20          JOB  1  PASS  1
     REV PC 09/83(.2)         ALT  86                                                           30                PAGE  27


  RUNOFF VOLUME ABOVE BASEFLOW =   .99 WATERSHED INCHES,     70.57 CFS-HRS,     5.83 ACRE-FEET;   BASEFLOW =    .00 CFS


 OPERATION ADDHYD   CROSS SECTION 180
          INPUT HYDROGRAPHS= 5,6     OUTPUT HYDROGRAPH= 7

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             12.04                         613.61                      (NULL)
             14.28                         216.15                      (NULL)
             16.51                         298.35                      (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.96 WATERSHED INCHES,   4006.78 CFS-HRS,   331.12 ACRE-FEET;   BASEFLOW =   3.00 CFS


 OPERATION REACH    CROSS SECTION 180
          INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5
          LENGTH =   1700.00 FEET      INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA,  X=   .21,   M= 1.48
0         MODIFIED ATT-KIN ROUTING COEFFICIENT =  .61      PEAK TRAVEL TIME =    .20 HOURS
0    ### WARNING - REACH 180 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT     115.89 CFS,  19.46 % OF PEAK.

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             12.18                         534.07                      (NULL)
             16.66                         297.92                      (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.95 WATERSHED INCHES,   3984.65 CFS-HRS,   329.29 ACRE-FEET;   BASEFLOW =   3.00 CFS


 OPERATION RUNOFF   CROSS SECTION 180
          OUTPUT HYDROGRAPH=  6
          AREA=    .11 SQ MI   INPUT RUNOFF CURVE= 41.    TIME OF CONCENTRATION=   .48 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             12.28                          34.74                      (RUNOFF)
             23.69                           2.34                      (RUNOFF)

  RUNOFF VOLUME ABOVE BASEFLOW =   .92 WATERSHED INCHES,     65.08 CFS-HRS,     5.38 ACRE-FEET;   BASEFLOW =    .00 CFS


 OPERATION ADDHYD   CROSS SECTION 180
          INPUT HYDROGRAPHS= 5,6     OUTPUT HYDROGRAPH= 7

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             12.19                         565.85                      (NULL)
             14.40                         221.36                      (NULL)
             16.65                         301.91                      (NULL)

TIME(HRS)        FIRST HYDROGRAPH POINT =   .00 HOURS      TIME INCREMENT =  .10 HOURS      DRAINAGE AREA =   3.28 SQ.MI.
  8.00   DISCH6       3.00      3.00      3.00      3.00      3.00      3.00      3.00      3.00      3.04      3.15
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9.00	DISCHG	3.31	3.49	3.71	3.98	4.25	4.51	4.77	5.07	5.45	5.80
10.00	DISCHG	6.13	6.43	6.82	7.29	7.78	8.54	9.32	10.32	11.65	12.87
11.00	DISCHG	14.56	16.21	18.03	20.22	22.25	25.54	28.79	49.17	93.79	148.44
12.00	DISCHG	307.01	502.59	564.02	452.13	347.88	268.19	217.61	189.10	173.40	167.79
13.00	DISCHG	165.12	166.29	169.90	174.31	180.69	186.50	192.54	198.12	202.77	207.86
14.00	DISCHG	212.64	216.84	219.57	220.78	221.36	220.87	220.15	221.67	225.38	231.24
15.00	DISCHG	238.42	246.16	253.91	261.31	268.02	273.14	277.49	281.54	285.29	288.68
16.00	DISCHG	291.68	294.28	296.48	298.30	299.79	300.95	301.81	301.79	300.85	299.95
17.00	DISCHG	299.22	298.62	298.06	297.50	296.89	296.23	295.52	294.74	293.91	292.84
18.00	DISCHG	290.77	288.52	286.60	284.97	283.56	282.28	281.07	279.89	278.72	277.55
19.00	DISCHG	276.37	275.19	274.01	272.82	271.64	270.45	269.28	268.10	266.93	265.57
20.00	DISCHG	263.24	260.77	258.67	256.91	255.39	254.04	252.78	251.57	250.39	249.23
21.00	DISCHG	248.08	246.93	245.78	244.63	243.47	242.27	241.00	239.67	238.26	236.79
22.00	DISCHG	235.26	233.66	232.03	230.35	228.63	226.89	225.13	223.36	221.57	219.78
23.00	DISCHG	217.99	216.20	214.42	212.65	210.90	209.16	207.45	205.76	204.10	202.26
24.00	DISCHG	199.45	196.77	193.51	189.40	186.23	184.10	182.78	181.98	181.50	181.20
25.00	DISCHG	181.01	180.88	180.79	180.71	180.64	180.58	180.53	180.47	180.41	180.35
26.00	DISCHG	180.29	180.23	180.17	179.82	179.03	177.85	176.43	174.84	173.18	171.48
27.00	DISCHG	169.78	168.11	166.47	164.86	163.27	161.71	160.14	158.59	157.04	155.49
28.00	DISCHG	153.94	152.39	150.84	149.30	147.75	146.21	144.67	143.13	141.60	140.07
29.00	DISCHG	138.54	136.91	135.18	133.37	131.51	129.62	127.72	125.81	123.91	122.01

RUNOFF VOLUME ABOVE BASEFLOW = 1.91 WATERSHED INCHES, 4049.73 CFS-HRS, 334.67 ACRE-FEET; BASEFLOW = 3.00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID 1770

\+ COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION ENDJOB RECORD ID 1690

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 86 STORM 1													
STRUCTURE 10	RUNOFF	.84	2	2	.10	.0	7.00	24.00	1.67	---	17.80	96.56	114.9
STRUCTURE 10	RESVOR	.84	2	2	.10	.0	7.00	24.00	1.63	9.50	18.14	96.09	114.4
XSECTION 10	REACH	.84	2	2	.10	.0	7.00	24.00	1.62	---	18.47	98.84	117.7
XSECTION 10	RUNOFF	.20	2	2	.10	.0	7.00	24.00	1.00	---	12.08	121.81	609.0
XSECTION 10	ADDHYD	1.04	2	2	.10	.0	7.00	24.00	1.50	---	12.08	124.81	120.0
STRUCTURE 20	RESVOR	1.04	2	2	.10	.0	7.00	24.00	1.45	9.18	20.10	93.18	89.6
XSECTION 20	REACH	1.04	2	2	.10	.0	7.00	24.00	1.44	---	20.25	93.15	89.6
XSECTION 20	RUNOFF	.28	2	2	.10	.0	7.00	24.00	2.03	---	12.60	168.04	600.2
XSECTION 20	ADDHYD	1.32	2	2	.10	.0	7.00	24.00	1.57	---	12.61	190.93	144.6
STRUCTURE 30	RUNOFF	.37	2	2	.10	.0	7.00	24.00	1.57	---	14.95	60.58	163.7
STRUCTURE 30	RESVOR	.37	2	2	.10	.0	7.00	24.00	1.51	25.91	16.21	48.05	129.9
XSECTION 40	REACH	.37	2	2	.10	.0	7.00	24.00	1.50	---	16.55	47.70	128.9
XSECTION 40	RUNOFF	.06	2	2	.10	.0	7.00	24.00	.84	---	12.72	10.21	170.2
XSECTION 40	ADDHYD	.43	2	2	.10	.0	7.00	24.00	1.41	---	16.54	49.80	115.8
STRUCTURE 40	RESVOR	.43	2	2	.10	.0	7.00	24.00	1.41	10.89	16.60	49.78	115.8
XSECTION 50	REACH	.43	2	2	.10	.0	7.00	24.00	1.40	---	16.72	49.77	115.7
XSECTION 49	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.84	---	13.33	13.76	125.1
XSECTION 50	ADDHYD	.54	2	2	.10	.0	7.00	24.00	1.29	---	16.65	53.98	100.0
XSECTION 50	RUNOFF	.36	2	2	.10	.0	7.00	24.00	5.25	---	12.13	1078.73	2996.5
XSECTION 50	ADDHYD	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	REACH	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	RUNOFF	.05	2	2	.10	.0	7.00	24.00	1.24	---	12.56	16.56	331.2
XSECTION 60	ADDHYD	.95	2	2	.10	.0	7.00	24.00	2.79	---	12.14	1086.21	1143.4
XSECTION 70	ADDHYD	2.27	2	2	.10	.0	7.00	24.00	2.08	---	12.15	1164.89	513.2
XSECTION 80	REACH	2.27	2	2	.10	.0	7.00	24.00	2.08	---	12.15	1164.89	513.2
XSECTION 80	RUNOFF	.02	2	2	.10	.0	7.00	24.00	2.98	---	11.98	54.99	2749.6
XSECTION 80	ADDHYD	2.29	2	2	.10	.0	7.00	24.00	2.08	---	12.14	1184.64	517.3
XSECTION 90	RUNOFF	.24	2	2	.10	.0	7.00	24.00	3.93	---	12.27	434.61	1810.9
XSECTION 100	ADDHYD	2.53	2	2	.10	.0	7.00	24.00	2.26	---	12.17	1575.11	622.6
XSECTION 110	REACH	2.53	2	2	.10	.0	7.00	24.00	2.26	---	12.17	1575.11	622.6
XSECTION 120	REACH	2.53	2	2	.10	.0	7.00	24.00	2.26	---	12.17	1575.11	622.6
XSECTION 120	RUNOFF	.19	2	2	.10	.0	7.00	24.00	2.22	---	12.38	159.29	838.4

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SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 86 STORM 1													
XSECTION 120	ADDHYD	2.72	2	2	.10	.0	7.00	24.00	2.26	---	12.19	1701.00	625.4
STRUCTURE 50	RESVOR	2.72	2	2	.10	.0	7.00	24.00	2.08	10.98	13.37	353.22	129.9
XSECTION 130	REACH	2.72	2	2	.10	.0	7.00	24.00	2.08	---	13.37	353.22	129.9
XSECTION 130	RUNOFF	.05	2	2	.10	.0	7.00	24.00	4.05	---	12.01	160.37	3207.4
XSECTION 130	ADDHYD	2.77	2	2	.10	.0	7.00	24.00	2.11	---	13.29	364.23	131.5
STRUCTURE 60	RESVOR	2.77	2	2	.10	.0	7.00	24.00	1.92	6.69	16.47	273.66	98.8
XSECTION 140	REACH	2.77	2	2	.10	.0	7.00	24.00	1.90	---	16.77	273.19	98.6
XSECTION 140	RUNOFF	.20	2	2	.10	.0	7.00	24.00	3.42	---	12.02	543.51	2717.6
XSECTION 140	ADDHYD	2.97	2	2	.10	.0	7.00	24.00	2.01	---	12.02	549.11	184.9
XSECTION 149	RUNOFF	.08	2	2	.10	.0	7.00	24.00	1.67	---	12.19	67.90	848.7
XSECTION 150	ADDHYD	3.05	2	2	.10	.0	7.00	24.00	2.00	---	12.03	592.40	194.2
XSECTION 150	REACH	3.05	2	2	.10	.0	7.00	24.00	2.00	---	12.03	592.40	194.2
XSECTION 150	RUNOFF	.01	2	2	.10	.0	7.00	24.00	.84	---	12.05	4.99	499.3
XSECTION 150	ADDHYD	3.06	2	2	.10	.0	7.00	24.00	1.99	---	12.03	597.34	195.2
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.99	---	12.27	39.64	360.4
XSECTION 180	ADDHYD	3.17	2	2	.10	.0	7.00	24.00	1.96	---	12.04	613.61	193.6
XSECTION 180	REACH	3.17	2	2	.10	.0	7.00	24.00	1.95	---	12.18	534.07	168.5
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.92	---	12.28	34.74	315.8
XSECTION 180	ADDHYD	3.28	2	2	.10	.0	7.00	24.00	1.91	---	12.19	565.85	172.5

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

XSEC ID	REACH LENGTH (FT)	HYDROGRAPH INFORMATION INFLOW PEAK (CFS)	INFLOW TIME (HR)	OUTFLOW PEAK (CFS)	OUTFLOW TIME (HR)	INTERV.AREA PEAK (CFS)	INTERV.AREA TIME (HR)	BASE-FLOW (CFS)	ROUTING PARAMETERS VOLUME ABOVE BASE (IN)	MAIN TIME INCR (HR)	ITER-ATION #	Q AND A EQUATION COEFF (X)	Q AND A EQUATION POWER (M)	LENGTH FACTOR (K*)	PEAK RATIO O/I (Q*)	S/Q @PEAK (K) (SEC)	ATT-KIN COEFF (C)	PEAK TRAVEL TIME STOR-AGE (HR)	PEAK TRAVEL TIME KINE-MATIC (HR)
ALTERNATE 86 STORM 1																			
10	1750	99	18.1	99	18.5			3	1.63*	.10	1	1.20	1.10	.021	.997	888	.34	.40	.25
						123	12.1												
20	2900	93	20.1	93	20.2			3	1.45*	.10	1	.280	1.94	.000	1.000	320	.72?	.10	.09
						191	12.6												
40	1300	48	16.2	48	16.5			0	1.51	.10	1	.880	1.10	.027	.992	934	.32	.30	.26
						50	16.5												
50	1700	50	16.6	50	16.7			0	1.41	.10	1	1.60	1.45	.002	1.000	252	.83?	.10	.07
						54	16.6												
60	1400	1064	12.1	1064	12.1			0	2.87	.10	0	.440	1.94	.000	1.000	38	1.00?	.00	.00
						1069	12.1												
80	700	1133	12.1	1133	12.1			3	2.08	.10	0	.300	1.94	.000	1.000	22	1.00?	.00	.00
						1161	12.1												
110	500	1567	12.2	1567	12.2			3	2.26	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						---	---												
120	500	1567	12.2	1567	12.2			3	2.26	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						1699	12.2												
												.300							

+130	1000	353	13.4	353	13.4		3	2.08*	.10	0	.000	1.94	.000	1.000	56	1.00?	.00	.00
+						364	13.3											
+140	2500	274	16.5	273	16.8		3	1.92*	.10	1	.210	1.48	.004	.998	786	.37	.30	.22
+						544	12.0											
+150	300	582	12.0	582	12.0		3	2.00*	.10	0	.210	1.48	.000	1.000	74	1.00?	.00	.00
+						587	12.0											
+180	1700	599	12.0	531	12.2		3	1.96*	.10	1	.210	1.48	.004	.887	414	.61	.20	.12
+						564	12.2											

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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 STRUCTURE 60	2.77	
+		
ALTERNATE 86		273.66
0 STRUCTURE 50	2.72	
+		
ALTERNATE 86		353.22
0 STRUCTURE 40	.43	
+		
ALTERNATE 86		49.78
0 STRUCTURE 30	.37	
+		
ALTERNATE 86		48.05
0 STRUCTURE 20	1.04	
+		
ALTERNATE 86		93.18
0 STRUCTURE 10	.84	
+		
ALTERNATE 86		96.09
0 XSECTION 10	1.04	
+		
ALTERNATE 86		124.81
0 XSECTION 20	1.32	
+		
ALTERNATE 86		190.93
0 XSECTION 40	.43	
+		
ALTERNATE 86		49.80
0 XSECTION 49	.11	
+		
ALTERNATE 86		13.76
0 XSECTION 50	.90	
+		
ALTERNATE 86		1079.95
0 XSECTION 60	.95	
+		
ALTERNATE 86		1086.21
0 XSECTION 70	2.27	
+		
ALTERNATE 86		1164.89
0 XSECTION 80	2.29	
+		
ALTERNATE 86		1184.64

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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 XSECTION 90	.24	
ALTERNATE 86		434.61
0 XSECTION 100	2.53	
ALTERNATE 86		1575.11
0 XSECTION 110	2.53	
ALTERNATE 86		1575.11
0 XSECTION 120	2.72	
ALTERNATE 86		1701.00
0 XSECTION 130	2.77	
ALTERNATE 86		364.23
0 XSECTION 140	2.97	
ALTERNATE 86		549.11
0 XSECTION 149	.08	
ALTERNATE 86		67.90
0 XSECTION 150	3.06	
ALTERNATE 86		597.34
0 XSECTION 180	3.28	
ALTERNATE 86		565.85

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

JOB TR-20                    FULLPRINT PASS=001  SUMMARY                    10
TITLE 002 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM    20
TITLE     ALT  87                                                  30
 3 STRUCT      10                                                          40
 8                    7.00       0.00       4.33                           50
 8                    7.4        2.5        5.01                           60
 8                    7.6        5.0        5.36                           70
 8                    7.8        10.0       5.70                           80
 8                    8.2        22.0       6.38                           90
 8                    8.6        52.0       7.07                          100
 8                    9.0        62.0       7.75                          110
 8                    9.5        96.0       8.61                          120
 8                    10.0       126.0      9.47                          130
 8                    11.0       198.0      11.18                         140
 8                    12.0       280.0      12.89                         150
 8                    13.00      360.0      14.79                         160
 8                    14.00      440.0      16.68                         170
 8                    15.00      500.0      18.58                         180
 8                    15.1       600.00     18.60                         190
 9 ENDTBL                                                                 200
 3 STRUCT      20                                                         210
 8                    4.5        0.00       6.80                          220
 8                    4.9        1.5        7.88                          230
 8                    5.1        3.7        8.42                          240
 8                    5.5        11.0       9.51                          250
 8                    5.7        15.0       10.13                         260
 8                    6.1        25.0       11.13                         270
 8                    6.5        40.0       12.21                         280
 8                    7.1        60.0       13.84                         290
 8                    7.9        78.0       16.01                         300
 8                    8.5        79.0       17.63                         310
 8                    9.5        100.0      20.34                         320
 8                    10.5       126.0      23.06                         330
 8                    11.5       150.0      25.76                         340
 8                    11.6       300.0      26.04                         350
 9 ENDTBL                                                                 360
 3 STRUCT      30                                                         370
 8                    21.0       0.00       0.10                          380
 8                    21.4       0.6        0.61                          390
 8                    21.6       1.5        0.86                          400
 8                    21.8       2.5        1.12                          410
 8                    22.2       5.2        1.62                          420
 8                    22.6       8.2        2.13                          430
 8                    23.0       11.0       2.64                          440
 8                    23.5       20.0       3.27                          450
 8                    24.0       27.0       3.91                          460
```

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

```
8                    25.0      39.0      5.18                    470
8                    26.0      49.0      6.45                    480
8                    27.0      57.0      7.72                    490
8                    27.1      200.00    7.74                    500
9 ENDTBL                                                         510
3 STRUCT      40                                                 520
8                    9.0       0.0       0.38                    530
8                    9.4       2.2       0.47                    540
8                    9.6       5.0       0.52                    550
8                    10.0      14.0      0.62                    560
8                    10.2      21.0      0.67                    570
8                    10.6      36.0      0.77                    580
8                    11.0      55.0      0.86                    590
8                    11.6      82.0      1.01                    600
8                    12.4      120.0     1.21                    610
8                    13.0      121.0     1.35                    620
8                    14.0      122.0     1.60                    630
8                    15.0      126.0     1.84                    640
8                    16.0      150.00    2.08                    650
8                    16.1      300.0     2.11                    660
9 ENDTBL                                                         670
3 STRUCT      50                                                 680
8                    2.4       0.00      22.00                   690
8                    2.8       2.0       26.86                   700
8                    3.0       7.0       29.29                   710
8                    3.4       16.0      34.16                   720
8                    3.6       24.0      36.59                   730
8                    4.0       40.0      41.46                   740
8                    4.4       60.0      46.32                   750
8                    5.0       90.0      53.62                   760
8                    5.8       120.0     63.35                   770
8                    6.4       121.0     70.65                   780
8                    7.4       210.0     82.81                   790
8                    8.4       250.00    94.98                   800
8                    10.4      334.0     119.31                  810
8                    12.4      400.0     143.63                  820
8                    12.5      800.0     143.70                  830
9 ENDTBL                                                         840
3 STRUCT      60                                                 850
8                    2.0       0.0       22.20                   860
8                    2.4       3.0       27.41                   870
8                    2.6       10.5      30.02                   880
8                    3.0       22.5      35.24                   890
8                    3.2       36.0      37.85                   900
8                    3.6       60.0      43.06                   910
8                    4.0       90.0      48.28                   920
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**********************80-80 LIST OF INPUT DATA (CONTINUED)**********************

8                    4.6        135.0      56.11                        930
8                    5.4        180.0      66.55                        940
8                    6.0        181.0      74.38                        950
8                    7.0        315.0      87.42                        960
8                    8.0        375.0      100.47                       970
8                    8.1        700.0      100.50                       980
9 ENDTBL                                                                990
6 RUNOFF 1    10     6 0.84     51.        7.50       1                1000
6 RESVOR 2    10 6   7 7.0                            1                1010
6 REACH  3 010   7   5 1750.    1.2        1.10       1                1020
6 RUNOFF 1 010       6 0.20     42.        0.19       1                1030
6 ADDHYD 4 010   5 6 7                                1 1              1040
6 SAVMOV 5 010   7   6                                                 1050
6 RESVOR 2    20 6   7 4.5                            1                1060
6 REACH  3 020   7   5 2900.    0.28       1.94       1                1070
6 RUNOFF 1 020       6 0.28     53.        1.02       1                1080
6 ADDHYD 4 020   5 6 7                                1 1              1090
6 SAVMOV 5 020   7   1                                                 1100
6 RUNOFF 1    30     6 0.37     49.        3.90       1                1110
6 RESVOR 2    30 6   7 21.0                           1                1120
6 REACH  3 040   7   5 1300.    0.88       1.10       1                1130
6 RUNOFF 1 040       6 0.06     40.        1.00       1                1140
6 ADDHYD 4 040   5 6 7                                1                1150
6 SAVMOV 5 040   7   6                                                 1160
6 RESVOR 2    40 6   7 9.0                            1                1170
6 REACH  3 050   7   5 1700.    1.6        1.45       1                1180
6 RUNOFF 1 049       6 0.11     40.        1.67       1                1190
6 ADDHYD 4 050   5 6 7                                1                1200
6 SAVMOV 5 050   7   5                                                 1210
6 RUNOFF 1 050       6 0.36     85.        0.42       1                1220
6 ADDHYD 4 050   5 6 7                                1                1230
6 REACH  3 060   7   5 1400.    0.44       1.94       1                1240
6 RUNOFF 1 060       6 0.05     45.        0.90       1                1250
6 ADDHYD 4 060   5 6 7                                1 1              1260
6 SAVMOV 5 070   7   5                                                 1270
6 SAVMOV 5 070   1   6                                                 1280
6 ADDHYD 4 070   5 6 7                                1 1              1290
6 REACH  3 080   7   5 700.     0.30       1.94       1                1300
6 RUNOFF 1 080       6 0.02     64.        0.12       1                1310
6 ADDHYD 4 080   5 6 7                                1                1320
6 SAVMOV 5 100   7   5                                                 1330
6 RUNOFF 1 090       6 0.24     73.        0.62       1                1340
6 ADDHYD 4 100   5 6 7                                1                1350
6 REACH  3 110   7   5 500.     0.30       1.94       1                1360
6 SAVMOV 5 120   5   7                                                 1370
6 REACH  3 120   7   5 500.     0.30       1.94       1                1380
```

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

 6 RUNOFF 1 120       6 0.19        56.        0.74       1                1390
 6 ADDHYD 4 120   5 6 7                                    1 1              1400
 6 SAVMOV 5    50 7   6                                                     1410
 6 RESVOR 2    50 6   7 2.4                                1 1 1            1420
 6 REACH  3 130   7   5 1000.       0.30       1.94       1                1430
 6 RUNOFF 1 130       6 0.05        74.        0.19       1                1440
 6 ADDHYD 4 130   5 6 7                                    1                1450
 6 SAVMOV 5 130   7   6                                                     1460
 6 RESVOR 2    60 6   7 2.0                                1 1 1            1470
 6 REACH  3 140   7   5 2500.       0.21       1.48       1                1480
 6 RUNOFF 1 140       6 0.20        66.        1.15       1                1490
 6 ADDHYD 4 140   5 6 7                                    1                1500
 6 SAVMOV 5 150   7   5                                                     1510
 6 RUNOFF 1 149       6 0.08.       50.        0.42       1                1520
 6 ADDHYD 4 150   5 6 7                                                     1530
 6 REACH  3 150   7   5 300.        0.21       1.48       1                1540
 6 RUNOFF 1 150       6 0.01        40.        0.15       1                1550
 6 ADDHYD 4 150   5 6 7                                    1                1560
 6 SAVMOV 5 180   7   5                                                     1570
 6 RUNOFF 1 180       6 0.28        50.        0.61       1                1580
 6 ADDHYD 4 180   5 6 7                                    1                1590
 6 REACH  3 180   7   5 1700.0      0.21       1.48       1                1600
 6 RUNOFF 1 180       6 0.11        41.        0.48       1                1610
 6 ADDHYD 4 180   5 6 7                                    1 1   1   1     1620
   ENDATA                                                                   1630
 7 ALTER  3                                                                 1640
 6 RUNOFF 1 010       6 0.20        42.0       0.19                        1650
 6 RUNOFF 1 020       6 0.28        54.0       2.00                        1660
 6 RUNOFF 1 140       6 0.20        68.0       0.19                        1670
 6 RUNOFF 1 149       6 0.08        65.0       0.42                        1680
 6 RUNOFF 1 180       6 0.11        42.0       0.48                        1690
 7 LIST                                                                     1700
 7 BASFLO 5             3.0                                                 1710
 7 INCREM 6             0.1                                                 1720
 7 COMPUT 7    10 180   0.0         7.0        1.0        2 2  B7  01      1730
   ENDCMP 1                                                                 1740
   ENDJOB 2                                                                 1750
0*******************************END OF 80-80 LIST*******************************
```


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OCHANGES TO STANDARD CONTROL LIST FOLLOW

EXECUTIVE CONTROL OPERATION ALTER RECORD ID 1640

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 10 RECORD ID 1650
OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2000 42.0000 .1900
OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 20 RECORD ID 1660
OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2800 54.0000 2.0000
OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 140 RECORD ID 1670
OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2000 68.0000 .1900
OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 149 RECORD ID 1680
OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .0800 65.0000 .4200
OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 180 RECORD ID 1690
OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .1100 42.0000 .4800
OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

EXECUTIVE CONTROL OPERATION LIST RECORD ID 1700

LISTING OF CURRENT DATA

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	10			
8		7.00	.00	4.33
8		7.40	2.50	5.01
8		7.60	5.00	5.36
8		7.80	10.00	5.70
8		8.20	22.00	6.38
8		8.60	52.00	7.07
8		9.00	62.00	7.75
8		9.50	96.00	8.61
8		10.00	126.00	9.47
8		11.00	198.00	11.18
8		12.00	280.00	12.89
8		13.00	360.00	14.79
8		14.00	440.00	16.68
8		15.00	500.00	18.58
8		15.10	600.00	18.60
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	20			
8		4.50	.00	6.80
8		4.90	1.50	7.88
8		5.10	3.70	8.42
8		5.50	11.00	9.51
8		5.70	15.00	10.13
8		6.10	25.00	11.13
8		6.50	40.00	12.21
8		7.10	60.00	13.84
8		7.90	78.00	16.01
8		8.50	79.00	17.63
8		9.50	100.00	20.34
8		10.50	126.00	23.06
8		11.50	150.00	25.76
8		11.60	300.00	26.04
9 ENDTBL				

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	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	30			
8		21.00	.00	.10
8		21.40	.60	.61
8		21.60	1.50	.86
8		21.80	2.50	1.12
8		22.20	5.20	1.62
8		22.60	8.20	2.13
8		23.00	11.00	2.64
8		23.50	20.00	3.27
8		24.00	27.00	3.91
8		25.00	39.00	5.18
8		26.00	49.00	6.45
8		27.00	57.00	7.72
8		27.10	200.00	7.74
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	40			
8		9.00	.00	.38
8		9.40	2.20	.47
8		9.60	5.00	.52
8		10.00	14.00	.62
8		10.20	21.00	.67
8		10.60	36.00	.77
8		11.00	55.00	.86
8		11.60	82.00	1.01
8		12.40	120.00	1.21
8		13.00	121.00	1.35
8		14.00	122.00	1.60
8		15.00	126.00	1.84
8		16.00	150.00	2.08
8		16.10	300.00	2.11
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	50			
8		2.40	.00	22.00
8		2.80	2.00	26.86
8		3.00	7.00	29.29
8		3.40	16.00	34.16
8		3.60	24.00	36.59
8		4.00	40.00	41.46
8		4.40	60.00	46.32
8		5.00	90.00	53.62

```
8                      5.80      120.00      63.35
8                      6.40      121.00      70.65
8                      7.40      210.00      82.81
8                      8.40      250.00      94.98
8                     10.40      334.00     119.31
8                     12.40      400.00     143.63
8                     12.50      800.00     143.70
9 ENDTBL

          STRUCT NO.  ELEVATION  DISCHARGE   STORAGE
3 STRUCT      60

8                      2.00         .00      22.20
8                      2.40        3.00      27.41
8                      2.60       10.50      30.02
8                      3.00       22.50      35.24
8                      3.20       36.00      37.85
8                      3.60       60.00      43.06
8                      4.00       90.00      48.28
8                      4.60      135.00      56.11
8                      5.40      180.00      66.55
8                      6.00      181.00      74.38
8                      7.00      315.00      87.42
8                      8.00      375.00     100.47
8                      8.10      700.00     100.50
9 ENDTBL

                TIME INCREMENT
4 DIMHYD                .0200

8              .0000     .0300     .1000     .1900     .3100
8              .4700     .6600     .8200     .9300     .9900
8             1.0000     .9900     .9300     .8600     .7800
8              .6800     .5600     .4600     .3900     .3300
8              .2800     .2410     .2070     .1740     .1470
8              .1260     .1070     .0910     .0770     .0660
8              .0550     .0470     .0400     .0340     .0290
8              .0250     .0210     .0180     .0150     .0130
8              .0110     .0090     .0080     .0070     .0060
8              .0050     .0040     .0030     .0020     .0010
8              .0000     .0000     .0000     .0000     .0000
9 ENDTBL

  COMPUTED PEAK RATE FACTOR =  484.00
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```
     TABLE NO.      TIME INCREMENT
5 RAINFL 1                .5000

8              .0000     .0080     .0170     .0260     .0350
8              .0450     .0550     .0650     .0760     .0870
8              .0990     .1120     .1260     .1400     .1560
8              .1740     .1940     .2190     .2540     .3030
8              .5150     .5830     .6240     .6550     .6820
8              .7060     .7280     .7480     .7660     .7830
8              .7990     .8150     .8300     .8440     .8570
8              .8700     .8820     .8930     .9050     .9160
8              .9260     .9360     .9460     .9560     .9650
8              .9740     .9830     .9920    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 2                .2500

8              .0000     .0020     .0050     .0080     .0110
8              .0140     .0170     .0200     .0230     .0260
8              .0290     .0320     .0350     .0380     .0410
8              .0440     .0480     .0520     .0560     .0600
8              .0640     .0680     .0720     .0760     .0800
8              .0850     .0900     .0950     .1000     .1050
8              .1100     .1150     .1200     .1260     .1330
8              .1400     .1470     .1550     .1630     .1720
8              .1810     .1910     .2030     .2180     .2360
8              .2570     .2830     .3870     .6630     .7070
8              .7350     .7580     .7760     .7910     .8040
8              .8150     .8250     .8340     .8420     .8490
8              .8560     .8630     .8690     .8750     .8810
8              .8870     .8930     .8980     .9030     .9080
8              .9130     .9180     .9220     .9260     .9300
8              .9340     .9380     .9420     .9460     .9500
8              .9530     .9560     .9590     .9620     .9650
8              .9680     .9710     .9740     .9770     .9800
8              .9830     .9860     .9890     .9920     .9950
8              .9980    1.0000    1.0000    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 3                .5000

8              .0000     .0100     .0220     .0360     .0510
8              .0670     .0830     .0990     .1160     .1350
```

```
8              .1560      .1790      .2040      .2330      .2680
8              .3100      .4250      .4800      .5200      .5500
8              .5770      .6010      .6230      .6440      .6640
8              .6830      .7010      .7190      .7360      .7530
8              .7690      .7850      .8000      .8150      .8300
8              .8440      .8580      .8710      .8840      .8960
8              .9080      .9200      .9320      .9440      .9560
8              .9670      .9780      .9890     1.0000     1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 4                .5000

8              .0000      .0040      .0080      .0120      .0160
8              .0200      .0250      .0300      .0350      .0400
8              .0450      .0500      .0550      .0600      .0650
8              .0700      .0750      .0810      .0870      .0930
8              .0990      .1050      .1110      .1180      .1250
8              .1320      .1400      .1480      .1560      .1650
8              .1740      .1840      .1950      .2070      .2200
8              .2360      .2550      .2770      .3030      .4090
8              .5150      .5490      .5830      .6050      .6240
8              .6400      .6550      .6690      .6820      .6940
8              .7050      .7160      .7270      .7380      .7480
8              .7580      .7670      .7760      .7840      .7920
8              .8000      .8080      .8160      .8230      .8300
8              .8370      .8440      .8510      .8580      .8640
8              .8700      .8760      .8820      .8880      .8940
8              .9000      .9060      .9110      .9160      .9210
8              .9260      .9310      .9360      .9410      .9460
8              .9510      .9560      .9610      .9660      .9710
8              .9760      .9800      .9840      .9880      .9920
8              .9960     1.0000     1.0000     1.0000     1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 5                .5000

8              .0000      .0020      .0050      .0080      .0110
8              .0140      .0170      .0200      .0230      .0260
8              .0290      .0320      .0350      .0380      .0410
8              .0440      .0470      .0510      .0550      .0590
8              .0630      .0670      .0710      .0750      .0790
8              .0840      .0890      .0940      .0990      .1040
8              .1090      .1140      .1200      .1260      .1330
8              .1400      .1470      .1540      .1620      .1710
8              .1810      .1920      .2040      .2170      .2330
```


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8              .2520      .2770      .3180      .6380      .6980
8              .7290      .7520      .7700      .7850      .7980
8              .8090      .8190      .8290      .8380      .8460
8              .8540      .8610      .8680      .8740      .8800
8              .8860      .8920      .8970      .9020      .9070
8              .9120      .9170      .9210      .9250      .9290
8              .9330      .9370      .9410      .9450      .9490
8              .9530      .9570      .9600      .9630      .9660
8              .9690      .9720      .9750      .9780      .9810
8              .9840      .9870      .9900      .9930      .9960
8              .9980     1.0000     1.0000     1.0000     1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 6                .0200

8              .0000      .0080      .0162      .0246      .0333
8              .0425      .0524      .0630      .0743      .0863
8              .0990      .1124      .1265      .1420      .1595
8              .1800      .2050      .2550      .3450      .4370
8              .5300      .6030      .6330      .6600      .6840
8              .7050      .7240      .7420      .7590      .7750
8              .7900      .8043      .8180      .8312      .8439
8              .8561      .8678      .8790      .8898      .9002
8              .9103      .9201      .9297      .9391      .9483
8              .9573      .9661      .9747      .9832      .9916
8             1.0000     1.0000     1.0000     1.0000     1.0000
9 ENDTBL
```

0 STANDARD CONTROL INSTRUCTIONS

```
6 RUNOFF 1   10    6      .8400     51.0000     7.50001 0 0 1 0 1
6 RESVOR 2   10 6  7     7.0000                     1 0 0 1 0 1
6 REACH  3 10  7   5  1750.0000      1.2000     1.10001 0 0 1 0 1
6 RUNOFF 1 10      6      .2000     42.0000      .19001 0 0 1 0 1
6 ADDHYD 4 10  5 6 7                               1 1 0 1 0 1
6 SAVMOV 5 10  7   6
6 RESVOR 2   20 6  7     4.5000                     1 0 0 1 0 1
6 REACH  3 20  7   5  2900.0000      .2800     1.94001 0 0 1 0 1
6 RUNOFF 1 20      6      .2800     54.0000     2.00001 0 0 1 0 1
6 ADDHYD 4 20  5 6 7                               1 1 0 1 0 1
6 SAVMOV 5 20  7   1
6 RUNOFF 1   30    6      .3700     49.0000     3.90001 0 0 1 0 1
6 RESVOR 2   30 6  7    21.0000                     1 0 0 1 0 1
6 REACH  3 40  7   5  1300.0000      .8800     1.10001 0 0 1 0 1
6 RUNOFF 1 40      6      .0600     40.0000     1.00001 0 0 1 0 1
6 ADDHYD 4 40  5 6 7                               1 0 0 1 0 1
6 SAVMOV 5 40  7   6
6 RESVOR 2   40 6  7     9.0000                     1 0 0 1 0 1
6 REACH  3 50  7   5  1700.0000      1.6000     1.45001 0 0 1 0 1
6 RUNOFF 1 49      6      .1100     40.0000     1.67001 0 0 1 0 1
6 ADDHYD 4 50  5 6 7                               1 0 0 1 0 1
6 SAVMOV 5 50  7   5
6 RUNOFF 1 50      6      .3600     85.0000      .42001 0 0 1 0 1
6 ADDHYD 4 50  5 6 7                               1 0 0 1 0 1
6 REACH  3 60  7   5  1400.0000      .4400     1.94001 0 0 1 0 1
6 RUNOFF 1 60      6      .0500     45.0000      .90001 0 0 1 0 1
6 ADDHYD 4 60  5 6 7                               1 1 0 1 0 1
6 SAVMOV 5 70  7   5
6 SAVMOV 5 70  1   6
6 ADDHYD 4 70  5 6 7                               1 1 0 1 0 1
6 REACH  3 80  7   5   700.0000      .3000     1.94001 0 0 1 0 1
6 RUNOFF 1 80      6      .0200     64.0000      .12001 0 0 1 0 1
6 ADDHYD 4 80  5 6 7                               1 0 0 1 0 1
6 SAVMOV 5 100 7   5
6 RUNOFF 1 90      6      .2400     73.0000      .62001 0 0 1 0 1
6 ADDHYD 4 100 5 6 7                               1 0 0 1 0 1
6 REACH  3 110 7   5   500.0000      .3000     1.94001 0 0 1 0 1
6 SAVMOV 5 120 5   7
6 REACH  3 120 7   5   500.0000      .3000     1.94001 0 0 1 0 1
6 RUNOFF 1 120     6      .1900     56.0000      .74001 0 0 1 0 1
6 ADDHYD 4 120 5 6 7                               1 1 0 1 0 1
6 SAVMOV 5   50 7  6
6 RESVOR 2   50 6  7     2.4000                     1 1 1 1 0 1
6 REACH  3 130 7   5  1000.0000      .3000     1.94001 0 0 1 0 1
6 RUNOFF 1 130     6      .0500     74.0000      .19001 0 0 1 0 1
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```
6 ADDHYD 4 130   5 6 7                          1 0 0 1 0 1
6 SAVMOV 5 130   7   6
6 RESVOR 2    60 6   7      2.0000                1 1 1 1 0 1
6 REACH  3 140   7   5   2500.0000      .2100   1.48001 0 0 1 0 1
6 RUNOFF 1 140       6      .2000     68.0000    .19001 0 0 1 0 1
6 ADDHYD 4 140   5 6 7                          1 0 0 1 0 1
6 SAVMOV 5 150   7   5
6 RUNOFF 1 149       6      .0800     65.0000    .42001 0 0 1 0 1
6 ADDHYD 4 150   5 6 7                          1 0 0 1 0 1
6 REACH  3 150   7   5    300.0000      .2100   1.48001 0 0 1 0 1
6 RUNOFF 1 150       6      .0100     40.0000    .15001 0 0 1 0 1
6 ADDHYD 4 150   5 6 7                          1 0 0 1 0 1
6 SAVMOV 5 180   7   5
6 RUNOFF 1 180       6      .1100     42.0000    .48001 0 0 1 0 1
6 ADDHYD 4 180   5 6 7                          1 0 0 1 0 1
6 REACH  3 180   7   5   1700.0000      .2100   1.48001 0 0 1 0 1
6 RUNOFF 1 180       6      .1100     41.0000    .48001 0 0 1 0 1
6 ADDHYD 4 180   5 6 7                          1 1 0 1 0 1
  ENDATA
```

END OF LISTING

```
EXECUTIVE CONTROL OPERATION BASFLO                                                    RECORD ID    1710

+                                  NEW BASEFLOW =   3.00 CFS

EXECUTIVE CONTROL OPERATION INCREM                                                    RECORD ID    1720

+                                  MAIN TIME INCREMENT =   .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT                                                    RECORD ID    1730

+                                  FROM STRUCTURE 10
+                                                  TO XSECTION 180
      STARTING TIME =   .00    RAIN DEPTH =  7.00    RAIN DURATION=  1.00    RAIN TABLE NO.= 2    ANT. MOIST. COND= 2
      ALTERNATE NO.=87         STORM NO.= 1    MAIN TIME INCREMENT =   .10 HOURS

OPERATION RUNOFF   STRUCTURE 10
         OUTPUT HYDROGRAPH=  6
         AREA=    .84 SQ MI   INPUT RUNOFF CURVE= 51.    TIME OF CONCENTRATION=  7.50 HOURS
         INTERNAL HYDROGRAPH TIME INCREMENT=  .1000 HOURS

         PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            17.80                          96.56                        (RUNOFF)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.67 WATERSHED INCHES,    906.24 CFS-HRS,    74.89 ACRE-FEET;   BASEFLOW =    .00 CFS

OPERATION RESVOR   STRUCTURE 10
         INPUT HYDROGRAPH= 6     OUTPUT HYDROGRAPH= 7
         SURFACE ELEVATION=    7.00

         PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            18.14                          96.09                         9.50

  RUNOFF VOLUME ABOVE BASEFLOW =  1.63 WATERSHED INCHES,    884.09 CFS-HRS,    73.06 ACRE-FEET;   BASEFLOW =    .00 CFS

OPERATION REACH    CROSS SECTION  10
         INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5
         LENGTH =   1750.00 FEET      INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA,  X=  1.20,   M= 1.10
0        MODIFIED ATT-KIN ROUTING COEFFICIENT =  .34      PEAK TRAVEL TIME =    .40 HOURS
0    *** WARNING - REACH  10 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT      18.15 CFS,  18.88 % OF PEAK.

         PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            18.47                          98.84                        (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.62 WATERSHED INCHES,    878.37 CFS-HRS,    72.59 ACRE-FEET;   BASEFLOW =   3.00 CFS

OPERATION RUNOFF   CROSS SECTION  10
         OUTPUT HYDROGRAPH=  6
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AREA= .20 SQ MI INPUT RUNOFF CURVE= 42. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.08	121.81	(RUNOFF)
15.20	8.69	(RUNOFF)
16.46	7.85	(RUNOFF)
17.67	6.75	(RUNOFF)
19.66	5.63	(RUNOFF)
23.66	4.48	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.00 WATERSHED INCHES, 128.54 CFS-HRS, 10.62 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 10
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.08	124.81	(NULL)
18.48	104.33	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.04 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.92	32.22
12.00	DISCHG	103.79	122.67	68.37	48.48	36.93	31.73	29.33	27.26	26.59	24.26
13.00	DISCHG	23.05	22.09	20.81	20.53	19.65	19.34	18.92	18.32	18.54	18.63
14.00	DISCHG	19.37	20.36	21.44	23.10	24.57	26.43	28.32	30.58	34.13	38.16
15.00	DISCHG	42.29	46.34	50.23	53.88	56.65	58.95	61.10	63.08	64.97	66.81
16.00	DISCHG	68.65	71.17	74.19	77.35	80.46	83.41	85.78	87.66	89.73	91.75
17.00	DISCHG	93.63	95.35	96.91	98.34	99.64	100.81	101.85	102.75	103.42	103.37
18.00	DISCHG	103.47	103.75	104.01	104.19	104.30	104.32	104.27	104.13	103.93	103.65
19.00	DISCHG	103.31	102.89	102.39	101.82	101.18	100.46	99.66	98.79	97.73	95.99
20.00	DISCHG	94.45	93.18	91.97	90.75	89.51	88.27	87.03	85.81	84.61	83.43
21.00	DISCHG	82.27	81.14	80.03	78.94	77.87	76.82	75.80	74.79	73.81	72.84
22.00	DISCHG	71.90	71.02	70.32	69.71	69.16	68.63	68.11	67.58	67.04	66.49
23.00	DISCHG	65.93	65.36	64.77	64.17	63.56	62.94	62.32	61.69	60.95	59.41
24.00	DISCHG	57.89	55.77	53.21	51.69	50.62	49.72	48.91	48.18	47.50	46.85
25.00	DISCHG	46.24	45.66	45.10	44.55	44.02	43.50	42.98	42.48	41.98	41.49
26.00	DISCHG	41.00	40.51	40.03	39.55	39.07	38.60	38.12	37.63	37.15	36.66
27.00	DISCHG	36.16	35.66	35.15	34.64	34.13	33.61	33.09	32.57	32.04	31.51
28.00	DISCHG	30.97	30.44	29.90	29.36	28.82	28.28	27.74	27.21	26.67	26.13
29.00	DISCHG	25.68	25.30	24.94	24.59	24.24	23.89	23.52	23.14	22.75	22.35

RUNOFF VOLUME ABOVE BASEFLOW = 1.50 WATERSHED INCHES, 1006.91 CFS-HRS, 83.21 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVHOV CROSS SECTION 10
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 20
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 4.50

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.90	24.55	6.08
20.10	93.18	9.18

RUNOFF VOLUME ABOVE BASEFLOW = 1.45 WATERSHED INCHES, 970.12 CFS-HRS, 80.17 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2900.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .28, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .72 PEAK TRAVEL TIME = .10 HOURS

*** WARNING REACH 20 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 20 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 23.17 CFS, 25.69 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.04	24.51	(NULL)
20.25	93.15	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.44 WATERSHED INCHES, 966.86 CFS-HRS, 79.90 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 20
OUTPUT HYDROGRAPH= 6
AREA= .28 SQ MI INPUT RUNOFF CURVE= 54. TIME OF CONCENTRATION= 2.00 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1026 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.36	102.66	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.03 WATERSHED INCHES, 366.74 CFS-HRS, 30.31 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 20
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.34	126.76	(NULL)
20.13	105.62	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.32 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.01	3.02	3.06	3.18	3.47	4.17	5.78
12.00	DISCHG	9.10	16.05	26.75	39.22	52.10	65.05	77.90	90.13	100.91	109.81
13.00	DISCHG	116.82	121.88	125.10	126.62	126.46	124.97	122.41	118.83	114.22	108.81
14.00	DISCHG	103.10	97.68	92.90	88.65	84.78	81.32	78.28	75.61	73.20	71.10
15.00	DISCHG	69.41	68.44	68.06	68.08	68.45	69.09	69.91	70.85	71.67	72.53
16.00	DISCHG	73.48	74.49	75.59	76.82	78.21	79.76	81.45	82.78	83.97	85.16
17.00	DISCHG	86.41	87.69	89.00	90.33	91.67	93.02	94.35	95.39	95.55	95.46
18.00	DISCHG	95.31	95.15	94.99	94.83	94.67	94.92	95.91	97.04	98.15	99.18

19.00	DISCHG	100.14	101.02	101.81	102.53	103.18	103.75	104.26	104.69	105.06	105.35
20.00	DISCHG	105.54	105.62	105.60	105.48	105.27	104.98	104.61	104.15	103.63	103.05
21.00	DISCHG	102.42	101.74	101.03	100.29	99.53	98.74	97.95	97.14	96.33	95.51
22.00	DISCHG	94.69	93.87	93.04	92.22	91.41	90.62	89.84	89.08	88.59	88.40
23.00	DISCHG	88.29	88.20	88.12	88.04	87.96	87.88	87.80	87.72	87.63	87.54
24.00	DISCHG	87.43	87.14	86.01	84.56	82.97	81.30	79.58	77.84	76.07	74.29
25.00	DISCHG	72.52	70.77	69.04	67.36	65.73	63.95	62.06	60.23	58.50	56.88
26.00	DISCHG	55.38	53.98	52.68	51.47	50.33	49.26	48.24	47.29	46.38	45.51
27.00	DISCHG	44.68	43.89	43.12	42.39	41.67	40.98	40.28	39.56	38.85	38.16
28.00	DISCHG	37.49	36.83	36.19	35.55	34.93	34.32	33.71	33.12	32.52	31.94
29.00	DISCHG	31.36	30.79	30.23	29.69	29.17	28.67	28.18	27.71	27.24	26.79

RUNOFF VOLUME ABOVE BASEFLOW = 1.57 WATERSHED INCHES, 1333.60 CFS-HRS, 110.21 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 1

OPERATION RUNOFF STRUCTURE 30
OUTPUT HYDROGRAPH= 6
AREA= .37 SQ MI INPUT RUNOFF CURVE= 49. TIME OF CONCENTRATION= 3.90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
14.95	60.58	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.57 WATERSHED INCHES, 375.61 CFS-HRS, 31.04 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 30
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 21.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.21	48.05	25.91

RUNOFF VOLUME ABOVE BASEFLOW = 1.51 WATERSHED INCHES, 360.28 CFS-HRS, 29.77 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1300.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .88, M= 1.10
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .32 PEAK TRAVEL TIME = .30 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.55	47.70	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.50 WATERSHED INCHES, 358.97 CFS-HRS, 29.67 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 40

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OUTPUT HYDROGRAPH= 6
AREA= .06 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= 1.00 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0952 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.72	10.21	(RUNOFF)
23.76	1.21	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 32.57 CFS-HRS, 2.69 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 40
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.73	10.35	(NULL)
16.54	49.80	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 391.54 CFS-HRS, 32.36 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 40
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 9.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.90	9.83	9.81
16.60	49.78	10.89

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 389.94 CFS-HRS, 32.22 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= 1.60, M= 1.45
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .83 PEAK TRAVEL TIME = .10 HOURS

*** WARNING REACH 50 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.02	9.78	(NULL)
16.72	49.77	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.40 WATERSHED INCHES, 389.36 CFS-HRS, 32.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 49
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= 1.67 HOURS

INTERNAL HYDROGRAPH TIME INCREMENT= .1012 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)	
13.33	13.76	(RUNOFF)	
23.80	2.20	(RUNOFF)	
+	*		* FIRST POINT OF FLAT PEAK

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 59.78 CFS-HRS, 4.94 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 50
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.16	22.91	(NULL)
16.65	53.98	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.29 WATERSHED INCHES, 449.14 CFS-HRS, 37.12 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 50
OUTPUT HYDROGRAPH= 6
AREA= .36 SQ MI INPUT RUNOFF CURVE= 85. TIME OF CONCENTRATION= .42 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0560 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1078.73	(RUNOFF)
19.65	24.75	(RUNOFF)
23.65	18.64	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 5.25 WATERSHED INCHES, 1220.14 CFS-HRS, 100.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 50
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1079.95	(NULL)
16.49	90.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.87 WATERSHED INCHES, 1669.27 CFS-HRS, 137.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 60
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1400.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .44, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

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WARNING REACH 60 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1079.95	(NULL)
16.49	90.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.87 WATERSHED INCHES, 1669.27 CFS-HRS, 137.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 60
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 45. TIME OF CONCENTRATION= .90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.56	16.56	(RUNOFF)
23.72	1.26	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.24 WATERSHED INCHES, 39.88 CFS-HRS, 3.30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 60
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1086.21	(NULL)
16.49	93.02	(NULL)

TIME(HRS)		FIRST HYDROGRAPH POINT = .00 HOURS			TIME INCREMENT = .10 HOURS				DRAINAGE AREA = .95 SQ.MI.		
4.00	DISCHG	.00	.00	.00	.02	.10	.26	.49	.75	1.04	1.33
5.00	DISCHG	1.62	1.91	2.20	2.49	2.77	3.04	3.32	3.58	3.84	4.10
6.00	DISCHG	4.36	4.67	5.18	5.80	6.40	6.89	7.32	7.71	8.07	8.41
7.00	DISCHG	8.75	9.07	9.38	9.69	9.99	10.29	10.58	10.86	11.14	11.41
8.00	DISCHG	11.68	12.08	12.82	13.80	14.96	16.27	17.48	18.44	19.17	19.76
9.00	DISCHG	20.27	20.91	21.91	23.16	24.29	25.16	26.02	27.23	28.66	29.92
10.00	DISCHG	30.90	31.86	33.18	34.84	37.10	40.08	43.57	47.95	52.84	58.21
11.00	DISCHG	64.10	70.07	76.45	83.02	90.75	101.27	130.10	208.30	333.15	539.50
12.00	DISCHG	836.25	1068.68	1030.91	805.58	576.69	421.03	324.82	265.51	227.09	199.69
13.00	DISCHG	178.52	161.72	147.53	136.12	127.20	119.75	113.25	107.02	101.45	96.86
14.00	DISCHG	93.29	90.54	88.31	86.99	86.63	86.30	86.13	85.74	85.37	85.47
15.00	DISCHG	86.26	87.42	88.85	90.29	90.92	90.62	90.19	90.11	90.41	90.86
16.00	DISCHG	91.35	91.83	92.25	92.60	92.86	93.02	92.76	91.64	89.95	88.43
17.00	DISCHG	87.35	86.55	85.87	85.24	84.63	84.03	83.43	82.82	82.11	80.76
18.00	DISCHG	78.62	76.40	74.60	73.30	72.20	71.21	70.27	69.38	68.51	67.67
19.00	DISCHG	66.86	66.07	65.33	64.68	63.99	63.30	62.62	61.96	61.19	59.85
20.00	DISCHG	57.76	55.58	53.88	52.62	51.60	50.72	49.94	49.23	48.56	47.93
21.00	DISCHG	47.34	46.79	46.26	45.76	45.28	44.83	44.40	43.97	43.53	43.10
22.00	DISCHG	42.70	42.29	41.89	41.51	41.15	40.80	40.46	40.14	39.84	39.55
23.00	DISCHG	39.27	39.01	38.75	38.51	38.28	38.06	37.85	37.65	37.37	36.46

24.00	DISCHG	34.72	32.26	28.67	24.55	21.18	18.97	17.56	16.54	15.77	15.13
25.00	DISCHG	14.59	14.12	13.71	13.34	13.02	12.72	12.45	12.20	11.96	11.76
26.00	DISCHG	11.57	11.41	11.25	11.11	10.97	10.84	10.71	10.57	10.42	10.28
27.00	DISCHG	10.13	9.97	9.81	9.64	9.47	9.29	9.11	8.93	8.74	8.54
28.00	DISCHG	8.34	8.13	7.93	7.72	7.51	7.29	7.08	6.87	6.67	6.46
29.00	DISCHG	6.26	6.06	5.87	5.68	5.49	5.32	5.14	4.99	4.87	4.74

RUNOFF VOLUME ABOVE BASEFLOW = 2.79 WATERSHED INCHES, 1709.15 CFS-HRS, 141.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 1 OUTPUT HYDROGRAPH= 6

OPERATION ADDHYD CROSS SECTION 70
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1105.88	(NULL)
17.69	178.21	(NULL)
19.31	167.21	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.27 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.41
7.00	DISCHG	11.75	12.07	12.38	12.69	12.99	13.29	13.58	13.86	14.14	14.41
8.00	DISCHG	14.68	15.08	15.82	16.80	17.96	19.27	20.48	21.44	22.17	22.76
9.00	DISCHG	23.27	23.91	24.91	26.16	27.29	28.16	29.02	30.23	31.66	32.92
10.00	DISCHG	33.90	34.86	36.18	37.84	40.10	43.08	46.57	50.95	55.84	61.21
11.00	DISCHG	67.10	73.07	79.45	86.03	93.78	104.34	133.28	211.78	337.32	545.28
12.00	DISCHG	845.34	1084.73	1057.66	844.80	628.79	486.08	402.72	355.64	327.99	309.50
13.00	DISCHG	295.33	283.60	272.63	262.73	253.67	244.72	235.66	225.85	215.67	205.68
14.00	DISCHG	196.38	188.23	181.21	175.63	171.40	167.62	164.41	161.35	158.57	156.57
15.00	DISCHG	155.67	155.86	156.90	158.38	159.37	159.71	160.10	160.96	162.08	163.39
16.00	DISCHG	164.83	166.32	167.84	169.42	171.07	172.78	174.21	174.42	173.91	173.59
17.00	DISCHG	173.76	174.24	174.87	175.57	176.31	177.05	177.78	178.21	177.66	176.22
18.00	DISCHG	173.93	171.55	169.59	168.13	166.87	166.13	166.18	166.42	166.66	166.86
19.00	DISCHG	167.00	167.09	167.14	167.21	167.17	167.05	166.88	166.65	166.25	165.20
20.00	DISCHG	163.30	161.20	159.47	158.10	156.88	155.71	154.55	153.38	152.19	150.98
21.00	DISCHG	149.76	148.53	147.29	146.05	144.81	143.57	142.34	141.10	139.86	138.61
22.00	DISCHG	137.38	136.16	134.93	133.73	132.56	131.41	130.30	129.22	128.43	127.95
23.00	DISCHG	127.56	127.21	126.88	126.55	126.24	125.94	125.65	125.37	125.01	124.00
24.00	DISCHG	122.15	119.40	114.67	109.11	104.15	100.27	97.14	94.38	91.84	89.42
25.00	DISCHG	87.11	84.89	82.75	80.71	78.75	76.68	74.51	72.43	70.46	68.64

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26.00	DISCHG	66.95	65.39	63.94	62.58	61.30	60.10	58.95	57.85	56.80	55.79
27.00	DISCHG	54.81	53.86	52.93	52.03	51.14	50.27	49.39	48.49	47.59	46.70
28.00	DISCHG	45.83	44.97	44.11	43.27	42.44	41.61	40.79	39.99	39.19	38.40
29.00	DISCHG	37.62	36.85	36.10	35.37	34.66	33.98	33.32	32.70	32.11	31.53

RUNOFF VOLUME ABOVE BASEFLOW = 2.08 WATERSHED INCHES, 3042.75 CFS-HRS, 251.45 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 80
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 80 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1105.88	(NULL)
17.69	178.21	(NULL)
19.31	167.21	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.08 WATERSHED INCHES, 3042.75 CFS-HRS, 251.45 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 80
OUTPUT HYDROGRAPH= 6
AREA= .02 SQ MI INPUT RUNOFF CURVE= 64. TIME OF CONCENTRATION= .12 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0160 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.98	54.99	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.98 WATERSHED INCHES, 38.49 CFS-HRS, 3.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 80
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1127.29	(NULL)
17.69	179.54	(NULL)
19.31	168.28	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.08 WATERSHED INCHES, 3081.23 CFS-HRS, 254.63 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 100
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 90
OUTPUT HYDROGRAPH= 6
AREA= .24 SQ MI INPUT RUNOFF CURVE= 73. TIME OF CONCENTRATION= .62 HOURS

INTERNAL HYDROGRAPH TIME INCREMENT= .0827 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.27	434.61	(RUNOFF)
19.66	14.73	(RUNOFF)
23.66	11.19	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.93 WATERSHED INCHES, 608.63 CFS-HRS, 50.30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 100
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1509.45	(NULL)
16.64	197.41	(NULL)
17.69	197.88	(NULL)
19.31	183.01	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.26 WATERSHED INCHES, 3689.87 CFS-HRS, 304.93 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 110
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 110 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1509.45	(NULL)
16.64	197.41	(NULL)
17.69	197.88	(NULL)
19.31	183.01	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.26 WATERSHED INCHES, 3689.87 CFS-HRS, 304.93 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 120
INPUT HYDROGRAPH= 5 OUTPUT HYDROGRAPH= 7

OPERATION REACH CROSS SECTION 120
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 120 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1509.45	(NULL)
16.64	197.41	(NULL)
17.69	197.88	(NULL)
19.31	183.01	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.26 WATERSHED INCHES, 3689.87 CFS-HRS, 304.93 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 120
OUTPUT HYDROGRAPH= 6
AREA= .19 SQ MI INPUT RUNOFF CURVE= 56. TIME OF CONCENTRATION= .74 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0987 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.38	159.29	(RUNOFF)
19.68	8.61	(RUNOFF)
23.67	6.65	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.22 WATERSHED INCHES, 271.72 CFS-HRS, 22.45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 120
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	1631.85	(NULL)
15.38	200.88	(NULL)
16.63	209.79	(NULL)
17.68	208.50	(NULL)
19.31	191.61	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.41
7.00	DISCHG	11.75	12.07	12.38	12.69	12.99	13.30	13.62	13.96	14.33	14.71
8.00	DISCHG	15.11	15.65	16.55	17.73	19.11	20.68	22.18	23.45	24.48	25.36
9.00	DISCHG	26.17	27.10	28.43	30.05	31.57	32.84	34.14	35.80	37.74	39.53
10.00	DISCHG	41.03	42.53	44.41	46.70	49.75	53.63	58.32	64.09	70.62	77.95
11.00	DISCHG	85.99	94.52	103.69	113.46	125.10	140.41	183.87	286.90	460.48	766.12
12.00	DISCHG	1202.04	1559.83	1624.75	1441.00	1183.26	959.33	788.96	670.15	588.09	528.05
13.00	DISCHG	483.20	446.76	416.31	390.69	368.75	349.61	331.75	314.52	297.83	282.10
14.00	DISCHG	268.15	255.94	245.43	236.78	229.69	223.42	217.69	212.27	207.28	203.30
15.00	DISCHG	200.77	199.72	199.88	200.67	200.87	200.37	199.77	199.60	199.82	200.45
16.00	DISCHG	201.43	202.60	203.92	205.37	206.95	208.60	209.73	209.46	208.22	207.00
17.00	DISCHG	206.27	206.00	206.08	206.42	206.92	207.50	208.12	208.48	207.78	205.91
18.00	DISCHG	203.02	199.77	196.87	194.55	192.63	191.42	191.15	191.18	191.28	191.38
19.00	DISCHG	191.47	191.52	191.55	191.61	191.57	191.45	191.28	191.07	190.57	189.11

20.00	DISCHG	186.62	183.65	180.97	178.73	176.82	175.17	173.70	172.31	170.97	169.66
21.00	DISCHG	168.37	167.09	165.83	164.57	163.32	162.08	160.84	159.61	158.37	157.13
22.00	DISCHG	155.91	154.69	153.47	152.28	151.11	149.98	148.87	147.80	147.02	146.55
23.00	DISCHG	146.17	145.82	145.50	145.18	144.88	144.59	144.31	144.03	143.57	142.13
24.00	DISCHG	139.62	135.38	128.68	120.70	113.12	106.85	101.78	97.59	94.05	90.96
25.00	DISCHG	88.18	85.63	83.26	81.05	78.99	76.84	74.62	72.49	70.51	68.66
26.00	DISCHG	66.96	65.39	63.94	62.58	61.30	60.10	58.95	57.85	56.80	55.79
27.00	DISCHG	54.81	53.86	52.93	52.03	51.14	50.27	49.39	48.49	47.59	46.70
28.00	DISCHG	45.83	44.97	44.11	43.27	42.44	41.61	40.79	39.99	39.19	38.40
29.00	DISCHG	37.62	36.85	36.10	35.37	34.66	33.98	33.32	32.70	32.11	31.53

RUNOFF VOLUME ABOVE BASEFLOW = 2.26 WATERSHED INCHES, 3961.59 CFS-HRS, 327.39 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV STRUCTURE 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 50
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.56	338.73	10.54

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

9.00	DISCHG	3.00	3.00	3.00	3.43	3.89	4.37	4.86	5.37	5.90	6.45
9.00	ELEV	2.84	2.84	2.84	2.86	2.88	2.89	2.91	2.93	2.96	2.98
10.00	DISCHG	7.02	7.55	8.09	8.66	9.26	9.90	10.60	11.37	12.21	13.16
10.00	ELEV	3.00	3.02	3.05	3.07	3.10	3.13	3.16	3.19	3.23	3.27
11.00	DISCHG	14.20	15.35	17.10	19.55	22.23	25.20	28.86	34.40	44.35	63.37
11.00	ELEV	3.32	3.37	3.43	3.49	3.56	3.63	3.72	3.86	4.09	4.47
12.00	DISCHG	93.11	120.25	168.39	227.57	256.97	279.89	296.60	308.78	317.79	324.55
12.00	ELEV	5.08	5.95	6.93	7.84	8.57	9.11	9.51	9.80	10.01	10.17
13.00	DISCHG	329.64	333.45	335.74	337.24	338.19	338.65	338.70	338.35	337.64	336.58
13.00	ELEV	10.30	10.39	10.45	10.50	10.53	10.54	10.54	10.53	10.51	10.48
14.00	DISCHG	335.22	333.49	331.16	328.62	325.94	323.14	320.26	317.30	314.27	311.21
14.00	ELEV	10.44	10.39	10.33	10.27	10.21	10.14	10.07	10.00	9.93	9.86
15.00	DISCHG	308.14	305.10	302.14	299.27	296.50	293.80	291.17	288.59	286.09	283.67
15.00	ELEV	9.78	9.71	9.64	9.57	9.51	9.44	9.38	9.32	9.26	9.20
16.00	DISCHG	281.35	279.12	276.98	274.95	273.01	271.18	269.43	267.75	266.09	264.45
16.00	ELEV	9.15	9.09	9.04	8.99	8.95	8.90	8.86	8.82	8.78	8.74
17.00	DISCHG	262.82	261.23	259.67	258.17	256.72	255.33	253.99	252.71	251.45	250.20
17.00	ELEV	8.71	8.67	8.63	8.59	8.56	8.53	8.50	8.46	8.43	8.40
18.00	DISCHG	248.96	247.69	246.36	245.01	243.63	242.25	240.88	239.55	238.25	237.00
18.00	ELEV	8.37	8.34	8.31	8.28	8.24	8.21	8.17	8.14	8.11	8.07
19.00	DISCHG	235.77	234.59	233.43	232.31	231.22	230.16	229.12	228.10	227.10	226.10
19.00	ELEV	8.04	8.01	7.99	7.96	7.93	7.90	7.88	7.85	7.83	7.80
20.00	DISCHG	225.08	224.01	222.89	221.74	220.56	219.36	218.16	216.95	215.74	214.52
20.00	ELEV	7.78	7.75	7.72	7.69	7.66	7.63	7.60	7.57	7.54	7.51

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21.00	DISCHG	213.30	212.08	210.86	209.19	206.54	203.96	201.47	199.05	196.69	194.41
21.00	ELEV	7.48	7.45	7.42	7.39	7.36	7.33	7.30	7.28	7.25	7.22
22.00	DISCHG	192.18	190.02	187.91	185.85	183.85	181.89	179.98	178.13	176.32	174.59
22.00	ELEV	7.20	7.18	7.15	7.13	7.11	7.08	7.06	7.04	7.02	7.00
23.00	DISCHG	172.93	171.35	169.84	168.40	167.03	165.72	164.47	163.28	162.14	161.00
23.00	ELEV	6.98	6.97	6.95	6.93	6.92	6.90	6.89	6.88	6.86	6.85
24.00	DISCHG	159.82	158.51	156.96	155.06	152.82	150.31	147.61	144.79	141.92	139.02
24.00	ELEV	6.84	6.82	6.80	6.78	6.76	6.73	6.70	6.67	6.64	6.60
25.00	DISCHG	136.11	133.22	130.36	127.53	124.74	121.99	120.97	120.91	120.86	120.80
25.00	ELEV	6.57	6.54	6.51	6.47	6.44	6.41	6.38	6.35	6.31	6.28
26.00	DISCHG	120.74	120.68	120.61	120.55	120.48	120.42	120.35	120.28	120.21	120.13
26.00	ELEV	6.24	6.21	6.17	6.13	6.09	6.05	6.01	5.97	5.92	5.88
27.00	DISCHG	120.06	119.67	118.00	116.35	114.72	113.11	111.52	109.94	108.39	106.85
27.00	ELEV	5.84	5.79	5.75	5.70	5.66	5.62	5.57	5.53	5.49	5.45
28.00	DISCHG	105.32	103.81	102.32	100.85	99.39	97.94	96.52	95.10	93.71	92.33
28.00	ELEV	5.41	5.37	5.33	5.29	5.25	5.21	5.17	5.14	5.10	5.06
29.00	DISCHG	90.96	89.48	87.71	85.97	84.27	82.60	80.97	79.37	77.80	76.26
29.00	ELEV	5.03	4.99	4.95	4.92	4.89	4.85	4.82	4.79	4.76	4.73

RUNOFF VOLUME ABOVE BASEFLOW = 2.07 WATERSHED INCHES, 3641.08 CFS-HRS, 300.90 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1000.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 130 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 130 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 73.26 CFS, 21.82 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.56	338.73	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.07 WATERSHED INCHES, 3641.08 CFS-HRS, 300.90 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 130
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 74. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	160.37	(RUNOFF)
23.65	2.37	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 4.05 WATERSHED INCHES, 130.79 CFS-HRS, 10.81 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 130
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.06	256.61	(NULL)
13.45	348.57	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.11 WATERSHED INCHES, 3771.87 CFS-HRS, 311.71 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 60
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.72	271.48	6.68

TIME(HRS)		FIRST HYDROGRAPH POINT = .00 HOURS				TIME INCREMENT = .10 HOURS			DRAINAGE AREA =		2.77 SQ.MI.
11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	4.63	7.79
11.00	ELEV	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.44	2.53
12.00	DISCHG	12.23	16.78	21.04	28.84	38.83	48.34	58.08	69.82	81.92	93.75
12.00	ELEV	2.66	2.81	2.95	3.09	3.25	3.41	3.57	3.73	3.89	4.05
13.00	DISCHG	105.24	116.35	127.04	136.72	144.13	151.29	158.18	164.81	171.16	177.25
13.00	ELEV	4.20	4.35	4.49	4.63	4.76	4.89	5.01	5.13	5.24	5.35
14.00	DISCHG	180.09	180.26	180.43	180.60	180.76	180.92	186.47	197.71	207.77	216.75
14.00	ELEV	5.46	5.56	5.66	5.76	5.85	5.95	6.04	6.12	6.20	6.27
15.00	DISCHG	224.76	231.86	238.14	243.67	248.50	252.69	256.30	259.41	262.06	264.29
15.00	ELEV	6.33	6.38	6.43	6.47	6.50	6.53	6.56	6.59	6.60	6.62
16.00	DISCHG	266.15	267.67	268.89	269.84	270.55	271.05	271.36	271.47	271.42	271.24
16.00	ELEV	6.64	6.65	6.66	6.66	6.67	6.67	6.67	6.68	6.67	6.67
17.00	DISCHG	270.93	270.52	270.01	269.42	268.76	268.04	267.26	266.44	265.58	264.67
17.00	ELEV	6.67	6.67	6.66	6.66	6.65	6.65	6.64	6.64	6.63	6.62
18.00	DISCHG	263.71	262.72	261.69	260.64	259.56	258.46	257.34	256.19	255.04	253.87
18.00	ELEV	6.62	6.61	6.60	6.59	6.59	6.58	6.57	6.56	6.55	6.54
19.00	DISCHG	252.70	251.52	250.35	249.18	248.01	246.86	245.71	244.57	243.44	242.30
19.00	ELEV	6.54	6.53	6.52	6.51	6.50	6.49	6.48	6.47	6.47	6.46
20.00	DISCHG	241.14	239.99	238.83	237.68	236.52	235.36	234.20	233.03	231.87	230.69
20.00	ELEV	6.45	6.44	6.43	6.42	6.41	6.41	6.40	6.39	6.38	6.37
21.00	DISCHG	229.52	228.34	227.15	225.95	224.67	223.27	221.79	220.23	218.60	216.91
21.00	ELEV	6.36	6.35	6.34	6.34	6.33	6.32	6.30	6.29	6.28	6.27
22.00	DISCHG	215.18	213.41	211.61	209.78	207.94	206.09	204.24	202.38	200.52	198.67
22.00	ELEV	6.26	6.24	6.23	6.21	6.20	6.19	6.17	6.16	6.15	6.13
23.00	DISCHG	196.83	195.01	193.21	191.44	189.70	187.99	186.32	184.68	183.08	181.50
23.00	ELEV	6.12	6.10	6.09	6.08	6.06	6.05	6.04	6.03	6.02	6.00
24.00	DISCHG	180.99	180.96	180.94	180.91	180.89	180.86	180.82	180.79	180.75	180.70
24.00	ELEV	5.99	5.98	5.96	5.95	5.93	5.91	5.89	5.87	5.85	5.82
25.00	DISCHG	180.66	180.61	180.56	180.50	180.45	180.39	180.32	180.26	180.20	180.14
25.00	ELEV	5.79	5.77	5.73	5.70	5.67	5.63	5.59	5.56	5.52	5.48

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26.00	DISCHG	180.07	180.01	178.27	176.25	174.30	172.42	170.60	168.84	167.13	165.49
26.00	ELEV	5.44	5.41	5.37	5.33	5.30	5.27	5.23	5.20	5.17	5.14
27.00	DISCHG	163.90	162.36	160.84	159.31	157.78	156.24	154.70	153.17	151.63	150.09
27.00	ELEV	5.11	5.09	5.06	5.03	5.00	4.98	4.95	4.92	4.90	4.87
28.00	DISCHG	148.55	147.01	145.47	143.93	142.40	140.87	139.34	137.82	136.30	134.71
28.00	ELEV	4.84	4.81	4.79	4.76	4.73	4.70	4.68	4.65	4.62	4.60
29.00	DISCHG	132.71	130.74	128.79	126.84	124.91	122.98	121.07	119.17	117.29	115.42
29.00	ELEV	4.57	4.54	4.52	4.49	4.47	4.44	4.41	4.39	4.36	4.34

RUNOFF VOLUME ABOVE BASEFLOW = 1.92 WATERSHED INCHES, 3427.89 CFS-HRS, 283.28 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 140
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .37 PEAK TRAVEL TIME = .30 HOURS
0 *** WARNING - REACH 140 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 112.42 CFS, 41.87 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
17.02	271.05	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.90 WATERSHED INCHES, 3396.49 CFS-HRS, 280.69 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 140
OUTPUT HYDROGRAPH= 6
AREA= .20 SQ MI INPUT RUNOFF CURVE= 68. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	543.51	(RUNOFF)
15.16	19.42	(RUNOFF)
16.45	16.95	(RUNOFF)
17.66	14.20	(RUNOFF)
19.65	11.51	(RUNOFF)
23.65	8.78	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.42 WATERSHED INCHES, 441.34 CFS-HRS, 36.47 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 140
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	549.09	(NULL)
17.02	285.17	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.00 WATERSHED INCHES, 3837.82 CFS-HRS, 317.16 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 150
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 149
OUTPUT HYDROGRAPH= 6
AREA= .08 SQ MI INPUT RUNOFF CURVE= 65. TIME OF CONCENTRATION= .42 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0560 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.15	142.32	(RUNOFF)
16.45	6.39	(RUNOFF)
17.67	5.39	(RUNOFF)
19.66	4.37	(RUNOFF)
23.66	3.34	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.10 WATERSHED INCHES, 160.17 CFS-HRS, 13.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 150
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.04	659.91	(NULL)
14.32	211.38	(NULL)
16.56	291.90	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.03 WATERSHED INCHES, 3997.99 CFS-HRS, 330.39 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 150
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 300.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 150 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 150 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 117.49 CFS, 18.32 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.04	659.91	(NULL)
14.32	211.38	(NULL)
16.56	291.90	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.03 WATERSHED INCHES, 3997.99 CFS-HRS, 330.39 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 150
OUTPUT HYDROGRAPH= 6
AREA= .01 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= .15 HOURS

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INTERNAL HYDROGRAPH TIME INCREMENT= .0200 HOURS

*** WARNING-MAIN TIME INCREMENT MAY BE TOO LARGE.
COMPUTED PEAK(4.99) AT EXCEEDS MAX. ADJACENT HYDROGRAPH COORDINATE BY 8 %.
+ XSECTION 150

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.05	4.99	(RUNOFF)

TIME(HRS)		FIRST HYDROGRAPH POINT = .00 HOURS				TIME INCREMENT = .10 HOURS			DRAINAGE AREA =		.01 SQ.MI.
11.00	DISCHG	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.05
12.00	DISCHG	4.60	4.46	2.17	1.71	1.28	1.17	1.09	1.02	1.00	.87
13.00	DISCHG	.84	.78	.73	.71	.66	.64	.60	.56	.55	.52
14.00	DISCHG	.52	.50	.48	.47	.44	.43	.41	.38	.38	.38
15.00	DISCHG	.38	.39	.39	.38	.35	.34	.34	.34	.34	.34
16.00	DISCHG	.34	.34	.35	.35	.35	.35	.32	.30	.30	.30
17.00	DISCHG	.30	.30	.30	.30	.30	.30	.30	.30	.30	.26
18.00	DISCHG	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25
19.00	DISCHG	.25	.25	.25	.25	.25	.25	.25	.25	.25	.21
20.00	DISCHG	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19
21.00	DISCHG	.19	.20	.20	.20	.20	.20	.20	.20	.20	.20
22.00	DISCHG	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
23.00	DISCHG	.20	.20	.20	.20	.20	.20	.20	.20	.20	.15
24.00	DISCHG	.14	.08	.01	.00						

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 5.41 CFS-HRS, .45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 150
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.04	664.89	(NULL)
14.32	211.85	(NULL)
16.56	292.24	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.03 WATERSHED INCHES, 4003.40 CFS-HRS, 330.84 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 180
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 180
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 42. TIME OF CONCENTRATION= .48 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.27	39.64	(RUNOFF)
23.68	2.45	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .99 WATERSHED INCHES, 70.57 CFS-HRS, 5.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 180
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.04	682.06	(NULL)
14.31	218.17	(NULL)
16.55	296.50	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.99 WATERSHED INCHES, 4073.98 CFS-HRS, 336.67 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 180
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .62 PEAK TRAVEL TIME = .20 HOURS
0 *** WARNING - REACH 180 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 117.49 CFS, 17.86 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	603.16	(NULL)
14.48	217.40	(NULL)
16.71	296.06	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.98 WATERSHED INCHES, 4051.95 CFS-HRS, 334.85 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 180
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 41. TIME OF CONCENTRATION= .48 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.28	34.74	(RUNOFF)
23.69	2.34	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 65.08 CFS-HRS, 5.38 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 180
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	635.26	(NULL)
14.44	223.16	(NULL)
16.70	300.00	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 3.28 SQ.MI.

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8.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.04	3.15
9.00	DISCHG	3.31	3.50	3.72	3.99	4.26	4.53	4.81	5.16	5.60	6.04
10.00	DISCHG	6.47	6.88	7.38	7.98	8.61	9.54	10.52	11.76	13.39	14.95
11.00	DISCHG	17.06	19.17	21.51	24.30	26.99	31.07	35.31	58.09	108.28	171.42
12.00	DISCHG	344.93	559.62	634.25	520.58	405.23	311.45	249.04	212.02	190.45	180.74
13.00	DISCHG	174.98	173.76	175.45	178.20	183.22	188.19	193.59	198.58	202.64	207.18
14.00	DISCHG	211.44	215.97	219.72	221.83	223.05	222.94	222.42	221.47	221.25	223.98
15.00	DISCHG	229.18	235.89	243.30	250.82	257.93	263.59	268.55	273.27	277.71	281.83
16.00	DISCHG	285.54	288.84	291.73	294.21	296.32	298.08	299.50	300.00	299.50	298.99
17.00	DISCHG	298.64	298.40	298.20	297.97	297.69	297.33	296.90	296.38	295.79	294.94
18.00	DISCHG	293.02	290.89	289.06	287.53	286.23	285.05	283.93	282.84	281.76	280.67
19.00	DISCHG	279.57	278.45	277.33	276.19	275.05	273.91	272.77	271.63	270.48	269.13
20.00	DISCHG	266.77	264.25	262.08	260.27	258.72	257.34	256.07	254.84	253.65	252.48
21.00	DISCHG	251.31	250.15	248.99	247.82	246.66	245.49	244.29	243.05	241.74	240.36
22.00	DISCHG	238.91	237.39	235.81	234.17	232.49	230.76	229.00	227.21	225.41	223.59
23.00	DISCHG	221.76	219.92	218.09	216.26	214.45	212.65	210.87	209.11	207.37	205.45
24.00	DISCHG	202.52	199.37	195.49	190.81	187.17	184.71	183.17	182.23	181.66	181.31
25.00	DISCHG	181.09	180.94	180.84	180.75	180.68	180.63	180.57	180.51	180.46	180.40
26.00	DISCHG	180.34	180.27	180.21	180.15	179.70	178.80	177.55	176.07	174.45	172.77
27.00	DISCHG	171.07	169.38	167.71	166.08	164.48	162.91	161.35	159.80	158.25	156.71
28.00	DISCHG	155.17	153.63	152.09	150.55	149.01	147.47	145.93	144.40	142.87	141.34
29.00	DISCHG	139.81	138.27	136.62	134.87	133.05	131.18	129.29	127.39	125.47	123.56

RUNOFF VOLUME ABOVE BASEFLOW = 1.94 WATERSHED INCHES, 4117.03 CFS-HRS, 340.23 ACRE-FEET; BASEFLOW = 3.00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID 1740

\+ COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION ENDJOB RECORD ID 1750

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 87 STORM 1													
STRUCTURE 10	RUNOFF	.84	2	2	.10	.0	7.00	24.00	1.67	---	17.80	96.56	114.9
STRUCTURE 10	RESVOR	.84	2	2	.10	.0	7.00	24.00	1.63	9.50	18.14	96.09	114.4
XSECTION 10	REACH	.84	2	2	.10	.0	7.00	24.00	1.62	---	18.47	98.84	117.7
XSECTION 10	RUNOFF	.20	2	2	.10	.0	7.00	24.00	1.00	---	12.08	121.81	609.0
XSECTION 10	ADDHYD	1.04	2	2	.10	.0	7.00	24.00	1.50	---	12.08	124.81	120.0
STRUCTURE 20	RESVOR	1.04	2	2	.10	.0	7.00	24.00	1.45	9.18	20.10	93.18	89.6
XSECTION 20	REACH	1.04	2	2	.10	.0	7.00	24.00	1.44	---	20.25	93.15	89.6
XSECTION 20	RUNOFF	.28	2	2	.10	.0	7.00	24.00	2.03	---	13.36	102.66	366.6
XSECTION 20	ADDHYD	1.32	2	2	.10	.0	7.00	24.00	1.57	---	13.34	126.76	96.0
STRUCTURE 30	RUNOFF	.37	2	2	.10	.0	7.00	24.00	1.57	---	14.95	60.58	163.7
STRUCTURE 30	RESVOR	.37	2	2	.10	.0	7.00	24.00	1.51	25.91	16.21	48.05	129.9
XSECTION 40	REACH	.37	2	2	.10	.0	7.00	24.00	1.50	---	16.55	47.70	128.9
XSECTION 40	RUNOFF	.06	2	2	.10	.0	7.00	24.00	.84	---	12.72	10.21	170.2
XSECTION 40	ADDHYD	.43	2	2	.10	.0	7.00	24.00	1.41	---	16.54	49.80	115.8
STRUCTURE 40	RESVOR	.43	2	2	.10	.0	7.00	24.00	1.41	10.89	16.60	49.78	115.8
XSECTION 50	REACH	.43	2	2	.10	.0	7.00	24.00	1.40	---	16.72	49.77	115.7
XSECTION 49	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.84	---	13.33	13.76	125.1
XSECTION 50	ADDHYD	.54	2	2	.10	.0	7.00	24.00	1.29	---	16.65	53.98	100.0
XSECTION 50	RUNOFF	.36	2	2	.10	.0	7.00	24.00	5.25	---	12.13	1078.73	2996.5
XSECTION 50	ADDHYD	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	REACH	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	RUNOFF	.05	2	2	.10	.0	7.00	24.00	1.24	---	12.56	16.56	331.2
XSECTION 60	ADDHYD	.95	2	2	.10	.0	7.00	24.00	2.79	---	12.14	1086.21	1143.4
XSECTION 70	ADDHYD	2.27	2	2	.10	.0	7.00	24.00	2.08	---	12.14	1105.88	487.2
XSECTION 80	REACH	2.27	2	2	.10	.0	7.00	24.00	2.08	---	12.14	1105.88	487.2
XSECTION 80	RUNOFF	.02	2	2	.10	.0	7.00	24.00	2.98	---	11.98	54.99	2749.6
XSECTION 80	ADDHYD	2.29	2	2	.10	.0	7.00	24.00	2.08	---	12.13	1127.29	492.3
XSECTION 90	RUNOFF	.24	2	2	.10	.0	7.00	24.00	3.93	---	12.27	434.61	1810.9
XSECTION 100	ADDHYD	2.53	2	2	.10	.0	7.00	24.00	2.26	---	12.16	1509.45	596.6
XSECTION 110	REACH	2.53	2	2	.10	.0	7.00	24.00	2.26	---	12.16	1509.45	596.6
XSECTION 120	REACH	2.53	2	2	.10	.0	7.00	24.00	2.26	---	12.16	1509.45	596.6
XSECTION 120	RUNOFF	.19	2	2	.10	.0	7.00	24.00	2.22	---	12.38	159.29	838.4

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SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 87 STORM 1													
XSECTION 120	ADDHYD	2.72	2	2	.10	.0	7.00	24.00	2.26	---	12.18	1631.85	599.9
STRUCTURE 50	RESVOR	2.72	2	2	.10	.0	7.00	24.00	2.07	10.54	13.56	338.73	124.5
XSECTION 130	REACH	2.72	2	2	.10	.0	7.00	24.00	2.07	---	13.56	338.73	124.5
XSECTION 130	RUNOFF	.05	2	2	.10	.0	7.00	24.00	4.05	---	12.01	160.37	3207.4
XSECTION 130	ADDHYD	2.77	2	2	.10	.0	7.00	24.00	2.11	---	13.45	348.57	125.8
STRUCTURE 60	RESVOR	2.77	2	2	.10	.0	7.00	24.00	1.92	6.68	16.72	271.48	98.0
XSECTION 140	REACH	2.77	2	2	.10	.0	7.00	24.00	1.90	---	17.02	271.05	97.9
XSECTION 140	RUNOFF	.20	2	2	.10	.0	7.00	24.00	3.42	---	12.02	543.51	2717.6
XSECTION 140	ADDHYD	2.97	2	2	.10	.0	7.00	24.00	2.00	---	12.02	549.09	184.9
XSECTION 149	RUNOFF	.08	2	2	.10	.0	7.00	24.00	3.10	---	12.15	142.32	1779.0
XSECTION 150	ADDHYD	3.05	2	2	.10	.0	7.00	24.00	2.03	---	12.04	659.91	216.4
XSECTION 150	REACH	3.05	2	2	.10	.0	7.00	24.00	2.03	---	12.04	659.91	216.4
XSECTION 150	RUNOFF	.01	2	2	.10	.0	7.00	24.00	.84	---	12.05	4.99	499.3
XSECTION 150	ADDHYD	3.06	2	2	.10	.0	7.00	24.00	2.03	---	12.04	664.89	217.3
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.99	---	12.27	39.64	360.4
XSECTION 180	ADDHYD	3.17	2	2	.10	.0	7.00	24.00	1.99	---	12.04	682.06	215.2
XSECTION 180	REACH	3.17	2	2	.10	.0	7.00	24.00	1.98	---	12.19	603.16	190.3
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.92	---	12.28	34.74	315.8
XSECTION 180	ADDHYD	3.28	2	2	.10	.0	7.00	24.00	1.94	---	12.19	635.26	193.7

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

XSEC ID	REACH LENGTH (FT)	HYDROGRAPH INFORMATION: INFLOW PEAK (CFS)	INFLOW TIME (HR)	OUTFLOW PEAK (CFS)	OUTFLOW TIME (HR)	OUTFLOW+ INTERV. PEAK (CFS)	OUTFLOW+ INTERV. TIME (HR)	AREA BASE-FLOW (CFS)	ROUTING PARAMETERS: VOLUME ABOVE BASE (IN)	MAIN TIME INCR (HR)	ITER-ATION #	Q AND A EQUATION COEFF (X)	Q AND A EQUATION POWER (M)	LENGTH FACTOR (K*)	PEAK RATIO Q/I (Q*)	S/Q @PEAK (K) (SEC)	ATT-KIN COEFF (C)	TRAVEL TIME STOR-AGE (HR)	TRAVEL TIME KINE-MATIC (HR)
ALTERNATE 87 STORM 1																			
10	1750	99	18.1	99	18.5			3	1.63*	.10	1	1.20	1.10	.021	.997	888	.34	.40	.25
						123	12.1												
20	2900	93	20.1	93	20.2			3	1.45*	.10	1	.280	1.94	.000	1.000	320	.72?	.10	.09
						127	13.3												
40	1300	48	16.2	48	16.5			0	1.51	.10	1	.880	1.10	.027	.992	934	.32	.30	.26
						50	16.5												
50	1700	50	16.6	50	16.7			0	1.41	.10	1	1.60	1.45	.002	1.000	252	.83?	.10	.07
						54	16.6												
60	1400	1064	12.1	1064	12.1			0	2.87	.10	0	.440	1.94	.000	1.000	38	1.00?	.00	.00
						1069	12.1												
80	700	1085	12.1	1085	12.1			3	2.08	.10	0	.300	1.94	.000	1.000	23	1.00?	.00	.00
						1113	12.1												
110	500	1493	12.2	1493	12.2			3	2.26	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						---	---												
120	500	1493	12.2	1493	12.2			3	2.26	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						1625	12.2												
												.300							

+130	1000	339	13.6	339	13.6		3	2.07*	.10	0		1.94	.000	1.000	57	1.00?	.00	.00
+						349	13.5											
											.210							
+140	2500	271	16.7	271	17.0		3	1.92*	.10	1		1.48	.004	.998	788	.37	.30	.22
+						544	12.0											
											.210							
+150	300	644	12.0	644	12.0		3	2.03*	.10	0		1.48	.000	1.000	71	1.00?	.00	.00
+						649	12.0											
											.210							
+180	1700	661	12.0	601	12.2		3	1.99*	.10	1		1.48	.005	.910	401	.62	.20	.11
+						634	12.2											

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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 STRUCTURE 60	2.77	
ALTERNATE 87		271.48
0 STRUCTURE 50	2.72	
ALTERNATE 87		338.73
0 STRUCTURE 40	.43	
ALTERNATE 87		49.78
0 STRUCTURE 30	.37	
ALTERNATE 87		48.05
0 STRUCTURE 20	1.04	
ALTERNATE 87		93.18
0 STRUCTURE 10	.84	
ALTERNATE 87		96.09
0 XSECTION 10	1.04	
ALTERNATE 87		124.81
0 XSECTION 20	1.32	
ALTERNATE 87		126.76
0 XSECTION 40	.43	
ALTERNATE 87		49.80
0 XSECTION 49	.11	
ALTERNATE 87		13.76
0 XSECTION 50	.90	
ALTERNATE 87		1079.95
0 XSECTION 60	.95	
ALTERNATE 87		1086.21
0 XSECTION 70	2.27	
ALTERNATE 87		1105.88
0 XSECTION 80	2.29	
ALTERNATE 87		1127.29

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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 XSECTION 90	.24	
ALTERNATE 87		434.61
0 XSECTION 100	2.53	
ALTERNATE 87		1509.45
0 XSECTION 110	2.53	
ALTERNATE 87		1509.45
0 XSECTION 120	2.72	
ALTERNATE 87		1631.85
0 XSECTION 130	2.77	
ALTERNATE 87		348.57
0 XSECTION 140	2.97	
ALTERNATE 87		549.09
0 XSECTION 149	.08	
ALTERNATE 87		142.32
0 XSECTION 150	3.06	
ALTERNATE 87		664.89
0 XSECTION 180	3.28	
ALTERNATE 87		635.26

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

JOB TR-20                    FULLPRINT PASS=001  SUMMARY                    10
TITLE 002 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM    20
TITLE     ALT  88                                                  30
 3 STRUCT      10                                                           40
 8                    7.00        0.00        4.33                          50
 8                    7.4         2.5         5.01                          60
 8                    7.6         5.0         5.36                          70
 8                    7.8         10.0        5.70                          80
 8                    8.2         22.0        6.38                          90
 8                    8.6         52.0        7.07                         100
 8                    9.0         62.0        7.75                         110
 8                    9.5         96.0        8.61                         120
 8                    10.0        126.0       9.47                         130
 8                    11.0        198.0       11.18                        140
 8                    12.0        280.0       12.89                        150
 8                    13.00       360.0       14.79                        160
 8                    14.00       440.0       16.68                        170
 8                    15.00       500.0       18.58                        180
 8                    15.1        600.00      18.60                        190
 9 ENDTBL                                                                  200
 3 STRUCT      20                                                          210
 8                    4.5         0.00        6.80                         220
 8                    4.9         1.5         7.88                         230
 8                    5.1         3.7         8.42                         240
 8                    5.5         11.0        9.51                         250
 8                    5.7         15.0        10.13                        260
 8                    6.1         25.0        11.13                        270
 8                    6.5         40.0        12.21                        280
 8                    7.1         60.0        13.84                        290
 8                    7.9         78.0        16.01                        300
 8                    8.5         79.0        17.63                        310
 8                    9.5         100.0       20.34                        320
 8                    10.5        126.0       23.06                        330
 8                    11.5        150.0       25.76                        340
 8                    11.6        300.0       26.04                        350
 9 ENDTBL                                                                  360
 3 STRUCT      30                                                          370
 8                    21.0        0.00        0.10                         380
 8                    21.4        0.6         0.61                         390
 8                    21.6        1.5         0.86                         400
 8                    21.8        2.5         1.12                         410
 8                    22.2        5.2         1.62                         420
 8                    22.6        8.2         2.13                         430
 8                    23.0        11.0        2.64                         440
 8                    23.5        20.0        3.27                         450
 8                    24.0        27.0        3.91                         460
```

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

```
8                    25.0      39.0      5.18                    470
8                    26.0      49.0      6.45                    480
8                    27.0      57.0      7.72                    490
8                    27.1      200.00    7.74                    500
9 ENDTBL                                                         510
3 STRUCT      40                                                 520
8                    9.0       0.0       0.38                    530
8                    9.4       2.2       0.47                    540
8                    9.6       5.0       0.52                    550
8                    10.0      14.0      0.62                    560
8                    10.2      21.0      0.67                    570
8                    10.6      36.0      0.77                    580
8                    11.0      55.0      0.86                    590
8                    11.6      82.0      1.01                    600
8                    12.4      120.0     1.21                    610
8                    13.0      121.0     1.35                    620
8                    14.0      122.0     1.60                    630
8                    15.0      126.0     1.84                    640
8                    16.0      150.00    2.08                    650
8                    16.1      300.0     2.11                    660
9 ENDTBL                                                         670
3 STRUCT      50                                                 680
8                    2.4       0.00      22.00                   690
8                    2.8       2.0       26.86                   700
8                    3.0       7.0       29.29                   710
8                    3.4       16.0      34.16                   720
8                    3.6       24.0      36.59                   730
8                    4.0       40.0      41.46                   740
8                    4.4       60.0      46.32                   750
8                    5.0       90.0      53.62                   760
8                    5.8       120.0     63.35                   770
8                    6.4       121.0     70.65                   780
8                    7.4       210.0     82.81                   790
8                    8.4       250.00    94.98                   800
8                    10.4      334.0     119.31                  810
8                    12.4      400.0     143.63                  820
8                    12.5      800.0     143.70                  830
9 ENDTBL                                                         840
3 STRUCT      60                                                 850
8                    2.0       0.0       22.20                   860
8                    2.4       3.0       27.41                   870
8                    2.6       10.5      30.02                   880
8                    3.0       22.5      35.24                   890
8                    3.2       36.0      37.85                   900
8                    3.6       60.0      43.06                   910
8                    4.0       90.0      48.28                   920
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**********80-80 LIST OF INPUT DATA (CONTINUED)**********

8                    4.6        135.0      56.11                    930
8                    5.4        180.0      66.55                    940
8                    6.0        181.0      74.38                    950
8                    7.0        315.0      87.42                    960
8                    8.0        375.0      100.47                   970
8                    8.1        700.0      100.50                   980
9 ENDTBL                                                            990
6 RUNOFF 1    10     6 0.84     51.        7.50      1              1000
6 RESVOR 2    10 6   7 7.0                           1              1010
6 REACH  3 010   7   5 1750.    1.2        1.10      1              1020
6 RUNOFF 1 010       6 0.20     42.        0.19      1              1030
6 ADDHYD 4 010   5 6 7                               1 1            1040
6 SAVMOV 5 010   7   6                                              1050
6 RESVOR 2    20 6   7 4.5                           1              1060
6 REACH  3 020   7   5 2900.    0.28       1.94      1              1070
6 RUNOFF 1 020       6 0.28     53.        1.02      1              1080
6 ADDHYD 4 020   5 6 7                               1 1            1090
6 SAVMOV 5 020   7   1                                              1100
6 RUNOFF 1    30     6 0.37     49.        3.90      1              1110
6 RESVOR 2    30 6   7 21.0                          1              1120
6 REACH  3 040   7   5 1300.    0.88       1.10      1              1130
6 RUNOFF 1 040       6 0.06     40.        1.00      1              1140
6 ADDHYD 4 040   5 6 7                               1              1150
6 SAVMOV 5 040   7   6                                              1160
6 RESVOR 2    40 6   7 9.0                           1              1170
6 REACH  3 050   7   5 1700.    1.6        1.45      1              1180
6 RUNOFF 1 049       6 0.11     40.        1.67      1              1190
6 ADDHYD 4 050   5 6 7                               1              1200
6 SAVMOV 5 050   7   5                                              1210
6 RUNOFF 1 050       6 0.36     85.        0.42      1              1220
6 ADDHYD 4 050   5 6 7                               1              1230
6 REACH  3 060   7   5 1400.    0.44       1.94      1              1240
6 RUNOFF 1 060       6 0.05     45.        0.90      1              1250
6 ADDHYD 4 060   5 6 7                               1 1            1260
6 SAVMOV 5 070   7   5                                              1270
6 SAVMOV 5 070   1   6                                              1280
6 ADDHYD 4 070   5 6 7                               1 1            1290
6 REACH  3 080   7   5 700.     0.30       1.94      1              1300
6 RUNOFF 1 080       6 0.02     64.        0.12      1              1310
6 ADDHYD 4 080   5 6 7                               1              1320
6 SAVMOV 5 100   7   5                                              1330
6 RUNOFF 1 090       6 0.24     73.        0.62      1              1340
6 ADDHYD 4 100   5 6 7                               1              1350
6 REACH  3 110   7   5 500.     0.30       1.94      1              1360
6 SAVMOV 5 120   5   7                                              1370
6 REACH  3 120   7   5 500.     0.30       1.94      1              1380
```

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

 6 RUNOFF 1 120       6 0.19        56.         0.74        1                1390
 6 ADDHYD 4 120   5 6 7                                     1 1              1400
 6 SAVMOV 5    50 7   6                                                      1410
 6 RESVOR 2    50 6   7 2.4                                 1 1 1            1420
 6 REACH  3 130   7   5 1000.       0.30        1.94        1                1430
 6 RUNOFF 1 130       6 0.05        74.         0.19        1                1440
 6 ADDHYD 4 130   5 6 7                                     1                1450
 6 SAVMOV 5 130   7   6                                                      1460
 6 RESVOR 2    60 6   7 2.0                                 1 1 1            1470
 6 REACH  3 140   7   5 2500.       0.21        1.48        1                1480
 6 RUNOFF 1 140       6 0.20        66.         1.15        1                1490
 6 ADDHYD 4 140   5 6 7                                     1                1500
 6 SAVMOV 5 150   7   5                                                      1510
 6 RUNOFF 1 149       6 0.08        50.         0.42        1                1520
 6 ADDHYD 4 150   5 6 7                                                      1530
 6 REACH  3 150   7   5 300.        0.21        1.48        1                1540
 6 RUNOFF 1 150       6 0.01        40.         0.15        1                1550
 6 ADDHYD 4 150   5 6 7                                     1                1560
 6 SAVMOV 5 180   7   5                                                      1570
 6 RUNOFF 1 180       6 0.28        50.         0.61        1                1580
 6 ADDHYD 4 180   5 6 7                                     1                1590
 6 REACH  3 180   7   5 1700.0      0.21        1.48        1                1600
 6 RUNOFF 1 180       6 0.11        41.         0.48        1                1610
 6 ADDHYD 4 180   5 6 7                                     1 1   1   1      1620
   ENDATA                                                                    1630
 7 ALTER  3                                                                  1640
 6 RUNOFF 1 010       6 0.20        43.0        0.19                         1650
 6 RUNOFF 1 020       6 0.28        54.0        2.00                         1660
 6 RUNOFF 1 090       6 0.24        75.0        0.62                         1665
 6 RUNOFF 1 140       6 0.20        69.0        0.19                         1670
 6 RUNOFF 1 149       6 0.08        65.0        0.42                         1680
 6 RUNOFF 1 180       6 0.11        42.0        0.48                         1690
 7 LIST                                                                      1700
 7 BASFLO 5             3.0                                                  1710
 7 INCREM 6             0.1                                                  1720
 7 COMPUT 7    10 180   0.0         7.0         1.0         2 2  88  01      1730
   ENDCMP 1                                                                  1740
   ENDJOB 2                                                                  1750
0*******************************END OF 80-80 LIST*******************************
```


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TR20 XEQ 04-28-86 13:44 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM 20 JOB 1 PASS 1

REV PC 09/83(.2) ALT 88 30 PAGE 1

0CHANGES TO STANDARD CONTROL LIST FOLLOW

EXECUTIVE CONTROL OPERATION ALTER RECORD ID 1640

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 10 RECORD ID 1650

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2000 43.0000 .1900

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 20 RECORD ID 1660

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2800 54.0000 2.0000

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 90 RECORD ID 1665

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2400 75.0000 .6200

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 140 RECORD ID 1670

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2000 69.0000 .1900

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 149 RECORD ID 1680

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .0800 65.0000 .4200

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 180 RECORD ID 1690

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .1100 42.0000 .4800

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

EXECUTIVE CONTROL OPERATION LIST RECORD ID 1700

LISTING OF CURRENT DATA

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	10			
8		7.00	.00	4.33
8		7.40	2.50	5.01
8		7.60	5.00	5.36
8		7.80	10.00	5.70
8		8.20	22.00	6.38
8		8.60	52.00	7.07
8		9.00	62.00	7.75
8		9.50	96.00	8.61
8		10.00	126.00	9.47
8		11.00	198.00	11.18
8		12.00	280.00	12.89
8		13.00	360.00	14.79
8		14.00	440.00	16.68
8		15.00	500.00	18.58
8		15.10	600.00	18.60
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	20			
8		4.50	.00	6.80
8		4.90	1.50	7.88
8		5.10	3.70	8.42
8		5.50	11.00	9.51
8		5.70	15.00	10.13
8		6.10	25.00	11.13
8		6.50	40.00	12.21
8		7.10	60.00	13.84
8		7.90	78.00	16.01
8		8.50	79.00	17.63
8		9.50	100.00	20.34
8		10.50	126.00	23.06
8		11.50	150.00	25.76
8		11.60	300.00	26.04
9 ENDTBL				

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	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	30			
8		21.00	.00	.10
8		21.40	.60	.61
8		21.60	1.50	.86
8		21.80	2.50	1.12
8		22.20	5.20	1.62
8		22.60	8.20	2.13
8		23.00	11.00	2.64
8		23.50	20.00	3.27
8		24.00	27.00	3.91
8		25.00	39.00	5.18
8		26.00	49.00	6.45
8		27.00	57.00	7.72
8		27.10	200.00	7.74
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	40			
8		9.00	.00	.38
8		9.40	2.20	.47
8		9.60	5.00	.52
8		10.00	14.00	.62
8		10.20	21.00	.67
8		10.60	36.00	.77
8		11.00	55.00	.86
8		11.60	82.00	1.01
8		12.40	120.00	1.21
8		13.00	121.00	1.35
8		14.00	122.00	1.60
8		15.00	126.00	1.84
8		16.00	150.00	2.08
8		16.10	300.00	2.11
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	50			
8		2.40	.00	22.00
8		2.80	2.00	26.86
8		3.00	7.00	29.29
8		3.40	16.00	34.16
8		3.60	24.00	36.59
8		4.00	40.00	41.46
8		4.40	60.00	46.32
8		5.00	90.00	53.62

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8                    5.80      120.00      63.35
8                    6.40      121.00      70.65
8                    7.40      210.00      82.81
8                    8.40      250.00      94.98
8                   10.40      334.00     119.31
8                   12.40      400.00     143.63
8                   12.50      800.00     143.70
9 ENDTBL

          STRUCT NO.     ELEVATION   DISCHARGE     STORAGE
3 STRUCT      60

8                    2.00         .00      22.20
8                    2.40        3.00      27.41
8                    2.60       10.50      30.02
8                    3.00       22.50      35.24
8                    3.20       36.00      37.85
8                    3.60       60.00      43.06
8                    4.00       90.00      48.28
8                    4.60      135.00      56.11
8                    5.40      180.00      66.55
8                    6.00      181.00      74.38
8                    7.00      315.00      87.42
8                    8.00      375.00     100.47
8                    8.10      700.00     100.50
9 ENDTBL

                TIME INCREMENT
4 DIMHYD                .0200

8              .0000     .0300     .1000     .1900     .3100
8              .4700     .6600     .8200     .9300     .9900
8             1.0000     .9900     .9300     .8600     .7800
8              .6800     .5600     .4600     .3900     .3300
8              .2800     .2410     .2070     .1740     .1470
8              .1260     .1070     .0910     .0770     .0660
8              .0550     .0470     .0400     .0340     .0290
8              .0250     .0210     .0180     .0150     .0130
8              .0110     .0090     .0080     .0070     .0060
8              .0050     .0040     .0030     .0020     .0010
8              .0000     .0000     .0000     .0000     .0000
9 ENDTBL

  COMPUTED PEAK RATE FACTOR =  484.00
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```
     TABLE NO.      TIME INCREMENT
5 RAINFL 1                .5000

8              .0000     .0080     .0170     .0260     .0350
8              .0450     .0550     .0650     .0760     .0870
8              .0990     .1120     .1260     .1400     .1560
8              .1740     .1940     .2190     .2540     .3030
8              .5150     .5830     .6240     .6550     .6820
8              .7060     .7280     .7480     .7660     .7830
8              .7990     .8150     .8300     .8440     .8570
8              .8700     .8820     .8930     .9050     .9160
8              .9260     .9360     .9460     .9560     .9650
8              .9740     .9830     .9920    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 2                .2500

8              .0000     .0020     .0050     .0080     .0110
8              .0140     .0170     .0200     .0230     .0260
8              .0290     .0320     .0350     .0380     .0410
8              .0440     .0480     .0520     .0560     .0600
8              .0640     .0680     .0720     .0760     .0800
8              .0850     .0900     .0950     .1000     .1050
8              .1100     .1150     .1200     .1260     .1330
8              .1400     .1470     .1550     .1630     .1720
8              .1810     .1910     .2030     .2180     .2360
8              .2570     .2830     .3870     .6630     .7070
8              .7350     .7580     .7760     .7910     .8040
8              .8150     .8250     .8340     .8420     .8490
8              .8560     .8630     .8690     .8750     .8810
8              .8870     .8930     .8980     .9030     .9080
8              .9130     .9180     .9220     .9260     .9300
8              .9340     .9380     .9420     .9460     .9500
8              .9530     .9560     .9590     .9620     .9650
8              .9680     .9710     .9740     .9770     .9800
8              .9830     .9860     .9890     .9920     .9950
8              .9980    1.0000    1.0000    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 3                .5000

8              .0000     .0100     .0220     .0360     .0510
8              .0670     .0830     .0990     .1160     .1350
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8              .1560     .1790     .2040     .2330     .2680
8              .3100     .4250     .4800     .5200     .5500
8              .5770     .6010     .6230     .6440     .6640
8              .6830     .7010     .7190     .7360     .7530
8              .7690     .7850     .8000     .8150     .8300
8              .8440     .8580     .8710     .8840     .8960
8              .9080     .9200     .9320     .9440     .9560
8              .9670     .9780     .9890    1.0000    1.0000
9 ENDTBL

    TABLE NO.      TIME INCREMENT
5 RAINFL 4                .5000

8              .0000     .0040     .0080     .0120     .0160
8              .0200     .0250     .0300     .0350     .0400
8              .0450     .0500     .0550     .0600     .0650
8              .0700     .0750     .0810     .0870     .0930
8              .0990     .1050     .1110     .1180     .1250
8              .1320     .1400     .1480     .1560     .1650
8              .1740     .1840     .1950     .2070     .2200
8              .2360     .2550     .2770     .3030     .4090
8              .5150     .5490     .5830     .6050     .6240
8              .6400     .6550     .6690     .6820     .6940
8              .7050     .7160     .7270     .7380     .7480
8              .7580     .7670     .7760     .7840     .7920
8              .8000     .8080     .8160     .8230     .8300
8              .8370     .8440     .8510     .8580     .8640
8              .8700     .8760     .8820     .8880     .8940
8              .9000     .9060     .9110     .9160     .9210
8              .9260     .9310     .9360     .9410     .9460
8              .9510     .9560     .9610     .9660     .9710
8              .9760     .9800     .9840     .9880     .9920
8              .9960    1.0000    1.0000    1.0000    1.0000
9 ENDTBL

    TABLE NO.      TIME INCREMENT
5 RAINFL 5                .5000

8              .0000     .0020     .0050     .0080     .0110
8              .0140     .0170     .0200     .0230     .0260
8              .0290     .0320     .0350     .0380     .0410
8              .0440     .0470     .0510     .0550     .0590
8              .0630     .0670     .0710     .0750     .0790
8              .0840     .0890     .0940     .0990     .1040
8              .1090     .1140     .1200     .1260     .1330
8              .1400     .1470     .1540     .1620     .1710
8              .1810     .1920     .2040     .2170     .2330
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```
8              .2520      .2770      .3180      .6380      .6980
8              .7290      .7520      .7700      .7850      .7980
8              .8090      .8190      .8290      .8380      .8460
8              .8540      .8610      .8680      .8740      .8800
8              .8860      .8920      .8970      .9020      .9070
8              .9120      .9170      .9210      .9250      .9290
8              .9330      .9370      .9410      .9450      .9490
8              .9530      .9570      .9600      .9630      .9660
8              .9690      .9720      .9750      .9780      .9810
8              .9840      .9870      .9900      .9930      .9960
8              .9980     1.0000     1.0000     1.0000     1.0000
9 ENDTBL

     TABLE NO.       TIME INCREMENT
5 RAINFL 6                .0200

8              .0000      .0080      .0162      .0246      .0333
8              .0425      .0524      .0630      .0743      .0863
8              .0990      .1124      .1265      .1420      .1595
8              .1800      .2050      .2550      .3450      .4370
8              .5300      .6030      .6330      .6600      .6840
8              .7050      .7240      .7420      .7590      .7750
8              .7900      .8043      .8180      .8312      .8439
8              .8561      .8678      .8790      .8898      .9002
8              .9103      .9201      .9297      .9391      .9483
8              .9573      .9661      .9747      .9832      .9916
8             1.0000     1.0000     1.0000     1.0000     1.0000
9 ENDTBL
```

0 STANDARD CONTROL INSTRUCTIONS

```
6 RUNOFF 1   10    6      .8400    51.0000    7.50001 0 0 1 0 1
6 RESVOR 2   10 6  7     7.0000                   1 0 0 1 0 1
6 REACH  3 10  7   5  1750.0000     1.2000    1.10001 0 0 1 0 1
6 RUNOFF 1 10      6      .2000    43.0000     .19001 0 0 1 0 1
6 ADDHYD 4 10  5 6 7                             1 1 0 1 0 1
6 SAVMOV 5 10  7   6
6 RESVOR 2   20 6  7     4.5000                   1 0 0 1 0 1
6 REACH  3 20  7   5  2900.0000      .2800    1.94001 0 0 1 0 1
6 RUNOFF 1 20      6      .2800    54.0000    2.00001 0 0 1 0 1
6 ADDHYD 4 20  5 6 7                             1 1 0 1 0 1
6 SAVMOV 5 20  7   1
6 RUNOFF 1   30    6      .3700    49.0000    3.90001 0 0 1 0 1
6 RESVOR 2   30 6  7    21.0000                   1 0 0 1 0 1
6 REACH  3 40  7   5  1300.0000      .8800    1.10001 0 0 1 0 1
6 RUNOFF 1 40      6      .0600    40.0000    1.00001 0 0 1 0 1
6 ADDHYD 4 40  5 6 7                             1 0 0 1 0 1
6 SAVMOV 5 40  7   6
6 RESVOR 2   40 6  7     9.0000                   1 0 0 1 0 1
6 REACH  3 50  7   5  1700.0000     1.6000    1.45001 0 0 1 0 1
6 RUNOFF 1 49      6      .1100    40.0000    1.67001 0 0 1 0 1
6 ADDHYD 4 50  5 6 7                             1 0 0 1 0 1
6 SAVMOV 5 50  7   5
6 RUNOFF 1 50      6      .3600    85.0000     .42001 0 0 1 0 1
6 ADDHYD 4 50  5 6 7                             1 0 0 1 0 1
6 REACH  3 60  7   5  1400.0000      .4400    1.94001 0 0 1 0 1
6 RUNOFF 1 60      6      .0500    45.0000     .90001 0 0 1 0 1
6 ADDHYD 4 60  5 6 7                             1 1 0 1 0 1
6 SAVMOV 5 70  7   5
6 SAVMOV 5 70  1   6
6 ADDHYD 4 70  5 6 7                             1 1 0 1 0 1
6 REACH  3 80  7   5   700.0000      .3000    1.94001 0 0 1 0 1
6 RUNOFF 1 80      6      .0200    64.0000     .12001 0 0 1 0 1
6 ADDHYD 4 80  5 6 7                             1 0 0 1 0 1
6 SAVMOV 5 100 7   5
6 RUNOFF 1 90      6      .2400    75.0000     .62001 0 0 1 0 1
6 ADDHYD 4 100 5 6 7                             1 0 0 1 0 1
6 REACH  3 110 7   5   500.0000      .3000    1.94001 0 0 1 0 1
6 SAVMOV 5 120 5   7
6 REACH  3 120 7   5   500.0000      .3000    1.94001 0 0 1 0 1
6 RUNOFF 1 120     6      .1900    56.0000     .74001 0 0 1 0 1
6 ADDHYD 4 120 5 6 7                             1 1 0 1 0 1
6 SAVMOV 5   50 7  6
6 RESVOR 2   50 6  7     2.4000                   1 1 1 1 0 1
6 REACH  3 130 7   5  1000.0000      .3000    1.94001 0 0 1 0 1
6 RUNOFF 1 130     6      .0500    74.0000     .19001 0 0 1 0 1
```


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```
6 ADDHYD 4 130   5 6 7                              1 0 0 1 0 1
6 SAVMOV 5 130   7   6
6 RESVOR 2    60 6   7       2.0000                 1 1 1 1 0 1
6 REACH  3 140   7   5    2500.0000       .2100    1.48001 0 0 1 0 1
6 RUNOFF 1 140       6       .2000     69.0000      .19001 0 0 1 0 1
6 ADDHYD 4 140   5 6 7                              1 0 0 1 0 1
6 SAVMOV 5 150   7   5
6 RUNOFF 1 149       6       .0800     65.0000      .42001 0 0 1 0 1
6 ADDHYD 4 150   5 6 7                              1 0 0 1 0 1
6 REACH  3 150   7   5     300.0000       .2100    1.48001 0 0 1 0 1
6 RUNOFF 1 150       6       .0100     40.0000      .15001 0 0 1 0 1
6 ADDHYD 4 150   5 6 7                              1 0 0 1 0 1
6 SAVMOV 5 180   7   5
6 RUNOFF 1 180       6       .1100     42.0000      .48001 0 0 1 0 1
6 ADDHYD 4 180   5 6 7                              1 0 0 1 0 1
6 REACH  3 180   7   5    1700.0000       .2100    1.48001 0 0 1 0 1
6 RUNOFF 1 180       6       .1100     41.0000      .48001 0 0 1 0 1
6 ADDHYD 4 180   5 6 7                              1 1 0 1 0 1
  ENDATA

END OF LISTING
```

```
EXECUTIVE CONTROL OPERATION BASFLO                                                    RECORD ID    1710

+                                  NEW BASEFLOW =   3.00 CFS

EXECUTIVE CONTROL OPERATION INCREM                                                    RECORD ID    1720

+                                  MAIN TIME INCREMENT =   .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT                                                    RECORD ID    1730

+                                  FROM STRUCTURE 10
+                                                  TO XSECTION 180
      STARTING TIME =   .00    RAIN DEPTH =  7.00    RAIN DURATION=  1.00    RAIN TABLE NO.= 2    ANT. MOIST. COND= 2
      ALTERNATE NO.=88         STORM NO.= 1    MAIN TIME INCREMENT =   .10 HOURS

OPERATION RUNOFF   STRUCTURE 10
         OUTPUT HYDROGRAPH=  6
         AREA=    .84 SQ MI   INPUT RUNOFF CURVE= 51.    TIME OF CONCENTRATION=  7.50 HOURS
         INTERNAL HYDROGRAPH TIME INCREMENT=  .1000 HOURS

         PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            17.80                          96.56                        (RUNOFF)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.67 WATERSHED INCHES,    906.24 CFS-HRS,    74.89 ACRE-FEET;   BASEFLOW =    .00 CFS

OPERATION RESVOR   STRUCTURE 10
         INPUT HYDROGRAPH= 6     OUTPUT HYDROGRAPH= 7
         SURFACE ELEVATION=    7.00

         PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            18.14                          96.09                         9.50

  RUNOFF VOLUME ABOVE BASEFLOW =  1.63 WATERSHED INCHES,    884.09 CFS-HRS,    73.06 ACRE-FEET;   BASEFLOW =    .00 CFS

OPERATION REACH    CROSS SECTION  10
         INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5
         LENGTH =   1750.00 FEET      INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA,  X=  1.20,   M= 1.10
0        MODIFIED ATT-KIN ROUTING COEFFICIENT =  .34      PEAK TRAVEL TIME =    .40 HOURS
0    *** WARNING - REACH  10 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT      18.15 CFS,  18.88 % OF PEAK.

         PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            18.47                          98.84                        (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.62 WATERSHED INCHES,    878.37 CFS-HRS,    72.59 ACRE-FEET;   BASEFLOW =   3.00 CFS
```



```
OPERATION RUNOFF   CROSS SECTION  10
         OUTPUT HYDROGRAPH=  6
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AREA= .20 SQ MI INPUT RUNOFF CURVE= 43. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.07	136.13	(RUNOFF)
15.20	9.17	(RUNOFF)
16.46	8.26	(RUNOFF)
17.67	7.09	(RUNOFF)
19.66	5.91	(RUNOFF)
23.66	4.68	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.08 WATERSHED INCHES, 138.80 CFS-HRS, 11.47 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 10
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.07	139.13	(NULL)
18.48	104.60	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.04 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	5.07	42.12
12.00	DISCHG	119.55	135.88	74.65	52.30	39.55	33.82	31.18	28.92	28.16	25.64
13.00	DISCHG	24.32	23.27	21.88	21.56	20.60	20.25	19.78	19.11	19.30	19.34
14.00	DISCHG	20.06	21.02	22.07	23.72	25.15	26.99	28.85	31.07	34.61	38.64
15.00	DISCHG	42.77	46.81	50.71	54.35	57.09	59.37	61.51	63.49	65.38	67.22
16.00	DISCHG	69.06	71.58	74.60	77.76	80.87	83.82	86.17	88.01	90.08	92.10
17.00	DISCHG	93.97	95.69	97.25	98.68	99.98	101.15	102.19	103.09	103.75	103.67
18.00	DISCHG	103.75	104.02	104.28	104.46	104.57	104.59	104.54	104.40	104.20	103.92
19.00	DISCHG	103.58	103.16	102.66	102.09	101.45	100.73	99.93	99.06	97.99	96.22
20.00	DISCHG	94.66	93.39	92.17	90.95	89.71	88.47	87.23	86.01	84.81	83.63
21.00	DISCHG	82.47	81.34	80.23	79.14	78.07	77.02	76.00	74.99	74.01	73.04
22.00	DISCHG	72.10	71.22	70.52	69.91	69.36	68.83	68.31	67.78	67.25	66.70
23.00	DISCHG	66.13	65.56	64.97	64.37	63.76	63.14	62.52	61.89	61.15	59.57
24.00	DISCHG	58.03	55.87	53.24	51.70	50.62	49.72	48.91	48.18	47.50	46.85
25.00	DISCHG	46.24	45.66	45.10	44.55	44.02	43.50	42.98	42.48	41.98	41.49
26.00	DISCHG	41.00	40.51	40.03	39.55	39.07	38.60	38.12	37.63	37.15	36.66
27.00	DISCHG	36.16	35.66	35.15	34.64	34.13	33.61	33.09	32.57	32.04	31.51
28.00	DISCHG	30.97	30.44	29.90	29.36	28.82	28.28	27.74	27.21	26.67	26.13
29.00	DISCHG	25.68	25.30	24.94	24.59	24.24	23.89	23.52	23.14	22.75	22.35

RUNOFF VOLUME ABOVE BASEFLOW = 1.52 WATERSHED INCHES, 1017.17 CFS-HRS, 84.06 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVHOV CROSS SECTION 10
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 20
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 4.50

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.78	28.06	6.18
20.09	93.50	9.19

RUNOFF VOLUME ABOVE BASEFLOW = 1.46 WATERSHED INCHES, 980.28 CFS-HRS, 81.01 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2900.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .28, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .72 PEAK TRAVEL TIME = .10 HOURS

*** WARNING REACH 20 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 20 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 23.17 CFS, 25.60 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.93	28.00	(NULL)
20.24	93.48	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.46 WATERSHED INCHES, 977.05 CFS-HRS, 80.74 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 20
OUTPUT HYDROGRAPH= 6
AREA= .28 SQ MI INPUT RUNOFF CURVE= 54. TIME OF CONCENTRATION= 2.00 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1026 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.36	102.66	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.03 WATERSHED INCHES, 366.74 CFS-HRS, 30.31 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 20
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.32	129.36	(NULL)
20.12	105.96	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.32 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.01	3.02	3.06	3.18	3.47	4.17	5.78
12.00	DISCHG	9.24	16.82	28.18	41.92	55.27	68.54	81.63	93.93	104.66	113.44
13.00	DISCHG	120.26	125.10	128.07	129.31	128.89	127.14	124.34	120.63	115.93	110.44
14.00	DISCHG	104.66	99.17	94.33	90.01	86.08	82.57	79.48	76.76	74.30	72.15
15.00	DISCHG	70.61	69.69	69.26	69.22	69.52	70.10	70.86	71.66	72.43	73.25
16.00	DISCHG	74.17	75.15	76.22	77.43	78.80	80.34	81.97	83.19	84.35	85.54
17.00	DISCHG	86.78	88.06	89.37	90.69	92.04	93.38	94.71	95.52	95.60	95.50
18.00	DISCHG	95.35	95.19	95.02	94.86	94.70	95.26	96.33	97.48	98.58	99.61

19.00	DISCHG	100.56	101.42	102.21	102.93	103.56	104.13	104.63	105.06	105.42	105.70
20.00	DISCHG	105.89	105.96	105.93	105.80	105.59	105.29	104.91	104.45	103.92	103.33
21.00	DISCHG	102.70	102.02	101.30	100.56	99.79	99.00	98.20	97.39	96.57	95.75
22.00	DISCHG	94.93	94.10	93.28	92.45	91.64	90.85	90.07	89.31	88.67	88.44
23.00	DISCHG	88.31	88.22	88.14	88.06	87.99	87.91	87.83	87.74	87.66	87.57
24.00	DISCHG	87.46	87.33	86.33	84.91	83.30	81.62	79.88	78.12	76.33	74.54
25.00	DISCHG	72.75	70.98	69.24	67.55	65.90	64.17	62.27	60.42	58.68	57.04
26.00	DISCHG	55.52	54.11	52.80	51.57	50.42	49.34	48.32	47.36	46.44	45.57
27.00	DISCHG	44.73	43.93	43.17	42.42	41.71	41.01	40.31	39.59	38.88	38.18
28.00	DISCHG	37.51	36.85	36.20	35.57	34.94	34.33	33.72	33.12	32.53	31.94
29.00	DISCHG	31.36	30.79	30.23	29.69	29.17	28.67	28.18	27.71	27.25	26.79

RUNOFF VOLUME ABOVE BASEFLOW = 1.58 WATERSHED INCHES, 1343.80 CFS-HRS, 111.05 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 1

OPERATION RUNOFF STRUCTURE 30
OUTPUT HYDROGRAPH= 6
AREA= .37 SQ MI INPUT RUNOFF CURVE= 49. TIME OF CONCENTRATION= 3.90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
14.95	60.58	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.57 WATERSHED INCHES, 375.61 CFS-HRS, 31.04 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 30
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 21.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.21	48.05	25.91

RUNOFF VOLUME ABOVE BASEFLOW = 1.51 WATERSHED INCHES, 360.28 CFS-HRS, 29.77 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1300.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .88, M= 1.10
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .32 PEAK TRAVEL TIME = .30 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.55	47.70	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.50 WATERSHED INCHES, 358.97 CFS-HRS, 29.67 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 40

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OUTPUT HYDROGRAPH= 6
AREA= .06 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= 1.00 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0952 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.72	10.21	(RUNOFF)
23.76	1.21	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 32.57 CFS-HRS, 2.69 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 40
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.73	10.35	(NULL)
16.54	49.80	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 391.54 CFS-HRS, 32.36 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 40
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 9.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.90	9.83	9.81
16.60	49.78	10.89

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 389.94 CFS-HRS, 32.22 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= 1.60, M= 1.45
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .83 PEAK TRAVEL TIME = .10 HOURS

*** WARNING REACH 50 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.02	9.78	(NULL)
16.72	49.77	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.40 WATERSHED INCHES, 389.36 CFS-HRS, 32.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 49
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= 1.67 HOURS

INTERNAL HYDROGRAPH TIME INCREMENT= .1012 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.33	13.76	(RUNOFF)
23.80	2.20	(RUNOFF)

+ * * FIRST POINT OF FLAT PEAK

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 59.78 CFS-HRS, 4.94 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 50
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.16	22.91	(NULL)
16.65	53.98	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.29 WATERSHED INCHES, 449.14 CFS-HRS, 37.12 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 50
OUTPUT HYDROGRAPH= 6
AREA= .36 SQ MI INPUT RUNOFF CURVE= 85. TIME OF CONCENTRATION= .42 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0560 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1078.73	(RUNOFF)
19.65	24.75	(RUNOFF)
23.65	18.64	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 5.25 WATERSHED INCHES, 1220.14 CFS-HRS, 100.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 50
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1079.95	(NULL)
16.49	90.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.87 WATERSHED INCHES, 1669.27 CFS-HRS, 137.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 60
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1400.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .44, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

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*** WARNING REACH 60 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1079.95	(NULL)
16.49	90.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.87 WATERSHED INCHES, 1669.27 CFS-HRS, 137.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 60
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 45. TIME OF CONCENTRATION= .90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.56	16.56	(RUNOFF)
23.72	1.26	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.24 WATERSHED INCHES, 39.88 CFS-HRS, 3.30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 60
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1086.21	(NULL)
16.49	93.02	(NULL)

TIME(HRS)		FIRST HYDROGRAPH POINT = .00 HOURS			TIME INCREMENT = .10 HOURS				DRAINAGE AREA = .95 SQ.MI.		
4.00	DISCHG	.00	.00	.00	.02	.10	.26	.49	.75	1.04	1.33
5.00	DISCHG	1.62	1.91	2.20	2.49	2.77	3.04	3.32	3.58	3.84	4.10
6.00	DISCHG	4.36	4.67	5.18	5.80	6.40	6.89	7.32	7.71	8.07	8.41
7.00	DISCHG	8.75	9.07	9.38	9.69	9.99	10.29	10.58	10.86	11.14	11.41
8.00	DISCHG	11.68	12.08	12.82	13.80	14.96	16.27	17.48	18.44	19.17	19.76
9.00	DISCHG	20.27	20.91	21.91	23.16	24.29	25.16	26.02	27.23	28.66	29.92
10.00	DISCHG	30.90	31.86	33.18	34.84	37.10	40.08	43.57	47.95	52.84	58.21
11.00	DISCHG	64.10	70.07	76.45	83.02	90.75	101.27	130.10	208.30	333.15	539.50
12.00	DISCHG	836.25	1068.68	1030.91	805.58	576.69	421.03	324.82	265.51	227.09	199.69
13.00	DISCHG	178.52	161.72	147.53	136.12	127.20	119.75	113.25	107.02	101.45	96.86
14.00	DISCHG	93.29	90.54	88.31	86.99	86.63	86.30	86.13	85.74	85.37	85.47
15.00	DISCHG	86.26	87.42	88.85	90.29	90.92	90.62	90.19	90.11	90.41	90.86
16.00	DISCHG	91.35	91.83	92.25	92.60	92.86	93.02	92.76	91.64	89.95	88.43
17.00	DISCHG	87.35	86.55	85.87	85.24	84.63	84.03	83.43	82.82	82.11	80.76
18.00	DISCHG	78.62	76.40	74.60	73.30	72.20	71.21	70.27	69.38	68.51	67.67
19.00	DISCHG	66.86	66.07	65.33	64.68	63.99	63.30	62.62	61.96	61.19	59.85
20.00	DISCHG	57.76	55.58	53.88	52.62	51.60	50.72	49.94	49.23	48.56	47.93
21.00	DISCHG	47.34	46.79	46.26	45.76	45.28	44.83	44.40	43.97	43.53	43.10
22.00	DISCHG	42.70	42.29	41.89	41.51	41.15	40.80	40.46	40.14	39.84	39.55
23.00	DISCHG	39.27	39.01	38.75	38.51	38.28	38.06	37.85	37.65	37.37	36.46

24.00	DISCHG	34.72	32.26	28.67	24.55	21.18	18.97	17.56	16.54	15.77	15.13
25.00	DISCHG	14.59	14.12	13.71	13.34	13.02	12.72	12.45	12.20	11.96	11.76
26.00	DISCHG	11.57	11.41	11.25	11.11	10.97	10.84	10.71	10.57	10.42	10.28
27.00	DISCHG	10.13	9.97	9.81	9.64	9.47	9.29	9.11	8.93	8.74	8.54
28.00	DISCHG	8.34	8.13	7.93	7.72	7.51	7.29	7.08	6.87	6.67	6.46
29.00	DISCHG	6.26	6.06	5.87	5.68	5.49	5.32	5.14	4.99	4.87	4.74

RUNOFF VOLUME ABOVE BASEFLOW = 2.79 WATERSHED INCHES, 1709.15 CFS-HRS, 141.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 1 OUTPUT HYDROGRAPH= 6

OPERATION ADDHYD CROSS SECTION 70
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1106.90	(NULL)
17.67	178.36	(NULL)
19.31	167.60	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.27 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.41
7.00	DISCHG	11.75	12.07	12.38	12.69	12.99	13.29	13.58	13.86	14.14	14.41
8.00	DISCHG	14.68	15.08	15.82	16.80	17.96	19.27	20.48	21.44	22.17	22.76
9.00	DISCHG	23.27	23.91	24.91	26.16	27.29	28.16	29.02	30.23	31.66	32.92
10.00	DISCHG	33.90	34.86	36.18	37.84	40.10	43.08	46.57	50.95	55.84	61.21
11.00	DISCHG	67.10	73.07	79.45	86.03	93.78	104.34	133.28	211.78	337.32	545.28
12.00	DISCHG	845.49	1085.50	1059.08	847.51	631.96	489.56	406.44	359.44	331.74	313.13
13.00	DISCHG	298.78	286.82	275.60	265.43	256.10	246.89	237.59	227.64	217.38	207.30
14.00	DISCHG	197.94	189.71	182.63	177.00	172.71	168.87	165.61	162.49	159.67	157.62
15.00	DISCHG	156.87	157.10	158.11	159.51	160.44	160.71	161.04	161.78	162.83	164.10
16.00	DISCHG	165.52	166.98	168.47	170.03	171.67	173.36	174.74	174.83	174.30	173.97
17.00	DISCHG	174.13	174.61	175.24	175.94	176.67	177.41	178.14	178.33	177.71	176.26
18.00	DISCHG	173.97	171.58	169.63	168.16	166.91	166.47	166.60	166.86	167.09	167.28
19.00	DISCHG	167.42	167.49	167.54	167.60	167.56	167.43	167.25	167.02	166.61	165.55
20.00	DISCHG	163.65	161.54	159.81	158.42	157.19	156.02	154.85	153.67	152.48	151.27
21.00	DISCHG	150.04	148.80	147.56	146.32	145.07	143.83	142.60	141.35	140.11	138.86
22.00	DISCHG	137.63	136.39	135.17	133.97	132.79	131.64	130.53	129.45	128.51	127.98
23.00	DISCHG	127.59	127.23	126.90	126.58	126.27	125.97	125.68	125.40	125.03	124.02
24.00	DISCHG	122.18	119.59	115.00	109.46	104.49	100.59	97.44	94.66	92.10	89.67
25.00	DISCHG	87.34	85.10	82.95	80.89	78.92	76.89	74.72	72.62	70.64	68.80

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26.00	DISCHG	67.09	65.52	64.05	62.68	61.40	60.18	59.03	57.92	56.86	55.84
27.00	DISCHG	54.86	53.90	52.97	52.07	51.18	50.30	49.42	48.52	47.61	46.72
28.00	DISCHG	45.85	44.98	44.13	43.28	42.45	41.62	40.80	40.00	39.20	38.41
29.00	DISCHG	37.62	36.85	36.10	35.37	34.66	33.98	33.33	32.70	32.11	31.53

RUNOFF VOLUME ABOVE BASEFLOW = 2.08 WATERSHED INCHES, 3052.95 CFS-HRS, 252.30 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 80
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 80 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1106.90	(NULL)
17.67	178.36	(NULL)
19.31	167.60	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.08 WATERSHED INCHES, 3052.95 CFS-HRS, 252.30 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 80
OUTPUT HYDROGRAPH= 6
AREA= .02 SQ MI INPUT RUNOFF CURVE= 64. TIME OF CONCENTRATION= .12 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0160 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.98	54.99	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.98 WATERSHED INCHES, 38.49 CFS-HRS, 3.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 80
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1128.27	(NULL)
17.67	179.69	(NULL)
19.31	168.68	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.09 WATERSHED INCHES, 3091.43 CFS-HRS, 255.48 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 100
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 90
OUTPUT HYDROGRAPH= 6
AREA= .24 SQ MI INPUT RUNOFF CURVE= 75. TIME OF CONCENTRATION= .62 HOURS

INTERNAL HYDROGRAPH TIME INCREMENT= .0827 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.26	458.49	(RUNOFF)
19.66	15.09	(RUNOFF)
23.66	11.44	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 4.14 WATERSHED INCHES, 641.76 CFS-HRS, 53.03 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 100
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1534.58	(NULL)
16.63	198.47	(NULL)
17.67	198.50	(NULL)
19.30	183.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.29 WATERSHED INCHES, 3733.19 CFS-HRS, 308.51 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 110
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 110 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1534.58	(NULL)
16.63	198.47	(NULL)
17.67	198.50	(NULL)
19.30	183.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.29 WATERSHED INCHES, 3733.19 CFS-HRS, 308.51 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 120
INPUT HYDROGRAPH= 5 OUTPUT HYDROGRAPH= 7

OPERATION REACH CROSS SECTION 120
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 120 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1534.58	(NULL)
16.63	198.47	(NULL)
17.67	198.50	(NULL)
19.30	183.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.29 WATERSHED INCHES, 3733.19 CFS-HRS, 308.51 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 120
OUTPUT HYDROGRAPH= 6
AREA= .19 SQ MI INPUT RUNOFF CURVE= 56. TIME OF CONCENTRATION= .74 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0987 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.38	159.29	(RUNOFF)
19.68	8.61	(RUNOFF)
23.67	6.65	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.22 WATERSHED INCHES, 271.72 CFS-HRS, 22.45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 120
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	1657.29	(NULL)
15.37	202.67	(NULL)
16.62	210.86	(NULL)
17.66	209.13	(NULL)
19.30	192.36	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.42
7.00	DISCHG	11.77	12.13	12.52	12.93	13.36	13.79	14.23	14.67	15.11	15.54
8.00	DISCHG	15.98	16.55	17.48	18.71	20.15	21.78	23.35	24.68	25.76	26.68
9.00	DISCHG	27.51	28.47	29.83	31.49	33.06	34.37	35.71	37.41	39.40	41.24
10.00	DISCHG	42.78	44.33	46.25	48.59	51.71	55.68	60.49	66.40	73.12	80.64
11.00	DISCHG	88.89	97.64	107.04	117.05	128.94	144.54	188.67	293.11	469.26	778.69
12.00	DISCHG	1219.90	1582.97	1650.59	1466.92	1206.10	978.15	804.27	682.80	598.75	537.17
13.00	DISCHG	491.13	453.70	422.41	396.08	373.52	353.85	335.53	317.99	301.05	285.11
14.00	DISCHG	271.00	258.63	248.00	239.22	232.03	225.65	219.82	214.29	209.21	205.15
15.00	DISCHG	202.73	201.70	201.81	202.51	202.63	202.05	201.36	201.05	201.19	201.77
16.00	DISCHG	202.71	203.85	205.13	206.56	208.12	209.75	210.82	210.44	209.15	207.90
17.00	DISCHG	207.15	206.86	206.93	207.26	207.75	208.33	208.94	209.07	208.30	206.40
18.00	DISCHG	203.49	200.23	197.31	194.98	193.05	192.14	191.94	191.98	192.08	192.17
19.00	DISCHG	192.24	192.28	192.30	192.36	192.31	192.19	192.01	191.78	191.28	189.81

20.00	DISCHG	187.31	184.31	181.61	179.34	177.42	175.76	174.27	172.87	171.52	170.20
21.00	DISCHG	168.91	167.63	166.36	165.09	163.84	162.59	161.36	160.12	158.87	157.63
22.00	DISCHG	156.40	155.18	153.96	152.77	151.60	150.46	149.35	148.28	147.35	146.83
23.00	DISCHG	146.44	146.10	145.77	145.46	145.16	144.87	144.58	144.31	143.84	142.40
24.00	DISCHG	139.89	135.78	129.19	121.20	113.57	107.25	102.14	97.90	94.33	91.22
25.00	DISCHG	88.42	85.85	83.47	81.24	79.16	77.05	74.83	72.69	70.68	68.82
26.00	DISCHG	67.11	65.52	64.05	62.68	61.40	60.18	59.03	57.92	56.86	55.84
27.00	DISCHG	54.86	53.90	52.97	52.07	51.18	50.30	49.42	48.52	47.61	46.72
28.00	DISCHG	45.85	44.98	44.13	43.28	42.45	41.62	40.80	40.00	39.20	38.41
29.00	DISCHG	37.62	36.85	36.10	35.37	34.66	33.98	33.33	32.70	32.11	31.53

RUNOFF VOLUME ABOVE BASEFLOW = 2.28 WATERSHED INCHES, 4004.91 CFS-HRS, 330.97 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV STRUCTURE 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 50
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.56	343.65	10.69

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

9.00	DISCHG	3.00	3.00	3.28	3.75	4.23	4.72	5.24	5.76	6.31	6.89
9.00	ELEV	2.84	2.84	2.85	2.87	2.89	2.91	2.93	2.95	2.97	3.00
10.00	DISCHG	7.43	7.98	8.54	9.13	9.76	10.42	11.14	11.94	12.81	13.78
10.00	ELEV	3.02	3.04	3.07	3.09	3.12	3.15	3.18	3.22	3.26	3.30
11.00	DISCHG	14.86	16.09	18.40	20.91	23.65	26.68	30.43	36.07	46.64	65.94
11.00	ELEV	3.35	3.40	3.46	3.52	3.59	3.67	3.76	3.90	4.13	4.52
12.00	DISCHG	95.35	120.37	176.14	231.60	261.77	285.13	302.18	314.59	323.77	330.64
12.00	ELEV	5.14	6.02	7.02	7.94	8.68	9.24	9.64	9.94	10.16	10.32
13.00	DISCHG	335.42	338.46	340.67	342.19	343.13	343.59	343.61	343.24	342.49	341.40
13.00	ELEV	10.44	10.54	10.60	10.65	10.68	10.69	10.69	10.68	10.66	10.62
14.00	DISCHG	339.99	338.32	336.44	334.38	331.70	328.81	325.83	322.77	319.64	316.48
14.00	ELEV	10.58	10.53	10.47	10.41	10.35	10.28	10.21	10.13	10.06	9.98
15.00	DISCHG	313.31	310.19	307.14	304.18	301.32	298.54	295.82	293.15	290.57	288.06
15.00	ELEV	9.91	9.83	9.76	9.69	9.62	9.56	9.49	9.43	9.37	9.31
16.00	DISCHG	285.64	283.33	281.11	278.99	276.98	275.06	273.24	271.48	269.74	268.02
16.00	ELEV	9.25	9.19	9.14	9.09	9.04	9.00	8.95	8.91	8.87	8.83
17.00	DISCHG	266.32	264.65	263.03	261.45	259.94	258.48	257.07	255.72	254.40	253.07
17.00	ELEV	8.79	8.75	8.71	8.67	8.64	8.60	8.57	8.54	8.50	8.47
18.00	DISCHG	251.72	250.32	248.92	247.51	246.07	244.64	243.23	241.86	240.52	239.22
18.00	ELEV	8.44	8.41	8.37	8.34	8.30	8.27	8.23	8.20	8.16	8.13
19.00	DISCHG	237.96	236.74	235.55	234.39	233.26	232.16	231.09	230.04	229.01	227.98
19.00	ELEV	8.10	8.07	8.04	8.01	7.98	7.95	7.93	7.90	7.88	7.85
20.00	DISCHG	226.92	225.82	224.67	223.49	222.28	221.05	219.82	218.58	217.34	216.09
20.00	ELEV	7.82	7.80	7.77	7.74	7.71	7.68	7.65	7.61	7.58	7.55

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21.00	DISCHG	214.84	213.60	212.35	211.10	209.67	206.94	204.30	201.74	199.26	196.85
21.00	ELEV	7.52	7.49	7.46	7.43	7.40	7.37	7.34	7.31	7.28	7.25
22.00	DISCHG	194.51	192.24	190.03	187.88	185.78	183.74	181.75	179.82	177.94	176.13
22.00	ELEV	7.23	7.20	7.18	7.15	7.13	7.10	7.08	7.06	7.04	7.02
23.00	DISCHG	174.40	172.75	171.17	169.67	168.24	166.88	165.58	164.34	163.15	161.97
23.00	ELEV	7.00	6.98	6.96	6.95	6.93	6.92	6.90	6.89	6.87	6.86
24.00	DISCHG	160.75	159.40	157.82	155.91	153.65	151.11	148.38	145.54	142.64	139.71
24.00	ELEV	6.85	6.83	6.81	6.79	6.77	6.74	6.71	6.68	6.64	6.61
25.00	DISCHG	136.78	133.87	130.98	128.12	125.31	122.54	120.98	120.92	120.87	120.81
25.00	ELEV	6.58	6.54	6.51	6.48	6.45	6.42	6.39	6.35	6.32	6.29
26.00	DISCHG	120.75	120.69	120.63	120.56	120.49	120.43	120.36	120.29	120.22	120.14
26.00	ELEV	6.25	6.21	6.18	6.14	6.10	6.06	6.01	5.97	5.93	5.89
27.00	DISCHG	120.07	119.93	118.26	116.60	114.97	113.35	111.75	110.17	108.61	107.07
27.00	ELEV	5.84	5.80	5.75	5.71	5.67	5.62	5.58	5.54	5.50	5.46
28.00	DISCHG	105.54	104.02	102.53	101.05	99.58	98.14	96.70	95.29	93.89	92.50
28.00	ELEV	5.41	5.37	5.33	5.29	5.26	5.22	5.18	5.14	5.10	5.07
29.00	DISCHG	91.13	89.70	87.92	86.18	84.47	82.80	81.15	79.55	77.97	76.43
29.00	ELEV	5.03	4.99	4.96	4.92	4.89	4.86	4.82	4.79	4.76	4.73

RUNOFF VOLUME ABOVE BASEFLOW = 2.10 WATERSHED INCHES, 3683.56 CFS-HRS, 304.41 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1000.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 130 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 130 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 73.43 CFS, 21.56 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.56	343.65	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.10 WATERSHED INCHES, 3683.56 CFS-HRS, 304.41 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 130
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 74. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	160.37	(RUNOFF)
23.65	2.37	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 4.05 WATERSHED INCHES, 130.79 CFS-HRS, 10.81 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 130
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.05	264.17	(NULL)
13.44	353.46	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.13 WATERSHED INCHES, 3814.35 CFS-HRS, 315.22 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 60
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.65	276.64	6.71

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.77 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.04	5.06	8.27
11.00	ELEV	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.46	2.54
12.00	DISCHG	12.66	17.21	21.55	30.19	40.15	49.79	59.68	72.00	84.27	96.27
12.00	ELEV	2.67	2.82	2.97	3.11	3.27	3.43	3.59	3.76	3.92	4.08
13.00	DISCHG	107.92	119.16	129.95	138.99	146.49	153.74	160.72	167.42	173.86	180.00
13.00	ELEV	4.24	4.39	4.53	4.67	4.80	4.93	5.06	5.18	5.29	5.40
14.00	DISCHG	180.18	180.35	180.53	180.70	180.87	183.28	195.50	206.46	216.24	224.97
14.00	ELEV	5.51	5.61	5.72	5.82	5.92	6.02	6.11	6.19	6.26	6.33
15.00	DISCHG	232.73	239.60	245.66	250.98	255.61	259.61	263.05	265.98	268.46	270.53
15.00	ELEV	6.39	6.44	6.48	6.52	6.56	6.59	6.61	6.63	6.65	6.67
16.00	DISCHG	272.24	273.61	274.68	275.49	276.07	276.44	276.62	276.61	276.45	276.15
16.00	ELEV	6.68	6.69	6.70	6.71	6.71	6.71	6.71	6.71	6.71	6.71
17.00	DISCHG	275.73	275.21	274.59	273.90	273.14	272.32	271.45	270.53	269.59	268.59
17.00	ELEV	6.71	6.70	6.70	6.69	6.69	6.68	6.67	6.67	6.66	6.65
18.00	DISCHG	267.54	266.45	265.33	264.19	263.02	261.84	260.63	259.41	258.18	256.94
18.00	ELEV	6.65	6.64	6.63	6.62	6.61	6.60	6.59	6.59	6.58	6.57
19.00	DISCHG	255.70	254.46	253.22	251.98	250.76	249.54	248.33	247.14	245.96	244.77
19.00	ELEV	6.56	6.55	6.54	6.53	6.52	6.51	6.50	6.49	6.48	6.48
20.00	DISCHG	243.56	242.36	241.15	239.95	238.75	237.55	236.35	235.14	233.93	232.72
20.00	ELEV	6.47	6.46	6.45	6.44	6.43	6.42	6.41	6.40	6.40	6.39
21.00	DISCHG	231.51	230.29	229.07	227.85	226.61	225.31	223.90	222.39	220.80	219.14
21.00	ELEV	6.38	6.37	6.36	6.35	6.34	6.33	6.32	6.31	6.30	6.28
22.00	DISCHG	217.42	215.65	213.84	212.01	210.15	208.27	206.38	204.49	202.60	200.70
22.00	ELEV	6.27	6.26	6.25	6.23	6.22	6.20	6.19	6.18	6.16	6.15
23.00	DISCHG	198.82	196.96	195.11	193.29	191.50	189.74	188.02	186.33	184.68	183.05
23.00	ELEV	6.13	6.12	6.11	6.09	6.08	6.07	6.05	6.04	6.03	6.02
24.00	DISCHG	181.43	180.98	180.96	180.94	180.91	180.88	180.85	180.81	180.77	180.73
24.00	ELEV	6.00	5.99	5.98	5.96	5.95	5.93	5.91	5.89	5.86	5.84
25.00	DISCHG	180.68	180.64	180.59	180.53	180.48	180.42	180.35	180.29	180.23	180.17
25.00	ELEV	5.81	5.78	5.75	5.72	5.69	5.65	5.61	5.57	5.54	5.50

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26.00	DISCHG	180.10	180.04	179.28	177.22	175.24	173.32	171.47	169.68	167.95	166.28
26.00	ELEV	5.46	5.42	5.39	5.35	5.32	5.28	5.25	5.22	5.19	5.16
27.00	DISCHG	164.66	163.10	161.56	160.01	158.47	156.92	155.36	153.81	152.25	150.70
27.00	ELEV	5.13	5.10	5.07	5.04	5.02	4.99	4.96	4.93	4.91	4.88
28.00	DISCHG	149.15	147.59	146.04	144.49	142.95	141.40	139.86	138.33	136.80	135.27
28.00	ELEV	4.85	4.82	4.80	4.77	4.74	4.71	4.69	4.66	4.63	4.60
29.00	DISCHG	133.34	131.35	129.38	127.42	125.46	123.52	121.59	119.68	117.78	115.90
29.00	ELEV	4.58	4.55	4.53	4.50	4.47	4.45	4.42	4.40	4.37	4.35

RUNOFF VOLUME ABOVE BASEFLOW = 1.94 WATERSHED INCHES, 3469.50 CFS-HRS, 286.72 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 140
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .37 PEAK TRAVEL TIME = .30 HOURS
0 ### WARNING - REACH 140 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 112.90 CFS, 41.26 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.94	276.19	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.92 WATERSHED INCHES, 3438.16 CFS-HRS, 284.13 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 140
OUTPUT HYDROGRAPH= 6
AREA= .20 SQ MI INPUT RUNOFF CURVE= 69. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	560.07	(RUNOFF)
15.16	19.75	(RUNOFF)
16.45	17.22	(RUNOFF)
17.66	14.43	(RUNOFF)
19.65	11.68	(RUNOFF)
23.65	8.90	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.52 WATERSHED INCHES, 454.78 CFS-HRS, 37.58 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 140
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	565.95	(NULL)
16.90	290.55	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.03 WATERSHED INCHES, 3892.94 CFS-HRS, 321.71 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 150
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 149
OUTPUT HYDROGRAPH= 6
AREA= .08 SQ MI INPUT RUNOFF CURVE= 65. TIME OF CONCENTRATION= .42 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0560 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.15	142.32	(RUNOFF)
16.45	6.39	(RUNOFF)
17.67	5.39	(RUNOFF)
19.66	4.37	(RUNOFF)
23.66	3.34	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.10 WATERSHED INCHES, 160.17 CFS-HRS, 13.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 150
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	676.34	(NULL)
14.30	212.55	(NULL)
16.54	297.91	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.06 WATERSHED INCHES, 4053.11 CFS-HRS, 334.95 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 150
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 300.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 150 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 150 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 117.99 CFS, 17.92 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	676.34	(NULL)
14.30	212.55	(NULL)
16.54	297.91	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.06 WATERSHED INCHES, 4053.11 CFS-HRS, 334.95 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 150
OUTPUT HYDROGRAPH= 6
AREA= .01 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= .15 HOURS

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INTERNAL HYDROGRAPH TIME INCREMENT= .0200 HOURS

*** WARNING-MAIN TIME INCREMENT MAY BE TOO LARGE.
COMPUTED PEAK(4.99) AT EXCEEDS MAX. ADJACENT HYDROGRAPH COORDINATE BY 8 %.
+ XSECTION 150

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.05	4.99	(RUNOFF)

TIME(HRS)		FIRST HYDROGRAPH POINT = .00 HOURS				TIME INCREMENT = .10 HOURS					DRAINAGE AREA = .01 SQ.MI.
11.00	DISCHG	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.05
12.00	DISCHG	4.60	4.46	2.17	1.71	1.28	1.17	1.09	1.02	1.00	.87
13.00	DISCHG	.84	.78	.73	.71	.66	.64	.60	.56	.55	.52
14.00	DISCHG	.52	.50	.48	.47	.44	.43	.41	.38	.38	.38
15.00	DISCHG	.38	.39	.39	.38	.35	.34	.34	.34	.34	.34
16.00	DISCHG	.34	.34	.35	.35	.35	.35	.32	.30	.30	.30
17.00	DISCHG	.30	.30	.30	.30	.30	.30	.30	.30	.30	.26
18.00	DISCHG	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25
19.00	DISCHG	.25	.25	.25	.25	.25	.25	.25	.25	.25	.21
20.00	DISCHG	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19
21.00	DISCHG	.19	.20	.20	.20	.20	.20	.20	.20	.20	.20
22.00	DISCHG	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
23.00	DISCHG	.20	.20	.20	.20	.20	.20	.20	.20	.20	.15
24.00	DISCHG	.14	.08	.01	.00						

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 5.41 CFS-HRS, .45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 150
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	681.31	(NULL)
14.30	213.02	(NULL)
16.54	298.25	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.06 WATERSHED INCHES, 4058.52 CFS-HRS, 335.40 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 180
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 180
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 42. TIME OF CONCENTRATION= .48 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.27	39.64	(RUNOFF)
23.68	2.45	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .99 WATERSHED INCHES, 70.57 CFS-HRS, 5.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 180
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.04	698.28	(NULL)
14.28	219.39	(NULL)
16.54	302.51	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.02 WATERSHED INCHES, 4129.10 CFS-HRS, 341.23 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 180
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .62 PEAK TRAVEL TIME = .20 HOURS
0 *** WARNING - REACH 180 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 117.99 CFS, 17.48 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	618.41	(NULL)
14.43	218.85	(NULL)
16.69	302.05	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.01 WATERSHED INCHES, 4106.99 CFS-HRS, 339.40 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 180
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 41. TIME OF CONCENTRATION= .48 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.28	34.74	(RUNOFF)
23.69	2.34	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 65.08 CFS-HRS, 5.38 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 180
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	650.38	(NULL)
14.41	224.58	(NULL)
16.68	306.01	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 3.28 SQ.MI.

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8.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.06	3.19	3.36	3.56
9.00	DISCHG	3.76	3.97	4.22	4.52	4.81	5.09	5.38	5.74	6.22	6.68
10.00	DISCHG	7.12	7.54	8.06	8.69	9.35	10.35	11.38	12.69	14.43	16.07
11.00	DISCHG	18.28	20.49	22.93	25.83	28.60	32.85	37.24	61.29	113.91	179.08
12.00	DISCHG	357.82	576.31	648.94	529.22	410.16	314.64	251.59	214.45	192.94	183.46
13.00	DISCHG	177.90	176.87	178.73	181.61	186.75	191.64	196.95	201.87	205.88	210.42
14.00	DISCHG	214.69	219.25	222.38	223.85	224.57	224.09	223.33	222.74	224.49	229.08
15.00	DISCHG	235.62	243.18	251.07	258.82	265.98	271.57	276.40	280.96	285.23	289.17
16.00	DISCHG	292.71	295.83	298.54	300.85	302.79	304.40	305.66	306.00	305.33	304.68
17.00	DISCHG	304.19	303.82	303.49	303.15	302.75	302.28	301.73	301.11	300.42	299.46
18.00	DISCHG	297.42	295.18	293.25	291.63	290.23	288.96	287.75	286.57	285.40	284.23
19.00	DISCHG	283.04	281.85	280.64	279.44	278.23	277.01	275.81	274.60	273.39	271.98
20.00	DISCHG	269.54	266.95	264.72	262.86	261.26	259.83	258.51	257.24	256.00	254.78
21.00	DISCHG	253.57	252.37	251.17	249.97	248.76	247.56	246.35	245.12	243.85	242.51
22.00	DISCHG	241.10	239.62	238.07	236.45	234.78	233.06	231.30	229.50	227.68	225.84
23.00	DISCHG	223.98	222.12	220.25	218.38	216.52	214.68	212.85	211.05	209.27	207.30
24.00	DISCHG	204.30	201.08	196.88	191.77	187.81	185.13	183.44	182.41	181.78	181.40
25.00	DISCHG	181.15	180.99	180.88	180.79	180.71	180.66	180.60	180.54	180.49	180.43
26.00	DISCHG	180.37	180.30	180.24	180.18	179.96	179.26	178.16	176.78	175.21	173.55
27.00	DISCHG	171.86	170.16	168.48	166.82	165.21	163.62	162.04	160.47	158.91	157.36
28.00	DISCHG	155.80	154.24	152.69	151.13	149.58	148.03	146.48	144.93	143.38	141.84
29.00	DISCHG	140.30	138.77	137.14	135.41	133.60	131.73	129.83	127.91	125.99	124.06

RUNOFF VOLUME ABOVE BASEFLOW = 1.97 WATERSHED INCHES, 4172.07 CFS-HRS, 344.78 ACRE-FEET; BASEFLOW = 3.00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID 1740

\+ COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION ENDJOB RECORD ID 1750

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE .RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 88 STORM 1													
STRUCTURE 10	RUNOFF	.84	2	2	.10	.0	7.00	24.00	1.67	---	17.80	96.56	114.9
STRUCTURE 10	RESVOR	.84	2	2	.10	.0	7.00	24.00	1.63	9.50	18.14	96.09	114.4
XSECTION 10	REACH	.84	2	2	.10	.0	7.00	24.00	1.62	---	18.47	98.84	117.7
XSECTION 10	RUNOFF	.20	2	2	.10	.0	7.00	24.00	1.08	---	12.07	136.13	680.6
XSECTION 10	ADDHYD	1.04	2	2	.10	.0	7.00	24.00	1.52	---	12.07	139.13	133.8
STRUCTURE 20	RESVOR	1.04	2	2	.10	.0	7.00	24.00	1.46	9.19	20.09	93.50	89.9
XSECTION 20	REACH	1.04	2	2	.10	.0	7.00	24.00	1.46	---	20.24	93.48	89.9
XSECTION 20	RUNOFF	.28	2	2	.10	.0	7.00	24.00	2.03	---	13.36	102.66	366.6
XSECTION 20	ADDHYD	1.32	2	2	.10	.0	7.00	24.00	1.58	---	13.32	129.36	98.0
STRUCTURE 30	RUNOFF	.37	2	2	.10	.0	7.00	24.00	1.57	---	14.95	60.58	163.7
STRUCTURE 30	RESVOR	.37	2	2	.10	.0	7.00	24.00	1.51	25.91	16.21	48.05	129.9
XSECTION 40	REACH	.37	2	2	.10	.0	7.00	24.00	1.50	---	16.55	47.70	128.9
XSECTION 40	RUNOFF	.06	2	2	.10	.0	7.00	24.00	.84	---	12.72	10.21	170.2
XSECTION 40	ADDHYD	.43	2	2	.10	.0	7.00	24.00	1.41	---	16.54	49.80	115.8
STRUCTURE 40	RESVOR	.43	2	2	.10	.0	7.00	24.00	1.41	10.89	16.60	49.78	115.8
XSECTION 50	REACH	.43	2	2	.10	.0	7.00	24.00	1.40	---	16.72	49.77	115.7
XSECTION 49	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.84	---	13.33	13.76	125.1
XSECTION 50	ADDHYD	.54	2	2	.10	.0	7.00	24.00	1.29	---	16.65	53.98	100.0
XSECTION 50	RUNOFF	.36	2	2	.10	.0	7.00	24.00	5.25	---	12.13	1078.73	2996.5
XSECTION 50	ADDHYD	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	REACH	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	RUNOFF	.05	2	2	.10	.0	7.00	24.00	1.24	---	12.56	16.56	331.2
XSECTION 60	ADDHYD	.95	2	2	.10	.0	7.00	24.00	2.79	---	12.14	1086.21	1143.4
XSECTION 70	ADDHYD	2.27	2	2	.10	.0	7.00	24.00	2.08	---	12.14	1106.90	487.6
XSECTION 80	REACH	2.27	2	2	.10	.0	7.00	24.00	2.08	---	12.14	1106.90	487.6
XSECTION 80	RUNOFF	.02	2	2	.10	.0	7.00	24.00	2.98	---	11.98	54.99	2749.6
XSECTION 80	ADDHYD	2.29	2	2	.10	.0	7.00	24.00	2.09	---	12.13	1128.27	492.7
XSECTION 90	RUNOFF	.24	2	2	.10	.0	7.00	24.00	4.14	---	12.26	458.49	1910.4
XSECTION 100	ADDHYD	2.53	2	2	.10	.0	7.00	24.00	2.29	---	12.16	1534.58	606.6
XSECTION 110	REACH	2.53	2	2	.10	.0	7.00	24.00	2.29	---	12.16	1534.58	606.6
XSECTION 120	REACH	2.53	2	2	.10	.0	7.00	24.00	2.29	---	12.16	1534.58	606.6
XSECTION 120	RUNOFF	.19	2	2	.10	.0	7.00	24.00	2.22	---	12.38	159.29	838.4

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SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 88 STORM 1													
XSECTION 120	ADDHYD	2.72	2	2	.10	.0	7.00	24.00	2.28	---	12.18	1657.29	609.3
STRUCTURE 50	RESVOR	2.72	2	2	.10	.0	7.00	24.00	2.10	10.69	13.56	343.65	126.3
XSECTION 130	REACH	2.72	2	2	.10	.0	7.00	24.00	2.10	---	13.56	343.65	126.3
XSECTION 130	RUNOFF	.05	2	2	.10	.0	7.00	24.00	4.05	---	12.01	160.37	3207.4
XSECTION 130	ADDHYD	2.77	2	2	.10	.0	7.00	24.00	2.13	---	13.44	353.46	127.6
STRUCTURE 60	RESVOR	2.77	2	2	.10	.0	7.00	24.00	1.94	6.71	16.65	276.64	99.9
XSECTION 140	REACH	2.77	2	2	.10	.0	7.00	24.00	1.92	---	16.94	276.19	99.7
XSECTION 140	RUNOFF	.20	2	2	.10	.0	7.00	24.00	3.52	---	12.02	560.07	2800.4
XSECTION 140	ADDHYD	2.97	2	2	.10	.0	7.00	24.00	2.03	---	12.02	565.95	190.6
XSECTION 149	RUNOFF	.08	2	2	.10	.0	7.00	24.00	3.10	---	12.15	142.32	1779.0
XSECTION 150	ADDHYD	3.05	2	2	.10	.0	7.00	24.00	2.06	---	12.03	676.34	221.8
XSECTION 150	REACH	3.05	2	2	.10	.0	7.00	24.00	2.06	---	12.03	676.34	221.8
XSECTION 150	RUNOFF	.01	2	2	.10	.0	7.00	24.00	.84	---	12.05	4.99	499.3
XSECTION 150	ADDHYD	3.06	2	2	.10	.0	7.00	24.00	2.06	---	12.03	681.31	222.6
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.99	---	12.27	39.64	360.4
XSECTION 180	ADDHYD	3.17	2	2	.10	.0	7.00	24.00	2.02	---	12.04	698.28	220.3
XSECTION 180	REACH	3.17	2	2	.10	.0	7.00	24.00	2.01	---	12.18	618.41	195.1
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.92	---	12.28	34.74	315.8
XSECTION 180	ADDHYD	3.28	2	2	.10	.0	7.00	24.00	1.97	---	12.19	650.38	198.3

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

XSEC ID	REACH LENGTH (FT)	HYDROGRAPH INFORMATION: INFLOW PEAK (CFS)	INFLOW TIME (HR)	OUTFLOW PEAK (CFS)	OUTFLOW TIME (HR)	INTERV.AREA PEAK (CFS)	INTERV.AREA TIME (HR)	BASE-FLOW (CFS)	ROUTING PARAMETERS: VOLUME ABOVE BASE (IN)	MAIN TIME INCR (HR)	ITER-ATION #	Q AND A EQUATION COEFF (X)	Q AND A EQUATION POWER (M)	PEAK FACTOR (K*)	S/Q . PEAK Q/I (Q*)	ATT-@PEAK (K) (SEC)	KIN STOR-AGE COEFF (C)	PEAK TRAVEL TIME KINE-MATIC (HR)	(HR)
ALTERNATE 88 STORM 1																			
10	1750	99	18.1	99	18.5			3	1.63*	.10	1	1.20	1.10	.021	.997	888	.34	.40	.25
						136	12.1												
20	2900	94	20.1	93	20.2			3	1.46*	.10	1	.280	1.94	.000	1.000	320	.72?	.10	.09
						129	13.3												
40	1300	48	16.2	48	16.5			0	1.51	.10	1	.880	1.10	.027	.992	934	.32	.30	.26
						50	16.5												
50	1700	50	16.6	50	16.7			0	1.41	.10	1	1.60	1.45	.002	1.000	252	.83?	.10	.07
						54	16.6												
60	1400	1064	12.1	1064	12.1			0	2.87	.10	0	.440	1.94	.000	1.000	38	1.00?	.00	.00
						1069	12.1												
80	700	1085	12.1	1085	12.1			3	2.08	.10	0	.300	1.94	.000	1.000	23	1.00?	.00	.00
						1114	12.1												
110	500	1518	12.2	1518	12.2			3	2.29	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						---	---												
120	500	1518	12.2	1518	12.2			3	2.29	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						1651	12.2												

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+130	1000	344	13.6	344	13.6		3	2.10‡	.10	0		1.94	.000	1.000	57	1.00?	.00	.00
+						353	13.4											
											.210							
+140	2500	277	16.6	276	16.9		3	1.94‡	.10	1		1.48	.004	.998	783	.37	.30	.22
+						562	12.0											
											.210							
+150	300	661	12.0	661	12.0		3	2.06‡	.10	0		1.48	.000	1.000	71	1.00?	.00	.00
+						666	12.0											
											.210							
+180	1700	678	12.0	616	12.2		3	2.02‡	.10	1		1.48	.005	.908	398	.62	.20	.11
+						649	12.2											

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 STRUCTURE 60	2.77	
ALTERNATE 88		276.64
0 STRUCTURE 50	2.72	
ALTERNATE 88		343.65
0 STRUCTURE 40	.43	
ALTERNATE 88		49.78
0 STRUCTURE 30	.37	
ALTERNATE 88		48.05
0 STRUCTURE 20	1.04	
ALTERNATE 88		93.50
0 STRUCTURE 10	.84	
ALTERNATE 88		96.09
0 XSECTION 10	1.04	
ALTERNATE 88		139.13
0 XSECTION 20	1.32	
ALTERNATE 88		129.36
0 XSECTION 40	.43	
ALTERNATE 88		49.80
0 XSECTION 49	.11	
ALTERNATE 88		13.76
0 XSECTION 50	.90	
ALTERNATE 88		1079.95
0 XSECTION 60	.95	
ALTERNATE 88		1086.21
0 XSECTION 70	2.27	
ALTERNATE 88		1106.90
0 XSECTION 80	2.29	
ALTERNATE 88		1128.27

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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 XSECTION 90	.24	
+		
ALTERNATE 88		458.49
0 XSECTION 100	2.53	
+		
ALTERNATE 88		1534.58
0 XSECTION 110	2.53	
+		
ALTERNATE 88		1534.58
0 XSECTION 120	2.72	
+		
ALTERNATE 88		1657.29
0 XSECTION 130	2.77	
+		
ALTERNATE 88		353.46
0 XSECTION 140	2.97	
+		
ALTERNATE 88		565.95
0 XSECTION 149	.08	
+		
ALTERNATE 88		142.32
0 XSECTION 150	3.06	
+		
ALTERNATE 88		681.31
0 XSECTION 180	3.28	
+		
ALTERNATE 88		650.38

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

JOB TR-20                    FULLPRINT PASS=001  SUMMARY                    10
TITLE 004 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM    20
TITLE     ALT  89                                                  30
 3 STRUCT      10                                                          40
 8                    7.00       0.00       4.33                           50
 8                    7.4        2.5        5.01                           60
 8                    7.6        5.0        5.36                           70
 8                    7.8        10.0       5.70                           80
 8                    8.2        22.0       6.38                           90
 8                    8.6        52.0       7.07                          100
 8                    9.0        62.0       7.75                          110
 8                    9.5        96.0       8.61                          120
 8                    10.0       126.0      9.47                          130
 8                    11.0       198.0      11.18                         140
 8                    12.0       280.0      12.89                         150
 8                    13.00      360.0      14.79                         160
 8                    14.00      440.0      16.68                         170
 8                    15.00      500.0      18.58                         180
 8                    15.1       600.00     18.60                         190
 9 ENDTBL                                                                  200
 3 STRUCT      20                                                          210
 8                    4.5        0.00       6.80                          220
 8                    4.9        1.5        7.88                          230
 8                    5.1        3.7        8.42                          240
 8                    5.5        11.0       9.51                          250
 8                    5.7        15.0       10.13                         260
 8                    6.1        25.0       11.13                         270
 8                    6.5        40.0       12.21                         280
 8                    7.1        60.0       13.84                         290
 8                    7.9        78.0       16.01                         300
 8                    8.5        79.0       17.63                         310
 8                    9.5        100.0      20.34                         320
 8                    10.5       126.0      23.06                         330
 8                    11.5       150.0      25.76                         340
 8                    11.6       300.0      26.04                         350
 9 ENDTBL                                                                  360
 3 STRUCT      30                                                          370
 8                    21.0       0.00       0.10                          380
 8                    21.4       0.6        0.61                          390
 8                    21.6       1.5        0.86                          400
 8                    21.8       2.5        1.12                          410
 8                    22.2       5.2        1.62                          420
 8                    22.6       8.2        2.13                          430
 8                    23.0       11.0       2.64                          440
 8                    23.5       20.0       3.27                          450
 8                    24.0       27.0       3.91                          460
```

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

```
8                    25.0      39.0      5.18                    470
8                    26.0      49.0      6.45                    480
8                    27.0      57.0      7.72                    490
8                    27.1      200.00    7.74                    500
9 ENDTBL                                                        510
3 STRUCT      40                                                520
8                    9.0       0.0       0.38                    530
8                    9.4       2.2       0.47                    540
8                    9.6       5.0       0.52                    550
8                    10.0      14.0      0.62                    560
8                    10.2      21.0      0.67                    570
8                    10.6      36.0      0.77                    580
8                    11.0      55.0      0.86                    590
8                    11.6      82.0      1.01                    600
8                    12.4      120.0     1.21                    610
8                    13.0      121.0     1.35                    620
8                    14.0      122.0     1.60                    630
8                    15.0      126.0     1.84                    640
8                    16.0      150.00    2.08                    650
8                    16.1      300.0     2.11                    660
9 ENDTBL                                                        670
3 STRUCT      50                                                680
8                    2.4       0.00      22.00                   690
8                    2.8       2.0       26.86                   700
8                    3.0       7.0       29.29                   710
8                    3.4       16.0      34.16                   720
8                    3.6       24.0      36.59                   730
8                    4.0       40.0      41.46                   740
8                    4.4       60.0      46.32                   750
8                    5.0       90.0      53.62                   760
8                    5.8       120.0     63.35                   770
8                    6.4       121.0     70.65                   780
8                    7.4       210.0     82.81                   790
8                    8.4       250.00    94.98                   800
8                    10.4      334.0     119.31                  810
8                    12.4      400.0     143.63                  820
8                    12.5      800.0     143.70                  830
9 ENDTBL                                                        840
3 STRUCT      60                                                850
8                    2.0       0.0       22.20                   860
8                    2.4       3.0       27.41                   870
8                    2.6       10.5      30.02                   880
8                    3.0       22.5      35.24                   890
8                    3.2       36.0      37.85                   900
8                    3.6       60.0      43.06                   910
8                    4.0       90.0      48.28                   920
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**********************80-80 LIST OF INPUT DATA (CONTINUED)**********************

8                    4.6        135.0      56.11                        930
8                    5.4        180.0      66.55                        940
8                    6.0        181.0      74.38                        950
8                    7.0        315.0      87.42                        960
8                    8.0        375.0      100.47                       970
8                    8.1        700.0      100.50                       980
9 ENDTBL                                                                990
6 RUNOFF 1    10     6 0.84     51.        7.50       1                1000
6 RESVOR 2    10 6   7 7.0                            1                1010
6 REACH  3 010   7   5 1750.    1.2        1.10       1                1020
6 RUNOFF 1 010       6 0.20     42.        0.19       1                1030
6 ADDHYD 4 010   5 6 7                                1 1              1040
6 SAVMOV 5 010   7   6                                                 1050
6 RESVOR 2    20 6   7 4.5                            1                1060
6 REACH  3 020   7   5 2900.    0.28       1.94       1                1070
6 RUNOFF 1 020       6 0.28     53.        1.02       1                1080
6 ADDHYD 4 020   5 6 7                                1 1              1090
6 SAVMOV 5 020   7   1                                                 1100
6 RUNOFF 1    30     6 0.37     49.        3.90       1                1110
6 RESVOR 2    30 6   7 21.0                           1                1120
6 REACH  3 040   7   5 1300.    0.88       1.10       1                1130
6 RUNOFF 1 040       6 0.06     40.        1.00       1                1140
6 ADDHYD 4 040   5 6 7                                1                1150
6 SAVMOV 5 040   7   6                                                 1160
6 RESVOR 2    40 6   7 9.0                            1                1170
6 REACH  3 050   7   5 1700.    1.6        1.45       1                1180
6 RUNOFF 1 049       6 0.11     40.        1.67       1                1190
6 ADDHYD 4 050   5 6 7                                1                1200
6 SAVMOV 5 050   7   5                                                 1210
6 RUNOFF 1 050       6 0.36     85.        0.42       1                1220
6 ADDHYD 4 050   5 6 7                                1                1230
6 REACH  3 060   7   5 1400.    0.44       1.94       1                1240
6 RUNOFF 1 060       6 0.05     45.        0.90       1                1250
6 ADDHYD 4 060   5 6 7                                1 1              1260
6 SAVMOV 5 070   7   5                                                 1270
6 SAVMOV 5 070   1   6                                                 1280
6 ADDHYD 4 070   5 6 7                                1 1              1290
6 REACH  3 080   7   5 700.     0.30       1.94       1                1300
6 RUNOFF 1 080       6 0.02     64.        0.12       1                1310
6 ADDHYD 4 080   5 6 7                                1                1320
6 SAVMOV 5 100   7   5                                                 1330
6 RUNOFF 1 090       6 0.24     73.        0.62       1                1340
6 ADDHYD 4 100   5 6 7                                1                1350
6 REACH  3 110   7   5 500.     0.30       1.94       1                1360
6 SAVMOV 5 120   5   7                                                 1370
6 REACH  3 120   7   5 500.     0.30       1.94       1                1380
```

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

 6 RUNOFF 1 120       6 0.19        56.        0.74       1                1390
 6 ADDHYD 4 120   5 6 7                                    1 1              1400
 6 SAVMOV 5    50 7   6                                                     1410
 6 RESVOR 2    50 6   7 2.4                                1 1 1            1420
 6 REACH  3 130   7   5 1000.       0.30       1.94       1                1430
 6 RUNOFF 1 130       6 0.05        74.        0.19       1                1440
 6 ADDHYD 4 130   5 6 7                                    1                1450
 6 SAVMOV 5 130   7   6                                                     1460
 6 RESVOR 2    60 6   7 2.0                                1 1 1            1470
 6 REACH  3 140   7   5 2500.       0.21       1.48       1                1480
 6 RUNOFF 1 140       6 0.20        66.        1.15       1                1490
 6 ADDHYD 4 140   5 6 7                                    1                1500
 6 SAVMOV 5 150   7   5                                                     1510
 6 RUNOFF 1 149       6 0.08        50.        0.42       1                1520
 6 ADDHYD 4 150   5 6 7                                                     1530
 6 REACH  3 150   7   5 300.        0.21       1.48       1                1540
 6 RUNOFF 1 150       6 0.01        40.        0.15       1                1550
 6 ADDHYD 4 150   5 6 7                                    1                1560
 6 SAVMOV 5 180   7   5                                                     1570
 6 RUNOFF 1 180       6 0.28        50.        0.61       1                1580
 6 ADDHYD 4 180   5 6 7                                    1                1590
 6 REACH  3 180   7   5 1700.0      0.21       1.48       1                1600
 6 RUNOFF 1 180       6 0.11        41.        0.48       1                1610
 6 ADDHYD 4 180   5 6 7                                    1 1   1   1      1620
   ENDATA                                                                   1630
 7 ALTER  3                                                                 1640
 6 RUNOFF 1 010       6 0.20        44.0       0.19       1                1650
 6 RUNOFF 1 020       6 0.28        54.0       2.00       1                1660
 6 RUNOFF 1 090       6 0.24        75.0       0.62       1                1665
 6 RUNOFF 1 120       6 0.19        57.0       0.74       1                1668
 6 RUNOFF 1 140       6 0.20        69.0       0.19       1                1670
 6 RUNOFF 1 149       6 0.08        65.0       0.42       1                1680
 6 RUNOFF 1 180       6 0.11        42.0       0.48       1                1690
 7 LIST                                                                     1700
 7 BASFLO 5             3.0                                                 1710
 7 INCREM 6             0.1                                                 1720
 7 COMPUT 7    10 180   0.0         7.0        1.0        2 2  89  01      1730
   ENDCMP 1                                                                 1740
   ENDJOB 2                                                                 1750
0*******************************END OF 80-80 LIST*******************************
```


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TR20 XEQ 04-29-86  08:27      COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM      20          JOB  1   PASS   1
    REV PC 09/83(.2)          ALT  89                                                  30                                PAGE   1

0CHANGES TO STANDARD CONTROL LIST FOLLOW

EXECUTIVE CONTROL OPERATION ALTER                                                                          RECORD ID     1640

  STANDARD CONTROL OPERATION RUNOFF   CROSS SECTION  10                                                    RECORD ID     1650
        OUTPUT HYDROGRAPH = 6                                  DATA FIELD VALUES =      .2000     44.0000      .1900
        OUTPUT OPTIONS IN EFFECT  PEAK  VOL   SUM
  STANDARD CONTROL OPERATION RUNOFF   CROSS SECTION  20                                                    RECORD ID     1660
        OUTPUT HYDROGRAPH = 6                                  DATA FIELD VALUES =      .2800     54.0000     2.0000
        OUTPUT OPTIONS IN EFFECT  PEAK  VOL   SUM
  STANDARD CONTROL OPERATION RUNOFF   CROSS SECTION  90                                                    RECORD ID     1665
        OUTPUT HYDROGRAPH = 6                                  DATA FIELD VALUES =      .2400     75.0000      .6200
        OUTPUT OPTIONS IN EFFECT  PEAK  VOL   SUM
  STANDARD CONTROL OPERATION RUNOFF   CROSS SECTION 120                                                    RECORD ID     1668
        OUTPUT HYDROGRAPH = 6                                  DATA FIELD VALUES =      .1900     57.0000      .7400
        OUTPUT OPTIONS IN EFFECT  PEAK  VOL   SUM
  STANDARD CONTROL OPERATION RUNOFF   CROSS SECTION 140                                                    RECORD ID     1670
        OUTPUT HYDROGRAPH = 6                                  DATA FIELD VALUES =      .2000     69.0000      .1900
        OUTPUT OPTIONS IN EFFECT  PEAK  VOL   SUM
  STANDARD CONTROL OPERATION RUNOFF   CROSS SECTION 149                                                    RECORD ID     1680
        OUTPUT HYDROGRAPH = 6                                  DATA FIELD VALUES =      .0800     65.0000      .4200
        OUTPUT OPTIONS IN EFFECT  PEAK  VOL   SUM
  STANDARD CONTROL OPERATION RUNOFF   CROSS SECTION 180                                                    RECORD ID     1690
        OUTPUT HYDROGRAPH = 6                                  DATA FIELD VALUES =      .1100     42.0000      .4800
        OUTPUT OPTIONS IN EFFECT  PEAK  VOL   SUM
```

EXECUTIVE CONTROL OPERATION LIST RECORD ID 1700

LISTING OF CURRENT DATA

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	10			
8		7.00	.00	4.33
8		7.40	2.50	5.01
8		7.60	5.00	5.36
8		7.80	10.00	5.70
8		8.20	22.00	6.38
8		8.60	52.00	7.07
8		9.00	62.00	7.75
8		9.50	96.00	8.61
8		10.00	126.00	9.47
8		11.00	198.00	11.18
8		12.00	280.00	12.89
8		13.00	360.00	14.79
8		14.00	440.00	16.68
8		15.00	500.00	18.58
8		15.10	600.00	18.60
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	20			
8		4.50	.00	6.80
8		4.90	1.50	7.88
8		5.10	3.70	8.42
8		5.50	11.00	9.51
8		5.70	15.00	10.13
8		6.10	25.00	11.13
8		6.50	40.00	12.21
8		7.10	60.00	13.84
8		7.90	78.00	16.01
8		8.50	79.00	17.63
8		9.50	100.00	20.34
8		10.50	126.00	23.06
8		11.50	150.00	25.76
8		11.60	300.00	26.04
9 ENDTBL				

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	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	30			
8		21.00	.00	.10
8		21.40	.60	.61
8		21.60	1.50	.86
8		21.80	2.50	1.12
8		22.20	5.20	1.62
8		22.60	8.20	2.13
8		23.00	11.00	2.64
8		23.50	20.00	3.27
8		24.00	27.00	3.91
8		25.00	39.00	5.18
8		26.00	49.00	6.45
8		27.00	57.00	7.72
8		27.10	200.00	7.74
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	40			
8		9.00	.00	.38
8		9.40	2.20	.47
8		9.60	5.00	.52
8		10.00	14.00	.62
8		10.20	21.00	.67
8		10.60	36.00	.77
8		11.00	55.00	.86
8		11.60	82.00	1.01
8		12.40	120.00	1.21
8		13.00	121.00	1.35
8		14.00	122.00	1.60
8		15.00	126.00	1.84
8		16.00	150.00	2.08
8		16.10	300.00	2.11
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	50			
8		2.40	.00	22.00
8		2.80	2.00	26.86
8		3.00	7.00	29.29
8		3.40	16.00	34.16
8		3.60	24.00	36.59
8		4.00	40.00	41.46
8		4.40	60.00	46.32
8		5.00	90.00	53.62

```
8                    5.80      120.00      63.35
8                    6.40      121.00      70.65
8                    7.40      210.00      82.81
8                    8.40      250.00      94.98
8                   10.40      334.00     119.31
8                   12.40      400.00     143.63
8                   12.50      800.00     143.70
9 ENDTBL

          STRUCT NO.     ELEVATION   DISCHARGE     STORAGE
3 STRUCT      60

8                    2.00         .00      22.20
8                    2.40        3.00      27.41
8                    2.60       10.50      30.02
8                    3.00       22.50      35.24
8                    3.20       36.00      37.85
8                    3.60       60.00      43.06
8                    4.00       90.00      48.28
8                    4.60      135.00      56.11
8                    5.40      180.00      66.55
8                    6.00      181.00      74.38
8                    7.00      315.00      87.42
8                    8.00      375.00     100.47
8                    8.10      700.00     100.50
9 ENDTBL

                TIME INCREMENT
4 DIMHYD              .0200

8              .0000     .0300     .1000     .1900     .3100
8              .4700     .6600     .8200     .9300     .9900
8             1.0000     .9900     .9300     .8600     .7800
8              .6800     .5600     .4600     .3900     .3300
8              .2800     .2410     .2070     .1740     .1470
8              .1260     .1070     .0910     .0770     .0660
8              .0550     .0470     .0400     .0340     .0290
8              .0250     .0210     .0180     .0150     .0130
8              .0110     .0090     .0080     .0070     .0060
8              .0050     .0040     .0030     .0020     .0010
8              .0000     .0000     .0000     .0000     .0000
9 ENDTBL

  COMPUTED PEAK RATE FACTOR =  484.00
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     TABLE NO.      TIME INCREMENT
5 RAINFL 1                .5000

8              .0000     .0080     .0170     .0260     .0350
8              .0450     .0550     .0650     .0760     .0870
8              .0990     .1120     .1260     .1400     .1560
8              .1740     .1940     .2190     .2540     .3030
8              .5150     .5830     .6240     .6550     .6820
8              .7060     .7280     .7480     .7660     .7830
8              .7990     .8150     .8300     .8440     .8570
8              .8700     .8820     .8930     .9050     .9160
8              .9260     .9360     .9460     .9560     .9650
8              .9740     .9830     .9920    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 2                .2500

8              .0000     .0020     .0050     .0080     .0110
8              .0140     .0170     .0200     .0230     .0260
8              .0290     .0320     .0350     .0380     .0410
8              .0440     .0480     .0520     .0560     .0600
8              .0640     .0680     .0720     .0760     .0800
8              .0850     .0900     .0950     .1000     .1050
8              .1100     .1150     .1200     .1260     .1330
8              .1400     .1470     .1550     .1630     .1720
8              .1810     .1910     .2030     .2180     .2360
8              .2570     .2830     .3870     .6630     .7070
8              .7350     .7580     .7760     .7910     .8040
8              .8150     .8250     .8340     .8420     .8490
8              .8560     .8630     .8690     .8750     .8810
8              .8870     .8930     .8980     .9030     .9080
8              .9130     .9180     .9220     .9260     .9300
8              .9340     .9380     .9420     .9460     .9500
8              .9530     .9560     .9590     .9620     .9650
8              .9680     .9710     .9740     .9770     .9800
8              .9830     .9860     .9890     .9920     .9950
8              .9980    1.0000    1.0000    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 3                .5000

8              .0000     .0100     .0220     .0360     .0510
8              .0670     .0830     .0990     .1160     .1350
```

```
8              .1560     .1790     .2040     .2330     .2680
8              .3100     .4250     .4800     .5200     .5500
8              .5770     .6010     .6230     .6440     .6640
8              .6830     .7010     .7190     .7360     .7530
8              .7690     .7850     .8000     .8150     .8300
8              .8440     .8580     .8710     .8840     .8960
8              .9080     .9200     .9320     .9440     .9560
8              .9670     .9780     .9890    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 4                .5000

8              .0000     .0040     .0080     .0120     .0160
8              .0200     .0250     .0300     .0350     .0400
8              .0450     .0500     .0550     .0600     .0650
8              .0700     .0750     .0810     .0870     .0930
8              .0990     .1050     .1110     .1180     .1250
8              .1320     .1400     .1480     .1560     .1650
8              .1740     .1840     .1950     .2070     .2200
8              .2360     .2550     .2770     .3030     .4090
8              .5150     .5490     .5830     .6050     .6240
8              .6400     .6550     .6690     .6820     .6940
8              .7050     .7160     .7270     .7380     .7480
8              .7580     .7670     .7760     .7840     .7920
8              .8000     .8080     .8160     .8230     .8300
8              .8370     .8440     .8510     .8580     .8640
8              .8700     .8760     .8820     .8880     .8940
8              .9000     .9060     .9110     .9160     .9210
8              .9260     .9310     .9360     .9410     .9460
8              .9510     .9560     .9610     .9660     .9710
8              .9760     .9800     .9840     .9880     .9920
8              .9960    1.0000    1.0000    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 5                .5000

8              .0000     .0020     .0050     .0080     .0110
8              .0140     .0170     .0200     .0230     .0260
8              .0290     .0320     .0350     .0380     .0410
8              .0440     .0470     .0510     .0550     .0590
8              .0630     .0670     .0710     .0750     .0790
8              .0840     .0890     .0940     .0990     .1040
8              .1090     .1140     .1200     .1260     .1330
8              .1400     .1470     .1540     .1620     .1710
8              .1810     .1920     .2040     .2170     .2330
```


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8	.2520	.2770	.3180	.6380	.6980
8	.7290	.7520	.7700	.7850	.7980
8	.8090	.8190	.8290	.8380	.8460
8	.8540	.8610	.8680	.8740	.8800
8	.8860	.8920	.8970	.9020	.9070
8	.9120	.9170	.9210	.9250	.9290
8	.9330	.9370	.9410	.9450	.9490
8	.9530	.9570	.9600	.9630	.9660
8	.9690	.9720	.9750	.9780	.9810
8	.9840	.9870	.9900	.9930	.9960
8	.9980	1.0000	1.0000	1.0000	1.0000

9 ENDTBL

TABLE NO.	TIME INCREMENT
5 RAINFL 6	.0200

8	.0000	.0080	.0162	.0246	.0333
8	.0425	.0524	.0630	.0743	.0863
8	.0990	.1124	.1265	.1420	.1595
8	.1800	.2050	.2550	.3450	.4370
8	.5300	.6030	.6330	.6600	.6840
8	.7050	.7240	.7420	.7590	.7750
8	.7900	.8043	.8180	.8312	.8439
8	.8561	.8678	.8790	.8898	.9002
8	.9103	.9201	.9297	.9391	.9483
8	.9573	.9661	.9747	.9832	.9916
8	1.0000	1.0000	1.0000	1.0000	1.0000

9 ENDTBL

0 STANDARD CONTROL INSTRUCTIONS

```
6 RUNOFF 1   10    6      .8400     51.0000     7.50001 0 0 1 0 1
6 RESVOR 2   10 6  7     7.0000                     1 0 0 1 0 1
6 REACH  3 10  7   5  1750.0000      1.2000     1.10001 0 0 1 0 1
6 RUNOFF 1 10      6      .2000     44.0000      .19001 0 0 1 0 1
6 ADDHYD 4 10  5 6 7                                1 1 0 1 0 1
6 SAVMOV 5 10  7   6
6 RESVOR 2   20 6  7     4.5000                     1 0 0 1 0 1
6 REACH  3 20  7   5  2900.0000      .2800     1.94001 0 0 1 0 1
6 RUNOFF 1 20      6      .2800     54.0000     2.00001 0 0 1 0 1
6 ADDHYD 4 20  5 6 7                                1 1 0 1 0 1
6 SAVMOV 5 20  7   1
6 RUNOFF 1   30    6      .3700     49.0000     3.90001 0 0 1 0 1
6 RESVOR 2   30 6  7    21.0000                     1 0 0 1 0 1
6 REACH  3 40  7   5  1300.0000      .8800     1.10001 0 0 1 0 1
6 RUNOFF 1 40      6      .0600     40.0000     1.00001 0 0 1 0 1
6 ADDHYD 4 40  5 6 7                                1 0 0 1 0 1
6 SAVMOV 5 40  7   6
6 RESVOR 2   40 6  7     9.0000                     1 0 0 1 0 1
6 REACH  3 50  7   5  1700.0000      1.6000     1.45001 0 0 1 0 1
6 RUNOFF 1 49      6      .1100     40.0000     1.67001 0 0 1 0 1
6 ADDHYD 4 50  5 6 7                                1 0 0 1 0 1
6 SAVMOV 5 50  7   5
6 RUNOFF 1 50      6      .3600     85.0000      .42001 0 0 1 0 1
6 ADDHYD 4 50  5 6 7                                1 0 0 1 0 1
6 REACH  3 60  7   5  1400.0000      .4400     1.94001 0 0 1 0 1
6 RUNOFF 1 60      6      .0500     45.0000      .90001 0 0 1 0 1
6 ADDHYD 4 60  5 6 7                                1 1 0 1 0 1
6 SAVMOV 5 70  7   5
6 SAVMOV 5 70  1   6
6 ADDHYD 4 70  5 6 7                                1 1 0 1 0 1
6 REACH  3 80  7   5   700.0000      .3000     1.94001 0 0 1 0 1
6 RUNOFF 1 80      6      .0200     64.0000      .12001 0 0 1 0 1
6 ADDHYD 4 80  5 6 7                                1 0 0 1 0 1
6 SAVMOV 5 100 7   5
6 RUNOFF 1 90      6      .2400     75.0000      .62001 0 0 1 0 1
6 ADDHYD 4 100 5 6 7                                1 0 0 1 0 1
6 REACH  3 110 7   5   500.0000      .3000     1.94001 0 0 1 0 1
6 SAVMOV 5 120 5   7
6 REACH  3 120 7   5   500.0000      .3000     1.94001 0 0 1 0 1
6 RUNOFF 1 120     6      .1900     57.0000      .74001 0 0 1 0 1
6 ADDHYD 4 120 5 6 7                                1 1 0 1 0 1
6 SAVMOV 5   50 7  6
6 RESVOR 2   50 6  7     2.4000                     1 1 1 1 0 1
6 REACH  3 130 7   5  1000.0000      .3000     1.94001 0 0 1 0 1
6 RUNOFF 1 130     6      .0500     74.0000      .19001 0 0 1 0 1
```


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```
6 ADDHYD 4 130   5 6 7                          1 0 0 1 0 1
6 SAVMOV 5 130   7   6
6 RESVOR 2    60 6   7      2.0000                1 1 1 1 0 1
6 REACH  3 140   7   5   2500.0000      .2100   1.48001 0 0 1 0 1
6 RUNOFF 1 140       6      .2000     69.0000    .19001 0 0 1 0 1
6 ADDHYD 4 140   5 6 7                          1 0 0 1 0 1
6 SAVMOV 5 150   7   5
6 RUNOFF 1 149       6      .0800     65.0000    .42001 0 0 1 0 1
6 ADDHYD 4 150   5 6 7                          1 0 0 1 0 1
6 REACH  3 150   7   5    300.0000      .2100   1.48001 0 0 1 0 1
6 RUNOFF 1 150       6      .0100     40.0000    .15001 0 0 1 0 1
6 ADDHYD 4 150   5 6 7                          1 0 0 1 0 1
6 SAVMOV 5 180   7   5
6 RUNOFF 1 180       6      .1100     42.0000    .48001 0 0 1 0 1
6 ADDHYD 4 180   5 6 7                          1 0 0 1 0 1
6 REACH  3 180   7   5   1700.0000      .2100   1.48001 0 0 1 0 1
6 RUNOFF 1 180       6      .1100     41.0000    .48001 0 0 1 0 1
6 ADDHYD 4 180   5 6 7                          1 1 0 1 0 1
  ENDATA

END OF LISTING
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EXECUTIVE CONTROL OPERATION BASFLO                                                    RECORD ID    1710

+                                  NEW BASEFLOW =   3.00 CFS

EXECUTIVE CONTROL OPERATION INCREM                                                    RECORD ID    1720

+                                  MAIN TIME INCREMENT =   .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT                                                    RECORD ID    1730

+                                  FROM STRUCTURE 10
+                                                  TO XSECTION 180
      STARTING TIME =   .00    RAIN DEPTH =  7.00    RAIN DURATION=  1.00    RAIN TABLE NO.= 2    ANT. MOIST. COND= 2
      ALTERNATE NO.=89         STORM NO.= 1    MAIN TIME INCREMENT =   .10 HOURS

OPERATION RUNOFF   STRUCTURE 10
         OUTPUT HYDROGRAPH=  6
         AREA=    .84 SQ MI   INPUT RUNOFF CURVE= 51.    TIME OF CONCENTRATION=  7.50 HOURS
         INTERNAL HYDROGRAPH TIME INCREMENT=  .1000 HOURS

         PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            17.80                          96.56                        (RUNOFF)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.67 WATERSHED INCHES,    906.24 CFS-HRS,    74.89 ACRE-FEET;   BASEFLOW =    .00 CFS

OPERATION RESVOR   STRUCTURE 10
         INPUT HYDROGRAPH= 6     OUTPUT HYDROGRAPH= 7
         SURFACE ELEVATION=    7.00

         PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            18.14                          96.09                         9.50

  RUNOFF VOLUME ABOVE BASEFLOW =  1.63 WATERSHED INCHES,    884.09 CFS-HRS,    73.06 ACRE-FEET;   BASEFLOW =    .00 CFS

OPERATION REACH    CROSS SECTION  10
         INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5
         LENGTH =   1750.00 FEET      INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA,  X=  1.20,   M= 1.10
0        MODIFIED ATT-KIN ROUTING COEFFICIENT =  .34      PEAK TRAVEL TIME =    .40 HOURS
0    *** WARNING - REACH  10 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT      18.15 CFS,  18.88 % OF PEAK.

         PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
            18.47                          98.84                        (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.62 WATERSHED INCHES,    878.37 CFS-HRS,    72.59 ACRE-FEET;   BASEFLOW =   3.00 CFS

OPERATION RUNOFF   CROSS SECTION  10
         OUTPUT HYDROGRAPH=  6
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AREA= .20 SQ MI INPUT RUNOFF CURVE= 44. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.07	150.75	(RUNOFF)
15.19	9.64	(RUNOFF)
16.46	8.67	(RUNOFF)
17.67	7.42	(RUNOFF)
19.66	6.17	(RUNOFF)
23.65	4.88	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.16 WATERSHED INCHES, 149.25 CFS-HRS, 12.33 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 10
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.07	153.76	(NULL)
18.48	104.86	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.04 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	7.21	53.07
12.00	DISCHG	135.64	149.19	80.95	56.13	42.16	35.91	33.02	30.56	29.72	27.02
13.00	DISCHG	25.58	24.44	22.95	22.58	21.54	21.15	20.62	19.89	20.05	20.05
14.00	DISCHG	20.75	21.68	22.70	24.32	25.72	27.54	29.37	31.56	35.09	39.12
15.00	DISCHG	43.24	47.29	51.18	54.82	57.52	59.78	61.92	63.90	65.78	67.63
16.00	DISCHG	69.47	71.98	75.00	78.16	81.27	84.22	86.55	88.36	90.42	92.43
17.00	DISCHG	94.31	96.02	97.59	99.01	100.31	101.48	102.52	103.43	104.09	103.97
18.00	DISCHG	104.02	104.29	104.55	104.73	104.84	104.86	104.81	104.67	104.47	104.19
19.00	DISCHG	103.84	103.42	102.93	102.36	101.72	101.00	100.20	99.32	98.25	96.45
20.00	DISCHG	94.87	93.59	92.37	91.15	89.91	88.67	87.43	86.21	85.01	83.83
21.00	DISCHG	82.67	81.54	80.43	79.34	78.27	77.22	76.20	75.19	74.21	73.24
22.00	DISCHG	72.30	71.42	70.72	70.11	69.56	69.03	68.51	67.98	67.44	66.89
23.00	DISCHG	66.33	65.76	65.17	64.57	63.96	63.34	62.72	62.09	61.34	59.73
24.00	DISCHG	58.17	55.97	53.27	51.71	50.62	49.72	48.91	48.18	47.50	46.85
25.00	DISCHG	46.24	45.66	45.10	44.55	44.02	43.50	42.98	42.48	41.98	41.49
26.00	DISCHG	41.00	40.51	40.03	39.55	39.07	38.60	38.12	37.63	37.15	36.66
27.00	DISCHG	36.16	35.66	35.15	34.64	34.13	33.61	33.09	32.57	32.04	31.51
28.00	DISCHG	30.97	30.44	29.90	29.36	28.82	28.28	27.74	27.21	26.67	26.13
29.00	DISCHG	25.68	25.30	24.94	24.59	24.24	23.89	23.52	23.14	22.75	22.35

RUNOFF VOLUME ABOVE BASEFLOW = 1.53 WATERSHED INCHES, 1027.62 CFS-HRS, 84.92 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 10
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 20
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 4.50

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.65	31.90	6.28
20.08	93.83	9.21

RUNOFF VOLUME ABOVE BASEFLOW = 1.48 WATERSHED INCHES, 990.65 CFS-HRS, 81.87 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2900.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .28, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .72 PEAK TRAVEL TIME = .10 HOURS

*** WARNING REACH 20 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 20 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 23.17 CFS, 25.51 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.82	31.79	(NULL)
20.23	93.80	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.47 WATERSHED INCHES, 987.44 CFS-HRS, 81.60 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 20
OUTPUT HYDROGRAPH= 6
AREA= .28 SQ MI INPUT RUNOFF CURVE= 54. TIME OF CONCENTRATION= 2.00 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1026 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.36	102.66	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.03 WATERSHED INCHES, 366.74 CFS-HRS, 30.31 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 20
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.31	132.15	(NULL)
20.11	106.29	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.32 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.01	3.02	3.06	3.18	3.47	4.17	5.78
12.00	DISCHG	9.45	17.69	29.98	44.84	59.25	72.98	86.02	98.12	108.61	117.14
13.00	DISCHG	123.73	128.34	131.09	132.14	131.53	129.60	126.63	122.67	117.70	111.97
14.00	DISCHG	106.02	100.46	95.56	91.20	87.22	83.67	80.54	77.77	75.29	73.28
15.00	DISCHG	71.78	70.81	70.32	70.22	70.47	70.99	71.70	72.40	73.11	73.90
16.00	DISCHG	74.80	75.76	76.81	78.00	79.36	80.88	82.38	83.57	84.72	85.90
17.00	DISCHG	87.14	88.42	89.73	91.05	92.39	93.73	95.06	95.63	95.66	95.54
18.00	DISCHG	95.38	95.22	95.06	94.90	94.74	95.60	96.75	97.91	99.01	100.03

19.00	DISCHG	100.97	101.82	102.60	103.31	103.94	104.50	104.99	105.42	105.77	106.05
20.00	DISCHG	106.23	106.29	106.25	106.12	105.90	105.59	105.20	104.74	104.21	103.61
21.00	DISCHG	102.97	102.29	101.57	100.82	100.05	99.26	98.45	97.64	96.82	95.99
22.00	DISCHG	95.17	94.34	93.51	92.69	91.87	91.07	90.29	89.53	88.78	88.48
23.00	DISCHG	88.34	88.25	88.16	88.09	88.01	87.93	87.85	87.77	87.68	87.59
24.00	DISCHG	87.49	87.36	86.62	85.25	83.64	81.94	80.19	78.40	76.60	74.78
25.00	DISCHG	72.98	71.20	69.44	67.74	66.08	64.38	62.48	60.62	58.85	57.20
26.00	DISCHG	55.67	54.24	52.92	51.68	50.52	49.43	48.40	47.43	46.50	45.62
27.00	DISCHG	44.78	43.98	43.21	42.46	41.74	41.04	40.34	39.62	38.90	38.21
28.00	DISCHG	37.53	36.87	36.22	35.58	34.96	34.34	33.73	33.13	32.54	31.95
29.00	DISCHG	31.37	30.80	30.24	29.70	29.17	28.67	28.18	27.71	27.25	26.80

RUNOFF VOLUME ABOVE BASEFLOW = 1.59 WATERSHED INCHES, 1354.18 CFS-HRS, 111.91 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 1

OPERATION RUNOFF STRUCTURE 30
OUTPUT HYDROGRAPH= 6
AREA= .37 SQ MI INPUT RUNOFF CURVE= 49. TIME OF CONCENTRATION= 3.90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
14.95	60.58	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.57 WATERSHED INCHES, 375.61 CFS-HRS, 31.04 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 30
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 21.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.21	48.05	25.91

RUNOFF VOLUME ABOVE BASEFLOW = 1.51 WATERSHED INCHES, 360.28 CFS-HRS, 29.77 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1300.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .88, M= 1.10
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .32 PEAK TRAVEL TIME = .30 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.55	47.70	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.50 WATERSHED INCHES, 358.97 CFS-HRS, 29.67 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 40

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OUTPUT HYDROGRAPH= 6
AREA= .06 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= 1.00 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0952 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.72	10.21	(RUNOFF)
23.76	1.21	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 32.57 CFS-HRS, 2.69 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 40
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.73	10.35	(NULL)
16.54	49.80	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 391.54 CFS-HRS, 32.36 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 40
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 9.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.90	9.83	9.81
16.60	49.78	10.89

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 389.94 CFS-HRS, 32.22 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= 1.60, M= 1.45
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .83 PEAK TRAVEL TIME = .10 HOURS

*** WARNING REACH 50 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.02	9.78	(NULL)
16.72	49.77	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.40 WATERSHED INCHES, 389.36 CFS-HRS, 32.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 49
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= 1.67 HOURS

```
          INTERNAL HYDROGRAPH TIME INCREMENT=  .1012 HOURS

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             13.33                          13.76                        (RUNOFF)
             23.80                           2.20                        (RUNOFF)
+                                                *                                  * FIRST POINT OF FLAT PEAK

  RUNOFF VOLUME ABOVE BASEFLOW =   .84 WATERSHED INCHES,     59.78 CFS-HRS,     4.94 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION ADDHYD   CROSS SECTION  50
          INPUT HYDROGRAPHS= 5,6     OUTPUT HYDROGRAPH= 7

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             13.16                          22.91                        (NULL)
             16.65                          53.98                        (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.29 WATERSHED INCHES,    449.14 CFS-HRS,    37.12 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION SAVMOV   CROSS SECTION  50
          INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5


OPERATION RUNOFF   CROSS SECTION  50
          OUTPUT HYDROGRAPH=  6
          AREA=    .36 SQ MI   INPUT RUNOFF CURVE= 85.    TIME OF CONCENTRATION=   .42 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .0560 HOURS

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             12.13                        1078.73                        (RUNOFF)
             19.65                          24.75                        (RUNOFF)
             23.65                          18.64                        (RUNOFF)

  RUNOFF VOLUME ABOVE BASEFLOW =  5.25 WATERSHED INCHES,   1220.14 CFS-HRS,   100.83 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION ADDHYD   CROSS SECTION  50
          INPUT HYDROGRAPHS= 5,6     OUTPUT HYDROGRAPH= 7

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             12.13                        1079.95                        (NULL)
             16.49                          90.76                        (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  2.87 WATERSHED INCHES,   1669.27 CFS-HRS,   137.95 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION REACH    CROSS SECTION  60
          INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5
          LENGTH =   1400.00 FEET      INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA,  X=   .44,   M= 1.94
0         MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00      PEAK TRAVEL TIME =    .00 HOURS
```

*** WARNING REACH 60 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1079.95	(NULL)
16.49	90.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.87 WATERSHED INCHES, 1669.27 CFS-HRS, 137.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 60
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 45. TIME OF CONCENTRATION= .90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.56	16.56	(RUNOFF)
23.72	1.26	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.24 WATERSHED INCHES, 39.88 CFS-HRS, 3.30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 60
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1086.21	(NULL)
16.49	93.02	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .95 SQ.MI.

4.00	DISCHG	.00	.00	.00	.02	.10	.26	.49	.75	1.04	1.33
5.00	DISCHG	1.62	1.91	2.20	2.49	2.77	3.04	3.32	3.58	3.84	4.10
6.00	DISCHG	4.36	4.67	5.18	5.80	6.40	6.89	7.32	7.71	8.07	8.41
7.00	DISCHG	8.75	9.07	9.38	9.69	9.99	10.29	10.58	10.86	11.14	11.41
8.00	DISCHG	11.68	12.08	12.82	13.80	14.96	16.27	17.48	18.44	19.17	19.76
9.00	DISCHG	20.27	20.91	21.91	23.16	24.29	25.16	26.02	27.23	28.66	29.92
10.00	DISCHG	30.90	31.86	33.18	34.84	37.10	40.08	43.57	47.95	52.84	58.21
11.00	DISCHG	64.10	70.07	76.45	83.02	90.75	101.27	130.10	208.30	333.15	539.50
12.00	DISCHG	836.25	1068.68	1030.91	805.58	576.69	421.03	324.82	265.51	227.09	199.69
13.00	DISCHG	178.52	161.72	147.53	136.12	127.20	119.75	113.25	107.02	101.45	96.86
14.00	DISCHG	93.29	90.54	88.31	86.99	86.63	86.30	86.13	85.74	85.37	85.47
15.00	DISCHG	86.26	87.42	88.85	90.29	90.92	90.62	90.19	90.11	90.41	90.86
16.00	DISCHG	91.35	91.83	92.25	92.60	92.86	93.02	92.76	91.64	89.95	88.43
17.00	DISCHG	87.35	86.55	85.87	85.24	84.63	84.03	83.43	82.82	82.11	80.76
18.00	DISCHG	78.62	76.40	74.60	73.30	72.20	71.21	70.27	69.38	68.51	67.67
19.00	DISCHG	66.86	66.07	65.33	64.68	63.99	63.30	62.62	61.96	61.19	59.85
20.00	DISCHG	57.76	55.58	53.88	52.62	51.60	50.72	49.94	49.23	48.56	47.93
21.00	DISCHG	47.34	46.79	46.26	45.76	45.28	44.83	44.40	43.97	43.53	43.10
22.00	DISCHG	42.70	42.29	41.89	41.51	41.15	40.80	40.46	40.14	39.84	39.55
23.00	DISCHG	39.27	39.01	38.75	38.51	38.28	38.06	37.85	37.65	37.37	36.46

24.00	DISCHG	34.72	32.26	28.67	24.55	21.18	18.97	17.56	16.54	15.77	15.13
25.00	DISCHG	14.59	14.12	13.71	13.34	13.02	12.72	12.45	12.20	11.96	11.76
26.00	DISCHG	11.57	11.41	11.25	11.11	10.97	10.84	10.71	10.57	10.42	10.28
27.00	DISCHG	10.13	9.97	9.81	9.64	9.47	9.29	9.11	8.93	8.74	8.54
28.00	DISCHG	8.34	8.13	7.93	7.72	7.51	7.29	7.08	6.87	6.67	6.46
29.00	DISCHG	6.26	6.06	5.87	5.68	5.49	5.32	5.14	4.99	4.87	4.74

RUNOFF VOLUME ABOVE BASEFLOW = 2.79 WATERSHED INCHES, 1709.15 CFS-HRS, 141.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 1 OUTPUT HYDROGRAPH= 6

OPERATION ADDHYD CROSS SECTION 70
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1108.12	(NULL)
17.64	178.57	(NULL)
19.30	167.99	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.27 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.41
7.00	DISCHG	11.75	12.07	12.38	12.69	12.99	13.29	13.58	13.86	14.14	14.41
8.00	DISCHG	14.68	15.08	15.82	16.80	17.96	19.27	20.48	21.44	22.17	22.76
9.00	DISCHG	23.27	23.91	24.91	26.16	27.29	28.16	29.02	30.23	31.66	32.92
10.00	DISCHG	33.90	34.86	36.18	37.84	40.10	43.08	46.57	50.95	55.84	61.21
11.00	DISCHG	67.10	73.07	79.45	86.03	93.78	104.34	133.28	211.78	337.32	545.28
12.00	DISCHG	845.70	1086.37	1060.89	850.42	635.93	494.01	410.84	363.63	335.70	316.84
13.00	DISCHG	302.25	290.06	278.62	268.25	258.73	249.35	239.88	229.68	219.15	208.83
14.00	DISCHG	199.31	191.00	183.87	178.18	173.85	169.97	166.66	163.51	160.66	158.75
15.00	DISCHG	158.04	158.23	159.17	160.51	161.38	161.60	161.89	162.51	163.52	164.76
16.00	DISCHG	166.15	167.59	169.06	170.60	172.22	173.90	175.15	175.21	174.67	174.33
17.00	DISCHG	174.49	174.97	175.59	176.29	177.03	177.77	178.49	178.45	177.77	176.30
18.00	DISCHG	174.00	171.61	169.66	168.20	166.94	166.81	167.02	167.29	167.52	167.70
19.00	DISCHG	167.83	167.90	167.93	167.99	167.93	167.80	167.61	167.37	166.96	165.90
20.00	DISCHG	163.99	161.88	160.13	158.74	157.50	156.32	155.15	153.96	152.76	151.55
21.00	DISCHG	150.31	149.07	147.83	146.58	145.33	144.09	142.85	141.60	140.35	139.10
22.00	DISCHG	137.86	136.63	135.40	134.20	133.02	131.87	130.75	129.67	128.62	128.03
23.00	DISCHG	127.61	127.25	126.92	126.60	126.29	125.99	125.70	125.42	125.06	124.05
24.00	DISCHG	122.21	119.62	115.28	109.80	104.83	100.91	97.75	94.95	92.36	89.91
25.00	DISCHG	87.57	85.32	83.15	81.08	79.10	77.11	74.93	72.81	70.82	68.96

26.00	DISCHG	67.24	65.65	64.17	62.79	61.49	60.27	59.11	57.99	56.93	55.90
27.00	DISCHG	54.91	53.95	53.02	52.10	51.21	50.33	49.45	48.54	47.64	46.75
28.00	DISCHG	45.87	45.00	44.14	43.30	42.46	41.63	40.81	40.00	39.20	38.41
29.00	DISCHG	37.63	36.86	36.10	35.37	34.67	33.99	33.33	32.70	32.12	31.53

RUNOFF VOLUME ABOVE BASEFLOW = 2.09 WATERSHED INCHES, 3063.33 CFS-HRS, 253.15 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 80
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

WARNING REACH 80 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1108.12	(NULL)
17.64	178.57	(NULL)
19.30	167.99	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.09 WATERSHED INCHES, 3063.33 CFS-HRS, 253.15 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 80
OUTPUT HYDROGRAPH= 6
AREA= .02 SQ MI INPUT RUNOFF CURVE= 64. TIME OF CONCENTRATION= .12 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0160 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.98	54.99	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.98 WATERSHED INCHES, 38.49 CFS-HRS, 3.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 80
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1129.43	(NULL)
17.64	179.89	(NULL)
19.30	169.06	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.10 WATERSHED INCHES, 3101.82 CFS-HRS, 256.33 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 100
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 90
OUTPUT HYDROGRAPH= 6
AREA= .24 SQ MI INPUT RUNOFF CURVE= 75. TIME OF CONCENTRATION= .62 HOURS

INTERNAL HYDROGRAPH TIME INCREMENT= .0827 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.26	458.49	(RUNOFF)
19.66	15.09	(RUNOFF)
23.66	11.44	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 4.14 WATERSHED INCHES, 641.76 CFS-HRS, 53.03 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 100
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1536.02	(NULL)
16.63	198.86	(NULL)
17.64	198.71	(NULL)
19.30	184.14	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.29 WATERSHED INCHES, 3743.57 CFS-HRS, 309.37 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 110
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 110 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1536.02	(NULL)
16.63	198.86	(NULL)
17.64	198.71	(NULL)
19.30	184.14	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.29 WATERSHED INCHES, 3743.57 CFS-HRS, 309.37 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 120
INPUT HYDROGRAPH= 5 OUTPUT HYDROGRAPH= 7

OPERATION REACH CROSS SECTION 120
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 120 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1536.02	(NULL)
16.63	198.86	(NULL)
17.64	198.71	(NULL)
19.30	184.14	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.29 WATERSHED INCHES, 3743.57 CFS-HRS, 309.37 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 120
OUTPUT HYDROGRAPH= 6
AREA= .19 SQ MI INPUT RUNOFF CURVE= 57. TIME OF CONCENTRATION= .74 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0987 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.38	167.75	(RUNOFF)
19.68	8.82	(RUNOFF)
23.66	6.81	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.31 WATERSHED INCHES, 283.37 CFS-HRS, 23.42 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 120
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	1666.75	(NULL)
15.36	204.04	(NULL)
16.62	211.58	(NULL)
17.63	209.61	(NULL)
19.29	192.96	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.42
7.00	DISCHG	11.77	12.13	12.52	12.93	13.36	13.79	14.23	14.67	15.11	15.54
8.00	DISCHG	15.98	16.55	17.48	18.71	20.15	21.78	23.35	24.68	25.76	26.68
9.00	DISCHG	27.51	28.47	29.83	31.49	33.06	34.37	35.71	37.41	39.40	41.24
10.00	DISCHG	42.78	44.33	46.25	48.59	51.71	55.68	60.49	66.40	73.12	80.68
11.00	DISCHG	88.99	97.85	107.40	117.59	129.65	145.43	189.80	294.64	471.47	782.03
12.00	DISCHG	1225.03	1590.55	1660.52	1478.51	1218.41	989.95	814.78	691.91	606.66	544.13
13.00	DISCHG	497.31	459.22	427.38	400.58	377.62	357.60	338.98	321.07	303.76	287.50
14.00	DISCHG	273.16	260.66	249.91	241.04	233.77	227.32	221.41	215.82	210.69	206.74
15.00	DISCHG	204.35	203.26	203.29	203.92	203.97	203.33	202.59	202.16	202.24	202.78
16.00	DISCHG	203.68	204.79	206.06	207.46	209.00	210.62	211.56	211.14	209.83	208.57
17.00	DISCHG	207.81	207.51	207.57	207.90	208.38	208.96	209.57	209.46	208.62	206.70
18.00	DISCHG	203.79	200.52	197.60	195.26	193.31	192.70	192.58	192.63	192.72	192.81
19.00	DISCHG	192.87	192.90	192.91	192.96	192.90	192.77	192.58	192.35	191.85	190.37

20.00	DISCHG	187.85	184.84	182.12	179.84	177.90	176.23	174.73	173.32	171.97	170.64
21.00	DISCHG	169.34	168.05	166.78	165.51	164.25	163.00	161.76	160.52	159.27	158.03
22.00	DISCHG	156.80	155.57	154.35	153.15	151.98	150.84	149.73	148.66	147.62	147.03
23.00	DISCHG	146.62	146.27	145.95	145.63	145.33	145.04	144.76	144.49	144.02	142.58
24.00	DISCHG	140.06	135.95	129.60	121.65	114.00	107.64	102.49	98.22	94.62	91.49
25.00	DISCHG	88.66	86.07	83.67	81.44	79.34	77.27	75.04	72.88	70.86	68.98
26.00	DISCHG	67.25	65.66	64.17	62.79	61.49	60.27	59.11	57.99	56.93	55.90
27.00	DISCHG	54.91	53.95	53.02	52.10	51.21	50.33	49.45	48.54	47.64	46.75
28.00	DISCHG	45.87	45.00	44.14	43.30	42.46	41.63	40.81	40.00	39.20	38.41
29.00	DISCHG	37.63	36.86	36.10	35.37	34.67	33.99	33.33	32.70	32.12	31.53

RUNOFF VOLUME ABOVE BASEFLOW = 2.29 WATERSHED INCHES, 4026.95 CFS-HRS, 332.79 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV STRUCTURE 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 50
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.56	345.99	10.76

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

9.00	DISCHG	3.00	3.00	3.28	3.75	4.23	4.72	5.24	5.76	6.31	6.89
9.00	ELEV	2.84	2.84	2.85	2.87	2.89	2.91	2.93	2.95	2.97	3.00
10.00	DISCHG	7.43	7.98	8.54	9.13	9.76	10.42	11.14	11.94	12.81	13.78
10.00	ELEV	3.02	3.04	3.07	3.09	3.12	3.15	3.18	3.22	3.26	3.30
11.00	DISCHG	14.86	16.09	18.42	20.94	23.70	26.75	30.52	36.19	46.85	66.23
11.00	ELEV	3.35	3.40	3.46	3.52	3.59	3.67	3.76	3.90	4.14	4.52
12.00	DISCHG	95.67	120.39	177.76	232.58	263.11	286.77	304.08	316.72	326.08	333.09
12.00	ELEV	5.15	6.03	7.04	7.96	8.71	9.28	9.69	9.99	10.21	10.38
13.00	DISCHG	337.45	340.57	342.85	344.43	345.42	345.91	345.96	345.61	344.87	343.78
13.00	ELEV	10.50	10.60	10.67	10.72	10.75	10.76	10.76	10.75	10.73	10.70
14.00	DISCHG	342.37	340.70	338.80	336.73	334.53	331.75	328.73	325.63	322.47	319.27
14.00	ELEV	10.65	10.60	10.55	10.48	10.42	10.35	10.27	10.20	10.13	10.05
15.00	DISCHG	316.07	312.91	309.83	306.84	303.94	301.12	298.36	295.66	293.03	290.48
15.00	ELEV	9.97	9.90	9.82	9.75	9.68	9.62	9.55	9.49	9.42	9.36
16.00	DISCHG	288.03	285.67	283.42	281.26	279.20	277.25	275.39	273.59	271.81	270.05
16.00	ELEV	9.31	9.25	9.20	9.14	9.10	9.05	9.00	8.96	8.92	8.88
17.00	DISCHG	268.31	266.61	264.94	263.34	261.78	260.29	258.85	257.46	256.10	254.74
17.00	ELEV	8.84	8.80	8.76	8.72	8.68	8.64	8.61	8.58	8.55	8.51
18.00	DISCHG	253.35	251.91	250.42	248.95	247.49	246.03	244.60	243.20	241.85	240.53
18.00	ELEV	8.48	8.45	8.41	8.37	8.34	8.30	8.26	8.23	8.20	8.16
19.00	DISCHG	239.26	238.01	236.80	235.63	234.48	233.37	232.28	231.21	230.16	229.12
19.00	ELEV	8.13	8.10	8.07	8.04	8.01	7.98	7.96	7.93	7.90	7.88
20.00	DISCHG	228.04	226.93	225.76	224.56	223.34	222.10	220.85	219.59	218.34	217.08
20.00	ELEV	7.85	7.82	7.79	7.76	7.73	7.70	7.67	7.64	7.61	7.58

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21.00	DISCHG	215.81	214.55	213.29	212.02	210.76	208.90	206.17	203.52	200.96	198.48
21.00	ELEV	7.55	7.51	7.48	7.45	7.42	7.39	7.36	7.33	7.30	7.27
22.00	DISCHG	196.07	193.73	191.45	189.24	187.08	184.99	182.95	180.97	179.04	177.18
22.00	ELEV	7.24	7.22	7.19	7.17	7.14	7.12	7.10	7.07	7.05	7.03
23.00	DISCHG	175.40	173.70	172.08	170.54	169.06	167.66	166.33	165.05	163.83	162.63
23.00	ELEV	7.01	6.99	6.97	6.96	6.94	6.92	6.91	6.89	6.88	6.87
24.00	DISCHG	161.37	160.00	158.40	156.48	154.21	151.66	148.93	146.08	143.16	140.22
24.00	ELEV	6.85	6.84	6.82	6.80	6.77	6.74	6.71	6.68	6.65	6.62
25.00	DISCHG	137.27	134.34	131.44	128.57	125.74	122.96	120.98	120.93	120.88	120.82
25.00	ELEV	6.58	6.55	6.52	6.49	6.45	6.42	6.39	6.36	6.33	6.29
26.00	DISCHG	120.76	120.70	120.63	120.57	120.50	120.44	120.37	120.30	120.23	120.15
26.00	ELEV	6.26	6.22	6.18	6.14	6.10	6.06	6.02	5.98	5.94	5.89
27.00	DISCHG	120.08	120.01	118.47	116.81	115.17	113.55	111.95	110.37	108.80	107.25
27.00	ELEV	5.85	5.80	5.76	5.71	5.67	5.63	5.59	5.54	5.50	5.46
28.00	DISCHG	105.71	104.20	102.70	101.21	99.75	98.29	96.86	95.44	94.03	92.64
28.00	ELEV	5.42	5.38	5.34	5.30	5.26	5.22	5.18	5.15	5.11	5.07
29.00	DISCHG	91.27	89.88	88.10	86.35	84.63	82.95	81.31	79.70	78.12	76.57
29.00	ELEV	5.03	5.00	4.96	4.93	4.89	4.86	4.83	4.79	4.76	4.73

RUNOFF VOLUME ABOVE BASEFLOW = 2.11 WATERSHED INCHES, 3705.16 CFS-HRS, 306.19 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1000.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 130 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 130 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 73.57 CFS, 21.45 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.56	345.99	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.11 WATERSHED INCHES, 3705.16 CFS-HRS, 306.19 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 130
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 74. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	160.37	(RUNOFF)
23.65	2.37	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 4.05 WATERSHED INCHES, 130.79 CFS-HRS, 10.81 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 130
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.05	264.38	(NULL)
13.46	355.81	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.15 WATERSHED INCHES, 3835.95 CFS-HRS, 317.00 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 60
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.63	279.24	6.73

FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.77 SQ.MI.

TIME(HRS)										
11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.05	5.07	9.29
11.00	ELEV	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.46	2.54
12.00	DISCHG	12.67	17.23	21.58	30.32	40.31	50.00	59.95	72.42	84.77	96.86
12.00	ELEV	2.67	2.82	2.97	3.12	3.27	3.43	3.60	3.77	3.93	4.09
13.00	DISCHG	108.58	119.88	130.74	139.64	147.20	154.50	161.53	168.29	174.78	180.03
13.00	ELEV	4.25	4.40	4.54	4.68	4.82	4.95	5.07	5.19	5.31	5.42
14.00	DISCHG	180.21	180.39	180.56	180.74	180.91	186.75	198.92	209.83	219.58	228.26
14.00	ELEV	5.53	5.63	5.74	5.84	5.94	6.04	6.13	6.22	6.29	6.35
15.00	DISCHG	235.98	242.81	248.83	254.11	258.70	262.66	266.05	268.95	271.39	273.42
15.00	ELEV	6.41	6.46	6.51	6.55	6.58	6.61	6.63	6.66	6.67	6.69
16.00	DISCHG	275.09	276.42	277.45	278.23	278.76	279.09	279.23	279.19	278.98	278.64
16.00	ELEV	6.70	6.71	6.72	6.73	6.73	6.73	6.73	6.73	6.73	6.73
17.00	DISCHG	278.18	277.62	276.97	276.24	275.44	274.58	273.67	272.72	271.73	270.70
17.00	ELEV	6.73	6.72	6.72	6.71	6.70	6.70	6.69	6.68	6.68	6.67
18.00	DISCHG	269.61	268.48	267.33	266.14	264.93	263.71	262.46	261.20	259.93	258.66
18.00	ELEV	6.66	6.65	6.64	6.64	6.63	6.62	6.61	6.60	6.59	6.58
19.00	DISCHG	257.38	256.11	254.84	253.57	252.32	251.07	249.84	248.62	247.41	246.19
19.00	ELEV	6.57	6.56	6.55	6.54	6.53	6.52	6.51	6.50	6.50	6.49
20.00	DISCHG	244.97	243.74	242.51	241.29	240.07	238.84	237.62	236.39	235.16	233.93
20.00	ELEV	6.48	6.47	6.46	6.45	6.44	6.43	6.42	6.41	6.40	6.40
21.00	DISCHG	232.70	231.46	230.22	228.98	227.74	226.47	225.12	223.66	222.11	220.47
21.00	ELEV	6.39	6.38	6.37	6.36	6.35	6.34	6.33	6.32	6.31	6.29
22.00	DISCHG	218.78	217.02	215.22	213.39	211.52	209.64	207.74	205.83	203.92	202.01
22.00	ELEV	6.28	6.27	6.26	6.24	6.23	6.21	6.20	6.19	6.17	6.16
23.00	DISCHG	200.10	198.21	196.34	194.50	192.68	190.89	189.13	187.41	185.73	184.07
23.00	ELEV	6.14	6.13	6.11	6.10	6.09	6.07	6.06	6.05	6.04	6.02
24.00	DISCHG	182.42	181.00	180.97	180.95	180.92	180.89	180.86	180.83	180.79	180.75
24.00	ELEV	6.01	6.00	5.98	5.97	5.95	5.94	5.92	5.90	5.87	5.85
25.00	DISCHG	180.70	180.66	180.60	180.55	180.49	180.44	180.37	180.31	180.25	180.19
25.00	ELEV	5.82	5.79	5.76	5.73	5.70	5.66	5.62	5.59	5.55	5.51

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26.00	DISCHG	180.12	180.06	179.94	177.86	175.85	173.92	172.04	170.23	168.48	166.79
26.00	ELEV	5.47	5.44	5.40	5.36	5.33	5.29	5.26	5.23	5.20	5.17
27.00	DISCHG	165.16	163.58	162.03	160.48	158.92	157.36	155.80	154.24	152.67	151.11
27.00	ELEV	5.14	5.11	5.08	5.05	5.03	5.00	4.97	4.94	4.91	4.89
28.00	DISCHG	149.55	147.99	146.43	144.87	143.32	141.77	140.22	138.68	137.14	135.61
28.00	ELEV	4.86	4.83	4.80	4.78	4.75	4.72	4.69	4.67	4.64	4.61
29.00	DISCHG	133.78	131.78	129.79	127.82	125.85	123.90	121.96	120.04	118.13	116.24
29.00	ELEV	4.58	4.56	4.53	4.50	4.48	4.45	4.43	4.40	4.38	4.35

RUNOFF VOLUME ABOVE BASEFLOW = 1.95 WATERSHED INCHES, 3490.43 CFS-HRS, 288.45 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 140
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .37 PEAK TRAVEL TIME = .30 HOURS
0 *** WARNING - REACH 140 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 113.24 CFS, 40.99 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.92	278.79	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.93 WATERSHED INCHES, 3459.06 CFS-HRS, 285.86 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 140
OUTPUT HYDROGRAPH= 6
AREA= .20 SQ MI INPUT RUNOFF CURVE= 69. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	560.07	(RUNOFF)
15.16	19.75	(RUNOFF)
16.45	17.22	(RUNOFF)
17.66	14.43	(RUNOFF)
19.65	11.68	(RUNOFF)
23.65	8.90	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.52 WATERSHED INCHES, 454.78 CFS-HRS, 37.58 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 140
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	565.97	(NULL)
16.54	294.29	(NULL)
16.85	293.16	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.04 WATERSHED INCHES, 3913.84 CFS-HRS, 323.44 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 150
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 149
OUTPUT HYDROGRAPH= 6
AREA= .08 SQ MI INPUT RUNOFF CURVE= 65. TIME OF CONCENTRATION= .42 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0560 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.15	142.32	(RUNOFF)
16.45	6.39	(RUNOFF)
17.67	5.39	(RUNOFF)
19.66	4.37	(RUNOFF)
23.66	3.34	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.10 WATERSHED INCHES, 160.17 CFS-HRS, 13.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 150
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	676.36	(NULL)
14.30	212.74	(NULL)
16.54	300.66	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.07 WATERSHED INCHES, 4074.00 CFS-HRS, 336.68 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 150
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 300.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 150 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 150 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 118.34 CFS, 17.97 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	676.36	(NULL)
14.30	212.74	(NULL)
16.54	300.66	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.07 WATERSHED INCHES, 4074.00 CFS-HRS, 336.68 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 150
OUTPUT HYDROGRAPH= 6
AREA= .01 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= .15 HOURS

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INTERNAL HYDROGRAPH TIME INCREMENT= .0200 HOURS

*** WARNING-MAIN TIME INCREMENT MAY BE TOO LARGE.
COMPUTED PEAK(4.99) AT EXCEEDS MAX. ADJACENT HYDROGRAPH COORDINATE BY 8 %.
+ XSECTION 150

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.05	4.99	(RUNOFF)

TIME(HRS)		FIRST HYDROGRAPH POINT = .00 HOURS				TIME INCREMENT = .10 HOURS				DRAINAGE AREA =	.01 SQ.MI.
11.00	DISCHG	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.05
12.00	DISCHG	4.60	4.46	2.17	1.71	1.28	1.17	1.09	1.02	1.00	.87
13.00	DISCHG	.84	.78	.73	.71	.66	.64	.60	.56	.55	.52
14.00	DISCHG	.52	.50	.48	.47	.44	.43	.41	.38	.38	.38
15.00	DISCHG	.38	.39	.39	.38	.35	.34	.34	.34	.34	.34
16.00	DISCHG	.34	.34	.35	.35	.35	.35	.32	.30	.30	.30
17.00	DISCHG	.30	.30	.30	.30	.30	.30	.30	.30	.30	.26
18.00	DISCHG	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25
19.00	DISCHG	.25	.25	.25	.25	.25	.25	.25	.25	.25	.21
20.00	DISCHG	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19
21.00	DISCHG	.19	.20	.20	.20	.20	.20	.20	.20	.20	.20
22.00	DISCHG	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
23.00	DISCHG	.20	.20	.20	.20	.20	.20	.20	.20	.20	.15
24.00	DISCHG	.14	.08	.01	.00						

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 5.41 CFS-HRS, .45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 150
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	681.33	(NULL)
14.29	213.21	(NULL)
16.54	301.00	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.07 WATERSHED INCHES, 4079.42 CFS-HRS, 337.12 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 180
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 180
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 42. TIME OF CONCENTRATION= .48 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.27	39.64	(RUNOFF)
23.68	2.45	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .99 WATERSHED INCHES, 70.57 CFS-HRS, 5.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 180
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.04	698.30	(NULL)
14.28	219.59	(NULL)
16.54	305.26	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.03 WATERSHED INCHES, 4149.99 CFS-HRS, 342.96 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 180
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .62 PEAK TRAVEL TIME = .20 HOURS
0 *** WARNING - REACH 180 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 118.34 CFS, 17.53 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	618.43	(NULL)
16.69	304.81	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.02 WATERSHED INCHES, 4127.82 CFS-HRS, 341.12 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 180
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 41. TIME OF CONCENTRATION= .48 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.28	34.74	(RUNOFF)
23.69	2.34	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 65.08 CFS-HRS, 5.38 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 180
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	650.40	(NULL)
14.40	224.82	(NULL)
16.68	308.77	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 3.28 SQ.MI.

8.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.06	3.19	3.36	3.56

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9.00	DISCHG	3.76	3.97	4.22	4.52	4.81	5.09	5.38	5.74	6.22	6.68
10.00	DISCHG	7.12	7.54	8.06	8.69	9.35	10.35	11.38	12.69	14.43	16.07
11.00	DISCHG	18.28	20.49	22.93	25.83	28.60	32.85	37.24	61.29	113.91	179.08
12.00	DISCHG	357.82	576.33	648.96	529.24	410.20	314.71	251.70	214.60	193.14	183.74
13.00	DISCHG	178.26	177.33	179.27	182.23	187.45	192.36	197.69	202.63	206.67	211.24
14.00	DISCHG	215.56	219.94	222.89	224.20	224.82	224.27	223.46	223.64	226.17	231.35
15.00	DISCHG	238.29	246.10	254.14	261.97	269.16	274.75	279.58	284.11	288.35	292.25
16.00	DISCHG	295.75	298.83	301.50	303.77	305.67	307.24	308.46	308.75	308.04	307.35
17.00	DISCHG	306.82	306.41	306.04	305.66	305.22	304.70	304.12	303.46	302.72	301.73
18.00	DISCHG	299.65	297.37	295.41	293.74	292.31	291.00	289.75	288.53	287.32	286.10
19.00	DISCHG	284.87	283.64	282.40	281.16	279.92	278.67	277.43	276.19	274.95	273.51
20.00	DISCHG	271.05	268.43	266.18	264.29	262.66	261.21	259.86	258.57	257.31	256.07
21.00	DISCHG	254.85	253.62	252.40	251.18	249.95	248.73	247.50	246.27	245.01	243.70
22.00	DISCHG	242.32	240.87	239.35	237.76	236.11	234.40	232.65	230.86	229.03	227.18
23.00	DISCHG	225.32	223.44	221.55	219.67	217.79	215.92	214.07	212.24	210.43	208.43
24.00	DISCHG	205.40	202.16	197.93	192.57	188.37	185.50	183.68	182.57	181.89	181.47
25.00	DISCHG	181.20	181.03	180.91	180.81	180.74	180.68	180.62	180.56	180.50	180.45
26.00	DISCHG	180.38	180.32	180.26	180.20	180.12	179.58	178.58	177.25	175.72	174.08
27.00	DISCHG	172.39	170.68	168.99	167.33	165.70	164.09	162.51	160.93	159.36	157.79
28.00	DISCHG	156.23	154.66	153.10	151.54	149.98	148.41	146.86	145.30	143.75	142.20
29.00	DISCHG	140.65	139.11	137.50	135.78	133.98	132.12	130.21	128.29	126.36	124.43

RUNOFF VOLUME ABOVE BASEFLOW = 1.99 WATERSHED INCHES, 4192.91 CFS-HRS, 346.50 ACRE-FEET; BASEFLOW = 3.00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID 1740

\+ COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION ENDJOB RECORD ID 1750

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD *CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 89 STORM 1													
STRUCTURE 10	RUNOFF	.84	2	2	.10	.0	7.00	24.00	1.67	---	17.80	96.56	114.9
STRUCTURE 10	RESVOR	.84	2	2	.10	.0	7.00	24.00	1.63	9.50	18.14	96.09	114.4
XSECTION 10	REACH	.84	2	2	.10	.0	7.00	24.00	1.62	---	18.47	98.84	117.7
XSECTION 10	RUNOFF	.20	2	2	.10	.0	7.00	24.00	1.16	---	12.07	150.75	753.8
XSECTION 10	ADDHYD	1.04	2	2	.10	.0	7.00	24.00	1.53	---	12.07	153.76	147.8
STRUCTURE 20	RESVOR	1.04	2	2	.10	.0	7.00	24.00	1.48	9.21	20.08	93.83	90.2
XSECTION 20	REACH	1.04	2	2	.10	.0	7.00	24.00	1.47	---	20.23	93.80	90.2
XSECTION 20	RUNOFF	.28	2	2	.10	.0	7.00	24.00	2.03	---	13.36	102.66	366.6
XSECTION 20	ADDHYD	1.32	2	2	.10	.0	7.00	24.00	1.59	---	13.31	132.15	100.1
STRUCTURE 30	RUNOFF	.37	2	2	.10	.0	7.00	24.00	1.57	---	14.95	60.58	163.7
STRUCTURE 30	RESVOR	.37	2	2	.10	.0	7.00	24.00	1.51	25.91	16.21	48.05	129.9
XSECTION 40	REACH	.37	2	2	.10	.0	7.00	24.00	1.50	---	16.55	47.70	128.9
XSECTION 40	RUNOFF	.06	2	2	.10	.0	7.00	24.00	.84	---	12.72	10.21	170.2
XSECTION 40	ADDHYD	.43	2	2	.10	.0	7.00	24.00	1.41	---	16.54	49.80	115.8
STRUCTURE 40	RESVOR	.43	2	2	.10	.0	7.00	24.00	1.41	10.89	16.60	49.78	115.8
XSECTION 50	REACH	.43	2	2	.10	.0	7.00	24.00	1.40	---	16.72	49.77	115.7
XSECTION 49	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.84	---	13.33	13.76	125.1
XSECTION 50	ADDHYD	.54	2	2	.10	.0	7.00	24.00	1.29	---	16.65	53.98	100.0
XSECTION 50	RUNOFF	.36	2	2	.10	.0	7.00	24.00	5.25	---	12.13	1078.73	2996.5
XSECTION 50	ADDHYD	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	REACH	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	RUNOFF	.05	2	2	.10	.0	7.00	24.00	1.24	---	12.56	16.56	331.2
XSECTION 60	ADDHYD	.95	2	2	.10	.0	7.00	24.00	2.79	---	12.14	1086.21	1143.4
XSECTION 70	ADDHYD	2.27	2	2	.10	.0	7.00	24.00	2.09	---	12.14	1108.12	488.2
XSECTION 80	REACH	2.27	2	2	.10	.0	7.00	24.00	2.09	---	12.14	1108.12	488.2
XSECTION 80	RUNOFF	.02	2	2	.10	.0	7.00	24.00	2.98	---	11.98	54.99	2749.6
XSECTION 80	ADDHYD	2.29	2	2	.10	.0	7.00	24.00	2.10	---	12.13	1129.43	493.2
XSECTION 90	RUNOFF	.24	2	2	.10	.0	7.00	24.00	4.14	---	12.26	458.49	1910.4
XSECTION 100	ADDHYD	2.53	2	2	.10	.0	7.00	24.00	2.29	---	12.16	1536.02	607.1
XSECTION 110	REACH	2.53	2	2	.10	.0	7.00	24.00	2.29	---	12.16	1536.02	607.1
XSECTION 120	REACH	2.53	2	2	.10	.0	7.00	24.00	2.29	---	12.16	1536.02	607.1
XSECTION 120	RUNOFF	.19	2	2	.10	.0	7.00	24.00	2.31	---	12.38	167.75	882.9

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SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 89 STORM 1													
XSECTION 120	ADDHYD	2.72	2	2	.10	.0	7.00	24.00	2.29	---	12.18	1666.75	612.8
STRUCTURE 50	RESVOR	2.72	2	2	.10	.0	7.00	24.00	2.11	10.76	13.56	345.99	127.2
XSECTION 130	REACH	2.72	2	2	.10	.0	7.00	24.00	2.11	---	13.56	345.99	127.2
XSECTION 130	RUNOFF	.05	2	2	.10	.0	7.00	24.00	4.05	---	12.01	160.37	3207.4
XSECTION 130	ADDHYD	2.77	2	2	.10	.0	7.00	24.00	2.15	---	13.46	355.81	128.5
STRUCTURE 60	RESVOR	2.77	2	2	.10	.0	7.00	24.00	1.95	6.73	16.63	279.24	100.8
XSECTION 140	REACH	2.77	2	2	.10	.0	7.00	24.00	1.93	---	16.92	278.79	100.6
XSECTION 140	RUNOFF	.20	2	2	.10	.0	7.00	24.00	3.52	---	12.02	560.07	2800.4
XSECTION 140	ADDHYD	2.97	2	2	.10	.0	7.00	24.00	2.04	---	12.02	565.97	190.6
XSECTION 149	RUNOFF	.08	2	2	.10	.0	7.00	24.00	3.10	---	12.15	142.32	1779.0
XSECTION 150	ADDHYD	3.05	2	2	.10	.0	7.00	24.00	2.07	---	12.03	676.36	221.8
XSECTION 150	REACH	3.05	2	2	.10	.0	7.00	24.00	2.07	---	12.03	676.36	221.8
XSECTION 150	RUNOFF	.01	2	2	.10	.0	7.00	24.00	.84	---	12.05	4.99	499.3
XSECTION 150	ADDHYD	3.06	2	2	.10	.0	7.00	24.00	2.07	---	12.03	681.33	222.7
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.99	---	12.27	39.64	360.4
XSECTION 180	ADDHYD	3.17	2	2	.10	.0	7.00	24.00	2.03	---	12.04	698.30	220.3
XSECTION 180	REACH	3.17	2	2	.10	.0	7.00	24.00	2.02	---	12.18	618.43	195.1
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.92	---	12.28	34.74	315.8
XSECTION 180	ADDHYD	3.28	2	2	.10	.0	7.00	24.00	1.98	---	12.19	650.40	198.3

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

XSEC ID	REACH LENGTH (FT)	HYDROGRAPH INFORMATION: INFLOW PEAK (CFS)	INFLOW TIME (HR)	OUTFLOW PEAK (CFS)	OUTFLOW TIME (HR)	OUTFLOW+ INTERV. PEAK (CFS)	OUTFLOW+ INTERV. TIME (HR)	AREA BASE-FLOW (CFS)	ROUTING PARAMETERS: VOLUME ABOVE BASE (IN)	MAIN TIME INCR (HR)	ITER-ATION #	Q AND A EQUATION COEFF (X)	Q AND A EQUATION POWER (M)	LENGTH FACTOR (K*)	PEAK RATIO O/I (Q*)	S/Q @PEAK (K) (SEC)	ATT-KIN COEFF (C)	TRAVEL TIME STOR-AGE (HR)	TRAVEL TIME KINE-MATIC (HR)
ALTERNATE 89 STORM 1																			
10	1750	99	18.1	99	18.5			3	1.63*	.10	1	1.20	1.10	.021	.997	888	.34	.40	.25
						149	12.1												
20	2900	94	20.1	94	20.2			3	1.48*	.10	1	.280	1.94	.000	1.000	319	.72?	.10	.09
						132	13.3												
40	1300	48	16.2	48	16.5			0	1.51	.10	1	.880	1.10	.027	.992	934	.32	.30	.26
						50	16.5												
50	1700	50	16.6	50	16.7			0	1.41	.10	1	1.60	1.45	.002	1.000	252	.83?	.10	.07
						54	16.6												
60	1400	1064	12.1	1064	12.1			0	2.87	.10	0	.440	1.94	.000	1.000	38	1.00?	.00	.00
						1069	12.1												
80	700	1086	12.1	1086	12.1			3	2.09	.10	0	.300	1.94	.000	1.000	23	1.00?	.00	.00
						1115	12.1												
110	500	1520	12.2	1520	12.2			3	2.29	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						---	---												
120	500	1520	12.2	1520	12.2			3	2.29	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						1661	12.2												

+130	1000	346	13.6	346	13.6			3	2.11#	.10	0		1.94	.000	1.000	56	1.00?	.00	.00
+						356	13.5												
												.210							
+140	2500	279	16.6	279	16.9			3	1.95#	.10	1		1.48	.004	.998	780	.37	.30	.22
+						562	12.0												
												.210							
+150	300	661	12.0	661	12.0			3	2.07#	.10	0		1.48	.000	1.000	71	1.00?	.00	.00
+						666	12.0												
												.210							
+180	1700	678	12.0	616	12.2			3	2.03#	.10	1		1.48	.005	.908	398	.62	.20	.11
+						649	12.2												

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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 STRUCTURE 60	2.77	
ALTERNATE 89		279.24
0 STRUCTURE 50	2.72	
ALTERNATE 89		345.99
0 STRUCTURE 40	.43	
ALTERNATE 89		49.78
0 STRUCTURE 30	.37	
ALTERNATE 89		48.05
0 STRUCTURE 20	1.04	
ALTERNATE 89		93.83
0 STRUCTURE 10	.84	
ALTERNATE 89		96.09
0 XSECTION 10	1.04	
ALTERNATE 89		153.76
0 XSECTION 20	1.32	
ALTERNATE 89		132.15
0 XSECTION 40	.43	
ALTERNATE 89		49.80
0 XSECTION 49	.11	
ALTERNATE 89		13.76
0 XSECTION 50	.90	
ALTERNATE 89		1079.95
0 XSECTION 60	.95	
ALTERNATE 89		1086.21
0 XSECTION 70	2.27	
ALTERNATE 89		1108.12
0 XSECTION 80	2.29	
ALTERNATE 89		1129.43

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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 XSECTION 90	.24	
+		
ALTERNATE 89		458.49
0 XSECTION 100	2.53	
+		
ALTERNATE 89		1536.02
0 XSECTION 110	2.53	
+		
ALTERNATE 89		1536.02
0 XSECTION 120	2.72	
+		
ALTERNATE 89		1666.75
0 XSECTION 130	2.77	
+		
ALTERNATE 89		355.81
0 XSECTION 140	2.97	
+		
ALTERNATE 89		565.97
0 XSECTION 149	.08	
+		
ALTERNATE 89		142.32
0 XSECTION 150	3.06	
+		
ALTERNATE 89		681.33
0 XSECTION 180	3.28	
+		
ALTERNATE 89		650.40

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

JOB TR-20                    FULLPRINT PASS=001  SUMMARY                    10
TITLE 005 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM    20
TITLE     ALT  90                                                  30
 3 STRUCT      10                                                            40
 8                    7.00        0.00        4.33                           50
 8                    7.4         2.5         5.01                           60
 8                    7.6         5.0         5.36                           70
 8                    7.8         10.0        5.70                           80
 8                    8.2         22.0        6.38                           90
 8                    8.6         52.0        7.07                          100
 8                    9.0         62.0        7.75                          110
 8                    9.5         96.0        8.61                          120
 8                    10.0        126.0       9.47                          130
 8                    11.0        198.0       11.18                         140
 8                    12.0        280.0       12.89                         150
 8                    13.00       360.0       14.79                         160
 8                    14.00       440.0       16.68                         170
 8                    15.00       500.0       18.58                         180
 8                    15.1        600.00      18.60                         190
 9 ENDTBL                                                                   200
 3 STRUCT      20                                                           210
 8                    4.5         0.00        6.80                          220
 8                    4.9         1.5         7.88                          230
 8                    5.1         3.7         8.42                          240
 8                    5.5         11.0        9.51                          250
 8                    5.7         15.0        10.13                         260
 8                    6.1         25.0        11.13                         270
 8                    6.5         40.0        12.21                         280
 8                    7.1         60.0        13.84                         290
 8                    7.9         78.0        16.01                         300
 8                    8.5         79.0        17.63                         310
 8                    9.5         100.0       20.34                         320
 8                    10.5        126.0       23.06                         330
 8                    11.5        150.0       25.76                         340
 8                    11.6        300.0       26.04                         350
 9 ENDTBL                                                                   360
 3 STRUCT      30                                                           370
 8                    21.0        0.00        0.10                          380
 8                    21.4        0.6         0.61                          390
 8                    21.6        1.5         0.86                          400
 8                    21.8        2.5         1.12                          410
 8                    22.2        5.2         1.62                          420
 8                    22.6        8.2         2.13                          430
 8                    23.0        11.0        2.64                          440
 8                    23.5        20.0        3.27                          450
 8                    24.0        27.0        3.91                          460
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**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
8                    25.0      39.0      5.18                    470
8                    26.0      49.0      6.45                    480
8                    27.0      57.0      7.72                    490
8                    27.1      200.00    7.74                    500
9 ENDTBL                                                         510
3 STRUCT      40                                                 520
8                    9.0       0.0       0.38                    530
8                    9.4       2.2       0.47                    540
8                    9.6       5.0       0.52                    550
8                    10.0      14.0      0.62                    560
8                    10.2      21.0      0.67                    570
8                    10.6      36.0      0.77                    580
8                    11.0      55.0      0.86                    590
8                    11.6      82.0      1.01                    600
8                    12.4      120.0     1.21                    610
8                    13.0      121.0     1.35                    620
8                    14.0      122.0     1.60                    630
8                    15.0      126.0     1.84                    640
8                    16.0      150.00    2.08                    650
8                    16.1      300.0     2.11                    660
9 ENDTBL                                                         670
3 STRUCT      50                                                 680
8                    2.4       0.00      22.00                   690
8                    2.8       2.0       26.86                   700
8                    3.0       7.0       29.29                   710
8                    3.4       16.0      34.16                   720
8                    3.6       24.0      36.59                   730
8                    4.0       40.0      41.46                   740
8                    4.4       60.0      46.32                   750
8                    5.0       90.0      53.62                   760
8                    5.8       120.0     63.35                   770
8                    6.4       121.0     70.65                   780
8                    7.4       210.0     82.81                   790
8                    8.4       250.00    94.98                   800
8                    10.4      334.0     119.31                  810
8                    12.4      400.0     143.63                  820
8                    12.5      800.0     143.70                  830
9 ENDTBL                                                         840
3 STRUCT      60                                                 850
8                    2.0       0.0       22.20                   860
8                    2.4       3.0       27.41                   870
8                    2.6       10.5      30.02                   880
8                    3.0       22.5      35.24                   890
8                    3.2       36.0      37.85                   900
8                    3.6       60.0      43.06                   910
8                    4.0       90.0      48.28                   920
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**********************80-80 LIST OF INPUT DATA (CONTINUED)**********************

8                    4.6        135.0      56.11                        930
8                    5.4        180.0      66.55                        940
8                    6.0        181.0      74.38                        950
8                    7.0        315.0      87.42                        960
8                    8.0        375.0      100.47                       970
8                    8.1        700.0      100.50                       980
9 ENDTBL                                                                990
6 RUNOFF 1    10     6 0.84     51.        7.50       1                1000
6 RESVOR 2    10 6   7 7.0                            1                1010
6 REACH  3 010   7   5 1750.    1.2        1.10       1                1020
6 RUNOFF 1 010       6 0.20     42.        0.19       1                1030
6 ADDHYD 4 010   5 6 7                                1 1              1040
6 SAVMOV 5 010   7   6                                                 1050
6 RESVOR 2    20 6   7 4.5                            1                1060
6 REACH  3 020   7   5 2900.    0.28       1.94       1                1070
6 RUNOFF 1 020       6 0.28     53.        1.02       1                1080
6 ADDHYD 4 020   5 6 7                                1 1              1090
6 SAVMOV 5 020   7   1                                                 1100
6 RUNOFF 1    30     6 0.37     49.        3.90       1                1110
6 RESVOR 2    30 6   7 21.0                           1                1120
6 REACH  3 040   7   5 1300.    0.88       1.10       1                1130
6 RUNOFF 1 040       6 0.06     40.        1.00       1                1140
6 ADDHYD 4 040   5 6 7                                1                1150
6 SAVMOV 5 040   7   6                                                 1160
6 RESVOR 2    40 6   7 9.0                            1                1170
6 REACH  3 050   7   5 1700.    1.6        1.45       1                1180
6 RUNOFF 1 049       6 0.11     40.        1.67       1                1190
6 ADDHYD 4 050   5 6 7                                1                1200
6 SAVMOV 5 050   7   5                                                 1210
6 RUNOFF 1 050       6 0.36     85.        0.42       1                1220
6 ADDHYD 4 050   5 6 7                                1                1230
6 REACH  3 060   7   5 1400.    0.44       1.94       1                1240
6 RUNOFF 1 060       6 0.05     45.        0.90       1                1250
6 ADDHYD 4 060   5 6 7                                1 1              1260
6 SAVMOV 5 070   7   5                                                 1270
6 SAVMOV 5 070   1   6                                                 1280
6 ADDHYD 4 070   5 6 7                                1 1              1290
6 REACH  3 080   7   5 700.     0.30       1.94       1                1300
6 RUNOFF 1 080       6 0.02     64.        0.12       1                1310
6 ADDHYD 4 080   5 6 7                                1                1320
6 SAVMOV 5 100   7   5                                                 1330
6 RUNOFF 1 090       6 0.24     73.        0.62       1                1340
6 ADDHYD 4 100   5 6 7                                1                1350
6 REACH  3 110   7   5 500.     0.30       1.94       1                1360
6 SAVMOV 5 120   5   7                                                 1370
6 REACH  3 120   7   5 500.     0.30       1.94       1                1380
```

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

  6 RUNOFF 1 120       6 0.19       56.       0.74       1              1390
  6 ADDHYD 4 120   5 6 7                                  1 1            1400
  6 SAVMOV 5    50 7   6                                                 1410
  6 RESVOR 2    50 6   7 2.4                              1 1 1          1420
  6 REACH  3 130   7   5 1000.      0.30      1.94       1              1430
  6 RUNOFF 1 130       6 0.05       74.       0.19       1              1440
  6 ADDHYD 4 130   5 6 7                                  1              1450
  6 SAVMOV 5 130   7   6                                                 1460
  6 RESVOR 2    60 6   7 2.0                              1 1 1          1470
  6 REACH  3 140   7   5 2500.      0.21      1.48       1              1480
  6 RUNOFF 1 140       6 0.20       66.       1.15       1              1490
  6 ADDHYD 4 140   5 6 7                                  1              1500
  6 SAVMOV 5 150   7   5                                                 1510
  6 RUNOFF 1 149       6 0.08       50.       0.42       1              1520
  6 ADDHYD 4 150   5 6 7                                                 1530
  6 REACH  3 150   7   5 300.       0.21      1.48       1              1540
  6 RUNOFF 1 150       6 0.01       40.       0.15       1              1550
  6 ADDHYD 4 150   5 6 7                                  1              1560
  6 SAVMOV 5 180   7   5                                                 1570
  6 RUNOFF 1 180       6 0.28       50.       0.61       1              1580
  6 ADDHYD 4 180   5 6 7                                  1              1590
  6 REACH  3 180   7   5 1700.0     0.21      1.48       1              1600
  6 RUNOFF 1 190       6 0.11       41.       0.48       1              1610
  6 ADDHYD 4 180   5 6 7                                  1 1   1   1    1620
    ENDATA                                                              1630
  7 ALTER  3                                                            1640
  6 RUNOFF 1 010       6 0.20       44.0      0.19       1              1650
  6 RUNOFF 1 020       6 0.28       54.0      2.00       1              1660
  6 RUNOFF 1 090       6 0.24       75.0      0.62       1              1665
  6 RUNOFF 1 120       6 0.19       58.0      0.74       1              1668
  6 RUNOFF 1 140       6 0.20       70.0      0.19       1              1670
  6 RUNOFF 1 149       6 0.08       65.0      0.42       1              1680
  6 RUNOFF 1 180       6 0.11       42.0      0.48       1              1690
  7 LIST                                                                1700
  7 BASFLO 5             3.0                                            1710
  7 INCREM 6             0.1                                            1720
  7 COMPUT 7    10 180   0.0          7.0       1.0        2 2  90  01   1730
    ENDCMP 1                                                            1740
    ENDJOB 2                                                            1750
0**********END OF 80-80 LIST**********
```


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OCHANGES TO STANDARD CONTROL LIST FOLLOW

EXECUTIVE CONTROL OPERATION ALTER RECORD ID 1640

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 10 RECORD ID 1650
OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2000 44.0000 .1900
OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 20 RECORD ID 1660
OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2800 54.0000 2.0000
OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 90 RECORD ID 1665
OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2400 75.0000 .6200
OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 120 RECORD ID 1668
OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .1900 58.0000 .7400
OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 140 RECORD ID 1670
OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2000 70.0000 .1900
OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 149 RECORD ID 1680
OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .0800 65.0000 .4200
OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 180 RECORD ID 1690
OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .1100 42.0000 .4800
OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

EXECUTIVE CONTROL OPERATION LIST RECORD ID 1700

LISTING OF CURRENT DATA

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	10			
8		7.00	.00	4.33
8		7.40	2.50	5.01
8		7.60	5.00	5.36
8		7.80	10.00	5.70
8		8.20	22.00	6.38
8		8.60	52.00	7.07
8		9.00	62.00	7.75
8		9.50	96.00	8.61
8		10.00	126.00	9.47
8		11.00	198.00	11.18
8		12.00	280.00	12.89
8		13.00	360.00	14.79
8		14.00	440.00	16.68
8		15.00	500.00	18.58
8		15.10	600.00	18.60
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	20			
8		4.50	.00	6.80
8		4.90	1.50	7.88
8		5.10	3.70	8.42
8		5.50	11.00	9.51
8		5.70	15.00	10.13
8		6.10	25.00	11.13
8		6.50	40.00	12.21
8		7.10	60.00	13.84
8		7.90	78.00	16.01
8		8.50	79.00	17.63
8		9.50	100.00	20.34
8		10.50	126.00	23.06
8		11.50	150.00	25.76
8		11.60	300.00	26.04
9 ENDTBL				

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	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	30			
8		21.00	.00	.10
8		21.40	.60	.61
8		21.60	1.50	.86
8		21.80	2.50	1.12
8		22.20	5.20	1.62
8		22.60	8.20	2.13
8		23.00	11.00	2.64
8		23.50	20.00	3.27
8		24.00	27.00	3.91
8		25.00	39.00	5.18
8		26.00	49.00	6.45
8		27.00	57.00	7.72
8		27.10	200.00	7.74
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	40			
8		9.00	.00	.38
8		9.40	2.20	.47
8		9.60	5.00	.52
8		10.00	14.00	.62
8		10.20	21.00	.67
8		10.60	36.00	.77
8		11.00	55.00	.86
8		11.60	82.00	1.01
8		12.40	120.00	1.21
8		13.00	121.00	1.35
8		14.00	122.00	1.60
8		15.00	126.00	1.84
8		16.00	150.00	2.08
8		16.10	300.00	2.11
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	50			
8		2.40	.00	22.00
8		2.80	2.00	26.86
8		3.00	7.00	29.29
8		3.40	16.00	34.16
8		3.60	24.00	36.59
8		4.00	40.00	41.46
8		4.40	60.00	46.32
8		5.00	90.00	53.62

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8                    5.80      120.00      63.35
8                    6.40      121.00      70.65
8                    7.40      210.00      82.81
8                    8.40      250.00      94.98
8                   10.40      334.00     119.31
8                   12.40      400.00     143.63
8                   12.50      800.00     143.70
9 ENDTBL

          STRUCT NO.     ELEVATION   DISCHARGE     STORAGE
3 STRUCT      60

8                    2.00         .00      22.20
8                    2.40        3.00      27.41
8                    2.60       10.50      30.02
8                    3.00       22.50      35.24
8                    3.20       36.00      37.85
8                    3.60       60.00      43.06
8                    4.00       90.00      48.28
8                    4.60      135.00      56.11
8                    5.40      180.00      66.55
8                    6.00      181.00      74.38
8                    7.00      315.00      87.42
8                    8.00      375.00     100.47
8                    8.10      700.00     100.50
9 ENDTBL

                TIME INCREMENT
4 DIMHYD                .0200

8              .0000     .0300     .1000     .1900     .3100
8              .4700     .6600     .8200     .9300     .9900
8             1.0000     .9900     .9300     .8600     .7800
8              .6800     .5600     .4600     .3900     .3300
8              .2800     .2410     .2070     .1740     .1470
8              .1260     .1070     .0910     .0770     .0660
8              .0550     .0470     .0400     .0340     .0290
8              .0250     .0210     .0180     .0150     .0130
8              .0110     .0090     .0080     .0070     .0060
8              .0050     .0040     .0030     .0020     .0010
8              .0000     .0000     .0000     .0000     .0000
9 ENDTBL

  COMPUTED PEAK RATE FACTOR =  484.00
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     TABLE NO.      TIME INCREMENT
5 RAINFL 1                .5000

8              .0000     .0080     .0170     .0260     .0350
8              .0450     .0550     .0650     .0760     .0870
8              .0990     .1120     .1260     .1400     .1560
8              .1740     .1940     .2190     .2540     .3030
8              .5150     .5830     .6240     .6550     .6820
8              .7060     .7280     .7480     .7660     .7830
8              .7990     .8150     .8300     .8440     .8570
8              .8700     .8820     .8930     .9050     .9160
8              .9260     .9360     .9460     .9560     .9650
8              .9740     .9830     .9920    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 2                .2500

8              .0000     .0020     .0050     .0080     .0110
8              .0140     .0170     .0200     .0230     .0260
8              .0290     .0320     .0350     .0380     .0410
8              .0440     .0480     .0520     .0560     .0600
8              .0640     .0680     .0720     .0760     .0800
8              .0850     .0900     .0950     .1000     .1050
8              .1100     .1150     .1200     .1260     .1330
8              .1400     .1470     .1550     .1630     .1720
8              .1810     .1910     .2030     .2180     .2360
8              .2570     .2830     .3870     .6630     .7070
8              .7350     .7580     .7760     .7910     .8040
8              .8150     .8250     .8340     .8420     .8490
8              .8560     .8630     .8690     .8750     .8810
8              .8870     .8930     .8980     .9030     .9080
8              .9130     .9180     .9220     .9260     .9300
8              .9340     .9380     .9420     .9460     .9500
8              .9530     .9560     .9590     .9620     .9650
8              .9680     .9710     .9740     .9770     .9800
8              .9830     .9860     .9890     .9920     .9950
8              .9980    1.0000    1.0000    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 3                .5000

8              .0000     .0100     .0220     .0360     .0510
8              .0670     .0830     .0990     .1160     .1350
```

```
8              .1560     .1790     .2040     .2330     .2680
8              .3100     .4250     .4800     .5200     .5500
8              .5770     .6010     .6230     .6440     .6640
8              .6830     .7010     .7190     .7360     .7530
8              .7690     .7850     .8000     .8150     .8300
8              .8440     .8580     .8710     .8840     .8960
8              .9080     .9200     .9320     .9440     .9560
8              .9670     .9780     .9890    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 4                .5000

8              .0000     .0040     .0080     .0120     .0160
8              .0200     .0250     .0300     .0350     .0400
8              .0450     .0500     .0550     .0600     .0650
8              .0700     .0750     .0810     .0870     .0930
8              .0990     .1050     .1110     .1180     .1250
8              .1320     .1400     .1480     .1560     .1650
8              .1740     .1840     .1950     .2070     .2200
8              .2360     .2550     .2770     .3030     .4090
8              .5150     .5490     .5830     .6050     .6240
8              .6400     .6550     .6690     .6820     .6940
8              .7050     .7160     .7270     .7380     .7480
8              .7580     .7670     .7760     .7840     .7920
8              .8000     .8080     .8160     .8230     .8300
8              .8370     .8440     .8510     .8580     .8640
8              .8700     .8760     .8820     .8880     .8940
8              .9000     .9060     .9110     .9160     .9210
8              .9260     .9310     .9360     .9410     .9460
8              .9510     .9560     .9610     .9660     .9710
8              .9760     .9800     .9840     .9880     .9920
8              .9960    1.0000    1.0000    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 5                .5000

8              .0000     .0020     .0050     .0080     .0110
8              .0140     .0170     .0200     .0230     .0260
8              .0290     .0320     .0350     .0380     .0410
8              .0440     .0470     .0510     .0550     .0590
8              .0630     .0670     .0710     .0750     .0790
8              .0840     .0890     .0940     .0990     .1040
8              .1090     .1140     .1200     .1260     .1330
8              .1400     .1470     .1540     .1620     .1710
8              .1810     .1920     .2040     .2170     .2330
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8              .2520     .2770     .3180     .6380     .6980
8              .7290     .7520     .7700     .7850     .7980
8              .8090     .8190     .8290     .8380     .8460
8              .8540     .8610     .8680     .8740     .8800
8              .8860     .8920     .8970     .9020     .9070
8              .9120     .9170     .9210     .9250     .9290
8              .9330     .9370     .9410     .9450     .9490
8              .9530     .9570     .9600     .9630     .9660
8              .9690     .9720     .9750     .9780     .9810
8              .9840     .9870     .9900     .9930     .9960
8              .9980    1.0000    1.0000    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 6                .0200

8              .0000     .0080     .0162     .0246     .0333
8              .0425     .0524     .0630     .0743     .0863
8              .0990     .1124     .1265     .1420     .1595
8              .1800     .2050     .2550     .3450     .4370
8              .5300     .6030     .6330     .6600     .6840
8              .7050     .7240     .7420     .7590     .7750
8              .7900     .8043     .8180     .8312     .8439
8              .8561     .8678     .8790     .8898     .9002
8              .9103     .9201     .9297     .9391     .9483
8              .9573     .9661     .9747     .9832     .9916
8             1.0000    1.0000    1.0000    1.0000    1.0000
9 ENDTBL
```

0 STANDARD CONTROL INSTRUCTIONS

6	RUNOFF	1	10		6	.8400	51.0000	7.50001	0	0	1	0 1
6	RESVOR	2	10	6	7	7.0000			1	0	0	1 0 1
6	REACH	3	10	7	5	1750.0000	1.2000	1.10001	0	0	1	0 1
6	RUNOFF	1	10		6	.2000	44.0000	.19001	0	0	1	0 1
6	ADDHYD	4	10	5	6 7				1	1	0	1 0 1
6	SAVMOV	5	10	7	6							
6	RESVOR	2	20	6	7	4.5000			1	0	0	1 0 1
6	REACH	3	20	7	5	2900.0000	.2800	1.94001	0	0	1	0 1
6	RUNOFF	1	20		6	.2800	54.0000	2.00001	0	0	1	0 1
6	ADDHYD	4	20	5	6 7				1	1	0	1 0 1
6	SAVMOV	5	20	7	1							
6	RUNOFF	1	30		6	.3700	49.0000	3.90001	0	0	1	0 1
6	RESVOR	2	30	6	7	21.0000			1	0	0	1 0 1
6	REACH	3	40	7	5	1300.0000	.8800	1.10001	0	0	1	0 1
6	RUNOFF	1	40		6	.0600	40.0000	1.00001	0	0	1	0 1
6	ADDHYD	4	40	5	6 7				1	0	0	1 0 1
6	SAVMOV	5	40	7	6							
6	RESVOR	2	40	6	7	9.0000			1	0	0	1 0 1
6	REACH	3	50	7	5	1700.0000	1.6000	1.45001	0	0	1	0 1
6	RUNOFF	1	49		6	.1100	40.0000	1.67001	0	0	1	0 1
6	ADDHYD	4	50	5	6 7				1	0	0	1 0 1
6	SAVMOV	5	50	7	5							
6	RUNOFF	1	50		6	.3600	85.0000	.42001	0	0	1	0 1
6	ADDHYD	4	50	5	6 7				1	0	0	1 0 1
6	REACH	3	60	7	5	1400.0000	.4400	1.94001	0	0	1	0 1
6	RUNOFF	1	60		6	.0500	45.0000	.90001	0	0	1	0 1
6	ADDHYD	4	60	5	6 7				1	1	0	1 0 1
6	SAVMOV	5	70	7	5							
6	SAVMOV	5	70	1	6							
6	ADDHYD	4	70	5	6 7				1	1	0	1 0 1
6	REACH	3	80	7	5	700.0000	.3000	1.94001	0	0	1	0 1
6	RUNOFF	1	80		6	.0200	64.0000	.12001	0	0	1	0 1
6	ADDHYD	4	80	5	6 7				1	0	0	1 0 1
6	SAVMOV	5	100	7	5							
6	RUNOFF	1	90		6	.2400	75.0000	.62001	0	0	1	0 1
6	ADDHYD	4	100	5	6 7				1	0	0	1 0 1
6	REACH	3	110	7	5	500.0000	.3000	1.94001	0	0	1	0 1
6	SAVMOV	5	120	5	7							
6	REACH	3	120	7	5	500.0000	.3000	1.94001	0	0	1	0 1
6	RUNOFF	1	120		6	.1900	58.0000	.74001	0	0	1	0 1
6	ADDHYD	4	120	5	6 7				1	1	0	1 0 1
6	SAVMOV	5	50	7	6							
6	RESVOR	2	50	6	7	2.4000			1	1	1	1 0 1
6	REACH	3	130	7	5	1000.0000	.3000	1.94001	0	0	1	0 1
6	RUNOFF	1	130		6	.0500	74.0000	.19001	0	0	1	0 1

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6 ADDHYD 4 130   5 6 7                          1 0 0 1 0 1
6 SAVMOV 5 130   7   6
6 RESVOR 2    60 6   7      2.0000                1 1 1 1 0 1
6 REACH  3 140   7   5   2500.0000      .2100  1.48001 0 0 1 0 1
6 RUNOFF 1 140       6      .2000    70.0000   .19001 0 0 1 0 1
6 ADDHYD 4 140   5 6 7                          1 0 0 1 0 1
6 SAVMOV 5 150   7   5
6 RUNOFF 1 149       6      .0800    65.0000   .42001 0 0 1 0 1
6 ADDHYD 4 150   5 6 7                          1 0 0 1 0 1
6 REACH  3 150   7   5    300.0000      .2100  1.48001 0 0 1 0 1
6 RUNOFF 1 150       6      .0100    40.0000   .15001 0 0 1 0 1
6 ADDHYD 4 150   5 6 7                          1 0 0 1 0 1
6 SAVMOV 5 180   7   5
6 RUNOFF 1 180       6      .1100    42.0000   .48001 0 0 1 0 1
6 ADDHYD 4 180   5 6 7                          1 0 0 1 0 1
6 REACH  3 180   7   5   1700.0000      .2100  1.48001 0 0 1 0 1
6 RUNOFF 1 180       6      .1100    41.0000   .48001 0 0 1 0 1
6 ADDHYD 4 180   5 6 7                          1 1 0 1 0 1
  ENDATA

END OF LISTING
```

```
EXECUTIVE CONTROL OPERATION BASFLO                                                    RECORD ID    1710

+                                  NEW BASEFLOW =   3.00 CFS

EXECUTIVE CONTROL OPERATION INCREM                                                    RECORD ID    1720

+                                  MAIN TIME INCREMENT =   .10 HOURS

EXECUTIVE CONTROL OPERATION COMPUT                                                    RECORD ID    1730

+                                  FROM STRUCTURE 10
+                                                  TO XSECTION 180
        STARTING TIME =   .00    RAIN DEPTH =  7.00    RAIN DURATION=  1.00    RAIN TABLE NO.= 2    ANT. MOIST. COND= 2
        ALTERNATE NO.=90         STORM NO.= 1    MAIN TIME INCREMENT =   .10 HOURS

OPERATION RUNOFF   STRUCTURE 10
          OUTPUT HYDROGRAPH=  6
          AREA=    .84 SQ MI   INPUT RUNOFF CURVE= 51.    TIME OF CONCENTRATION=  7.50 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .1000 HOURS

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             17.80                          96.56                        (RUNOFF)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.67 WATERSHED INCHES,    906.24 CFS-HRS,    74.89 ACRE-FEET;   BASEFLOW =    .00 CFS

OPERATION RESVOR   STRUCTURE 10
          INPUT HYDROGRAPH= 6     OUTPUT HYDROGRAPH= 7
          SURFACE ELEVATION=    7.00

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             18.14                          96.09                         9.50

  RUNOFF VOLUME ABOVE BASEFLOW =  1.63 WATERSHED INCHES,    884.09 CFS-HRS,    73.06 ACRE-FEET;   BASEFLOW =    .00 CFS

OPERATION REACH    CROSS SECTION  10
          INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5
          LENGTH =   1750.00 FEET      INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA,  X=  1.20,   M= 1.10
0         MODIFIED ATT-KIN ROUTING COEFFICIENT =  .34      PEAK TRAVEL TIME =    .40 HOURS
0    *** WARNING - REACH  10 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT      18.15 CFS,  18.88 % OF PEAK.

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             18.47                          98.84                        (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.62 WATERSHED INCHES,    878.37 CFS-HRS,    72.59 ACRE-FEET;   BASEFLOW =   3.00 CFS

OPERATION RUNOFF   CROSS SECTION  10
          OUTPUT HYDROGRAPH=  6
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AREA= .20 SQ MI INPUT RUNOFF CURVE= 44. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.07	150.75	(RUNOFF)
15.19	9.64	(RUNOFF)
16.46	8.67	(RUNOFF)
17.67	7.42	(RUNOFF)
19.66	6.17	(RUNOFF)
23.65	4.88	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.16 WATERSHED INCHES, 149.25 CFS-HRS, 12.33 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 10
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.07	153.76	(NULL)
18.48	104.86	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.04 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	7.21	53.07
12.00	DISCHG	135.64	149.19	80.95	56.13	42.16	35.91	33.02	30.56	29.72	27.02
13.00	DISCHG	25.58	24.44	22.95	22.58	21.54	21.15	20.62	19.89	20.05	20.05
14.00	DISCHG	20.75	21.68	22.70	24.32	25.72	27.54	29.37	31.56	35.09	39.12
15.00	DISCHG	43.24	47.29	51.18	54.82	57.52	59.78	61.92	63.90	65.78	67.63
16.00	DISCHG	69.47	71.98	75.00	78.16	81.27	84.22	86.55	88.36	90.42	92.43
17.00	DISCHG	94.31	96.02	97.59	99.01	100.31	101.48	102.52	103.43	104.09	103.97
18.00	DISCHG	104.02	104.29	104.55	104.73	104.84	104.86	104.81	104.67	104.47	104.19
19.00	DISCHG	103.84	103.42	102.93	102.36	101.72	101.00	100.20	99.32	98.25	96.45
20.00	DISCHG	94.87	93.59	92.37	91.15	89.91	88.67	87.43	86.21	85.01	83.83
21.00	DISCHG	82.67	81.54	80.43	79.34	78.27	77.22	76.20	75.19	74.21	73.24
22.00	DISCHG	72.30	71.42	70.72	70.11	69.56	69.03	68.51	67.98	67.44	66.89
23.00	DISCHG	66.33	65.76	65.17	64.57	63.96	63.34	62.72	62.09	61.34	59.73
24.00	DISCHG	58.17	55.97	53.27	51.71	50.62	49.72	48.91	48.18	47.50	46.85
25.00	DISCHG	46.24	45.66	45.10	44.55	44.02	43.50	42.98	42.48	41.98	41.49
26.00	DISCHG	41.00	40.51	40.03	39.55	39.07	38.60	38.12	37.63	37.15	36.66
27.00	DISCHG	36.16	35.66	35.15	34.64	34.13	33.61	33.09	32.57	32.04	31.51
28.00	DISCHG	30.97	30.44	29.90	29.36	28.82	28.28	27.74	27.21	26.67	26.13
29.00	DISCHG	25.68	25.30	24.94	24.59	24.24	23.89	23.52	23.14	22.75	22.35

RUNOFF VOLUME ABOVE BASEFLOW = 1.53 WATERSHED INCHES, 1027.62 CFS-HRS, 84.92 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 10
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 20
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 4.50

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.65	31.90	6.28
20.08	93.83	9.21

RUNOFF VOLUME ABOVE BASEFLOW = 1.48 WATERSHED INCHES, 990.65 CFS-HRS, 81.87 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2900.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .28, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .72 PEAK TRAVEL TIME = .10 HOURS

*** WARNING REACH 20 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 20 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 23.17 CFS, 25.51 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.82	31.79	(NULL)
20.23	93.80	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.47 WATERSHED INCHES, 987.44 CFS-HRS, 81.60 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 20
OUTPUT HYDROGRAPH= 6
AREA= .28 SQ MI INPUT RUNOFF CURVE= 54. TIME OF CONCENTRATION= 2.00 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1026 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.36	102.66	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.03 WATERSHED INCHES, 366.74 CFS-HRS, 30.31 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 20
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.31	132.15	(NULL)
20.11	106.29	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.32 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.01	3.02	3.06	3.18	3.47	4.17	5.78
12.00	DISCHG	9.45	17.69	29.98	44.84	59.25	72.98	86.02	98.12	108.61	117.14
13.00	DISCHG	123.73	128.34	131.09	132.14	131.53	129.60	126.63	122.67	117.70	111.97
14.00	DISCHG	106.02	100.46	95.56	91.20	87.22	83.67	80.54	77.77	75.29	73.28
15.00	DISCHG	71.78	70.81	70.32	70.22	70.47	70.99	71.70	72.40	73.11	73.90
16.00	DISCHG	74.80	75.76	76.81	78.00	79.36	80.88	82.38	83.57	84.72	85.90
17.00	DISCHG	87.14	88.42	89.73	91.05	92.39	93.73	95.06	95.63	95.66	95.54
18.00	DISCHG	95.38	95.22	95.06	94.90	94.74	95.60	96.75	97.91	99.01	100.03

19.00	DISCHG	100.97	101.82	102.60	103.31	103.94	104.50	104.99	105.42	105.77	106.05
20.00	DISCHG	106.23	106.29	106.25	106.12	105.90	105.59	105.20	104.74	104.21	103.61
21.00	DISCHG	102.97	102.29	101.57	100.82	100.05	99.26	98.45	97.64	96.82	95.99
22.00	DISCHG	95.17	94.34	93.51	92.69	91.87	91.07	90.29	89.53	88.78	88.48
23.00	DISCHG	88.34	88.25	88.16	88.09	88.01	87.93	87.85	87.77	87.68	87.59
24.00	DISCHG	87.49	87.36	86.62	85.25	83.64	81.94	80.19	78.40	76.60	74.78
25.00	DISCHG	72.98	71.20	69.44	67.74	66.08	64.38	62.48	60.62	58.85	57.20
26.00	DISCHG	55.67	54.24	52.92	51.68	50.52	49.43	48.40	47.43	46.50	45.62
27.00	DISCHG	44.78	43.98	43.21	42.46	41.74	41.04	40.34	39.62	38.90	38.21
28.00	DISCHG	37.53	36.87	36.22	35.58	34.96	34.34	33.73	33.13	32.54	31.95
29.00	DISCHG	31.37	30.80	30.24	29.70	29.17	28.67	28.18	27.71	27.25	26.80

RUNOFF VOLUME ABOVE BASEFLOW = 1.59 WATERSHED INCHES, 1354.18 CFS-HRS, 111.91 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 1

OPERATION RUNOFF STRUCTURE 30
OUTPUT HYDROGRAPH= 6
AREA= .37 SQ MI INPUT RUNOFF CURVE= 49. TIME OF CONCENTRATION= 3.90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
14.95	60.58	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.57 WATERSHED INCHES, 375.61 CFS-HRS, 31.04 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 30
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 21.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.21	48.05	25.91

RUNOFF VOLUME ABOVE BASEFLOW = 1.51 WATERSHED INCHES, 360.28 CFS-HRS, 29.77 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1300.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .88, M= 1.10
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .32 PEAK TRAVEL TIME = .30 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.55	47.70	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.50 WATERSHED INCHES, 358.97 CFS-HRS, 29.67 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 40

OUTPUT HYDROGRAPH= 6
AREA= .06 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= 1.00 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0952 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.72	10.21	(RUNOFF)
23.76	1.21	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 32.57 CFS-HRS, 2.69 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 40
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.73	10.35	(NULL)
16.54	49.80	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 391.54 CFS-HRS, 32.36 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 40
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 9.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.90	9.83	9.81
16.60	49.78	10.89

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 389.94 CFS-HRS, 32.22 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= 1.60, M= 1.45
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .83 PEAK TRAVEL TIME = .10 HOURS

WARNING REACH 50 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.02	9.78	(NULL)
16.72	49.77	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.40 WATERSHED INCHES, 389.36 CFS-HRS, 32.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 49
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= 1.67 HOURS

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INTERNAL HYDROGRAPH TIME INCREMENT= .1012 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)	
13.33	13.76	(RUNOFF)	
23.80	2.20	(RUNOFF)	
*	*		* FIRST POINT OF FLAT PEAK

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 59.78 CFS-HRS, 4.94 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 50
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.16	22.91	(NULL)
16.65	53.98	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.29 WATERSHED INCHES, 449.14 CFS-HRS, 37.12 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 50
OUTPUT HYDROGRAPH= 6
AREA= .36 SQ MI INPUT RUNOFF CURVE= 85. TIME OF CONCENTRATION= .42 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0560 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1078.73	(RUNOFF)
19.65	24.75	(RUNOFF)
23.65	18.64	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 5.25 WATERSHED INCHES, 1220.14 CFS-HRS, 100.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 50
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1079.95	(NULL)
16.49	90.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.87 WATERSHED INCHES, 1669.27 CFS-HRS, 137.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 60
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1400.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .44, M= 1.94
MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

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WARNING REACH 60 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1079.95	(NULL)
16.49	90.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.87 WATERSHED INCHES, 1669.27 CFS-HRS, 137.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 60
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 45. TIME OF CONCENTRATION= .90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.56	16.56	(RUNOFF)
23.72	1.26	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.24 WATERSHED INCHES, 39.88 CFS-HRS, 3.30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 60
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1086.21	(NULL)
16.49	93.02	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .95 SQ.MI.

4.00	DISCHG	.00	.00	.00	.02	.10	.26	.49	.75	1.04	1.33
5.00	DISCHG	1.62	1.91	2.20	2.49	2.77	3.04	3.32	3.58	3.84	4.10
6.00	DISCHG	4.36	4.67	5.18	5.80	6.40	6.89	7.32	7.71	8.07	8.41
7.00	DISCHG	8.75	9.07	9.38	9.69	9.99	10.29	10.58	10.86	11.14	11.41
8.00	DISCHG	11.68	12.08	12.82	13.80	14.96	16.27	17.48	18.44	19.17	19.76
9.00	DISCHG	20.27	20.91	21.91	23.16	24.29	25.16	26.02	27.23	28.66	29.92
10.00	DISCHG	30.90	31.86	33.18	34.84	37.10	40.08	43.57	47.95	52.84	58.21
11.00	DISCHG	64.10	70.07	76.45	83.02	90.75	101.27	130.10	208.30	333.15	539.50
12.00	DISCHG	836.25	1068.68	1030.91	805.58	576.69	421.03	324.82	265.51	227.09	199.69
13.00	DISCHG	178.52	161.72	147.53	136.12	127.20	119.75	113.25	107.02	101.45	96.86
14.00	DISCHG	93.29	90.54	88.31	86.99	86.63	86.30	86.13	85.74	85.37	85.47
15.00	DISCHG	86.26	87.42	88.85	90.29	90.92	90.62	90.19	90.11	90.41	90.86
16.00	DISCHG	91.35	91.83	92.25	92.60	92.86	93.02	92.76	91.64	89.95	88.43
17.00	DISCHG	87.35	86.55	85.87	85.24	84.63	84.03	83.43	82.82	82.11	80.76
18.00	DISCHG	78.62	76.40	74.60	73.30	72.20	71.21	70.27	69.38	68.51	67.67
19.00	DISCHG	66.86	66.07	65.33	64.68	63.99	63.30	62.62	61.96	61.19	59.85
20.00	DISCHG	57.76	55.58	53.88	52.62	51.60	50.72	49.94	49.23	48.56	47.93
21.00	DISCHG	47.34	46.79	46.26	45.76	45.28	44.83	44.40	43.97	43.53	43.10
22.00	DISCHG	42.70	42.29	41.89	41.51	41.15	40.80	40.46	40.14	39.84	39.55
23.00	DISCHG	39.27	39.01	38.75	38.51	38.28	38.06	37.85	37.65	37.37	36.46

24.00	DISCHG	34.72	32.26	28.67	24.55	21.18	18.97	17.56	16.54	15.77	15.13
25.00	DISCHG	14.59	14.12	13.71	13.34	13.02	12.72	12.45	12.20	11.96	11.76
26.00	DISCHG	11.57	11.41	11.25	11.11	10.97	10.84	10.71	10.57	10.42	10.28
27.00	DISCHG	10.13	9.97	9.81	9.64	9.47	9.29	9.11	8.93	8.74	8.54
28.00	DISCHG	8.34	8.13	7.93	7.72	7.51	7.29	7.08	6.87	6.67	6.46
29.00	DISCHG	6.26	6.06	5.87	5.68	5.49	5.32	5.14	4.99	4.87	4.74

RUNOFF VOLUME ABOVE BASEFLOW = 2.79 WATERSHED INCHES, 1709.15 CFS-HRS, 141.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 1 OUTPUT HYDROGRAPH= 6

OPERATION ADDHYD CROSS SECTION 70
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1108.12	(NULL)
17.64	178.57	(NULL)
19.30	167.99	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.27 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.41
7.00	DISCHG	11.75	12.07	12.38	12.69	12.99	13.29	13.58	13.86	14.14	14.41
8.00	DISCHG	14.68	15.08	15.82	16.80	17.96	19.27	20.48	21.44	22.17	22.76
9.00	DISCHG	23.27	23.91	24.91	26.16	27.29	28.16	29.02	30.23	31.66	32.92
10.00	DISCHG	33.90	34.86	36.18	37.84	40.10	43.08	46.57	50.95	55.84	61.21
11.00	DISCHG	67.10	73.07	79.45	86.03	93.78	104.34	133.28	211.78	337.32	545.28
12.00	DISCHG	845.70	1086.37	1060.89	850.42	635.93	494.01	410.84	363.63	335.70	316.84
13.00	DISCHG	302.25	290.06	278.62	268.25	258.73	249.35	239.88	229.68	219.15	208.83
14.00	DISCHG	199.31	191.00	183.87	178.18	173.85	169.97	166.66	163.51	160.66	158.75
15.00	DISCHG	158.04	158.23	159.17	160.51	161.38	161.60	161.89	162.51	163.52	164.76
16.00	DISCHG	166.15	167.59	169.06	170.60	172.22	173.90	175.15	175.21	174.67	174.33
17.00	DISCHG	174.49	174.97	175.59	176.29	177.03	177.77	178.49	178.45	177.77	176.30
18.00	DISCHG	174.00	171.61	169.66	168.20	166.94	166.81	167.02	167.29	167.52	167.70
19.00	DISCHG	167.83	167.90	167.93	167.99	167.93	167.80	167.61	167.37	166.96	165.90
20.00	DISCHG	163.99	161.88	160.13	158.74	157.50	156.32	155.15	153.96	152.76	151.55
21.00	DISCHG	150.31	149.07	147.83	146.58	145.33	144.09	142.85	141.60	140.35	139.10
22.00	DISCHG	137.86	136.63	135.40	134.20	133.02	131.87	130.75	129.67	128.62	128.03
23.00	DISCHG	127.61	127.25	126.92	126.60	126.29	125.99	125.70	125.42	125.08	124.05
24.00	DISCHG	122.21	119.62	115.28	109.80	104.83	100.91	97.75	94.95	92.36	89.91
25.00	DISCHG	87.57	85.32	83.15	81.08	79.10	77.11	74.93	72.81	70.82	68.96

26.00	DISCHG	67.24	65.65	64.17	62.79	61.49	60.27	59.11	57.99	56.93	55.90
27.00	DISCHG	54.91	53.95	53.02	52.10	51.21	50.33	49.45	48.54	47.64	46.75
28.00	DISCHG	45.87	45.00	44.14	43.30	42.46	41.63	40.81	40.00	39.20	38.41
29.00	DISCHG	37.63	36.86	36.10	35.37	34.67	33.99	33.33	32.70	32.12	31.53

RUNOFF VOLUME ABOVE BASEFLOW = 2.09 WATERSHED INCHES, 3063.33 CFS-HRS, 253.15 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 80
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 80 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1108.12	(NULL)
17.64	178.57	(NULL)
19.30	167.99	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.09 WATERSHED INCHES, 3063.33 CFS-HRS, 253.15 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 80
OUTPUT HYDROGRAPH= 6
AREA= .02 SQ MI INPUT RUNOFF CURVE= 64. TIME OF CONCENTRATION= .12 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0160 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.98	54.99	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.98 WATERSHED INCHES, 38.49 CFS-HRS, 3.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 80
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1129.43	(NULL)
17.64	179.89	(NULL)
19.30	169.06	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.10 WATERSHED INCHES, 3101.82 CFS-HRS, 256.33 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVHOV CROSS SECTION 100
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 90
OUTPUT HYDROGRAPH= 6
AREA= .24 SQ MI INPUT RUNOFF CURVE= 75. TIME OF CONCENTRATION= .62 HOURS

INTERNAL HYDROGRAPH TIME INCREMENT= .0827 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.26	458.49	(RUNOFF)
19.66	15.09	(RUNOFF)
23.66	11.44	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 4.14 WATERSHED INCHES, 641.76 CFS-HRS, 53.03 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 100
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1536.02	(NULL)
16.63	198.86	(NULL)
17.64	198.71	(NULL)
19.30	184.14	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.29 WATERSHED INCHES, 3743.57 CFS-HRS, 309.37 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 110
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 110 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1536.02	(NULL)
16.63	198.86	(NULL)
17.64	198.71	(NULL)
19.30	184.14	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.29 WATERSHED INCHES, 3743.57 CFS-HRS, 309.37 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 120
INPUT HYDROGRAPH= 5 OUTPUT HYDROGRAPH= 7

OPERATION REACH CROSS SECTION 120
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 120 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1536.02	(NULL)
16.63	198.86	(NULL)
17.64	198.71	(NULL)
19.30	184.14	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.29 WATERSHED INCHES, 3743.57 CFS-HRS, 309.37 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 120
OUTPUT HYDROGRAPH= 6
AREA= .19 SQ MI INPUT RUNOFF CURVE= 58. TIME OF CONCENTRATION= .74 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0987 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.37	176.25	(RUNOFF)
19.67	9.03	(RUNOFF)
23.66	6.96	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.41 WATERSHED INCHES, 295.13 CFS-HRS, 24.39 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 120
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	1674.69	(NULL)
15.36	204.43	(NULL)
16.62	211.90	(NULL)
17.63	209.88	(NULL)
19.29	193.16	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.42
7.00	DISCHG	11.77	12.13	12.52	12.93	13.36	13.79	14.23	14.67	15.11	15.54
8.00	DISCHG	15.98	16.55	17.48	18.71	20.15	21.78	23.35	24.68	25.76	26.68
9.00	DISCHG	27.51	28.47	29.83	31.49	33.06	34.37	35.71	37.41	39.40	41.24
10.00	DISCHG	42.78	44.33	46.25	48.59	51.71	55.68	60.49	66.42	73.17	80.80
11.00	DISCHG	89.23	98.24	107.95	118.29	130.50	146.43	191.02	296.23	473.75	785.42
12.00	DISCHG	1230.01	1597.32	1668.70	1487.21	1226.75	997.31	820.89	696.82	610.62	547.37
13.00	DISCHG	500.00	461.48	429.30	402.24	379.07	358.88	340.12	322.10	304.70	288.35
14.00	DISCHG	273.94	261.38	250.58	241.67	234.36	227.88	221.95	216.33	211.17	207.20
15.00	DISCHG	204.79	203.68	203.70	204.33	204.37	203.72	202.96	202.52	202.59	203.12
16.00	DISCHG	204.02	205.13	206.39	207.79	209.33	210.94	211.88	211.45	210.15	208.87
17.00	DISCHG	208.11	207.80	207.86	208.18	208.66	209.23	209.84	209.73	208.89	206.96
18.00	DISCHG	204.05	200.77	197.84	195.49	193.54	192.93	192.80	192.85	192.94	193.02
19.00	DISCHG	193.08	193.11	193.12	193.16	193.10	192.98	192.79	192.56	192.05	190.57

20.00	DISCHG	188.05	185.04	182.31	180.02	178.07	176.40	174.90	173.48	172.13	170.80
21.00	DISCHG	169.50	168.21	166.93	165.66	164.40	163.16	161.91	160.67	159.42	158.18
22.00	DISCHG	156.95	155.72	154.50	153.31	152.13	150.99	149.89	148.81	147.77	147.18
23.00	DISCHG	146.77	146.42	146.10	145.78	145.48	145.19	144.91	144.64	144.17	142.73
24.00	DISCHG	140.21	136.09	129.73	121.75	114.09	107.71	102.54	98.26	94.65	91.50
25.00	DISCHG	88.67	86.08	83.68	81.44	79.34	77.27	75.04	72.89	70.86	68.98
26.00	DISCHG	67.25	65.66	64.17	62.79	61.49	60.27	59.11	57.99	56.93	55.90
27.00	DISCHG	54.91	53.95	53.02	52.10	51.21	50.33	49.45	48.54	47.64	46.75
28.00	DISCHG	45.87	45.00	44.14	43.30	42.46	41.63	40.81	40.00	39.20	38.41
29.00	DISCHG	37.63	36.86	36.10	35.37	34.67	33.99	33.33	32.70	32.12	31.53

RUNOFF VOLUME ABOVE BASEFLOW = 2.30 WATERSHED INCHES, 4038.70 CFS-HRS, 333.76 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV STRUCTURE 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 50
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.56	347.44	10.81

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

9.00	DISCHG	3.00	3.00	3.28	3.75	4.23	4.72	5.24	5.76	6.31	6.89
9.00	ELEV	2.84	2.84	2.85	2.87	2.89	2.91	2.93	2.95	2.97	3.00
10.00	DISCHG	7.43	7.98	8.54	9.13	9.76	10.42	11.14	11.94	12.81	13.79
10.00	ELEV	3.02	3.04	3.07	3.09	3.12	3.15	3.18	3.22	3.26	3.30
11.00	DISCHG	14.87	16.11	18.44	20.99	23.76	26.83	30.64	36.34	47.09	66.56
11.00	ELEV	3.35	3.40	3.46	3.52	3.59	3.67	3.77	3.91	4.14	4.53
12.00	DISCHG	96.02	120.41	179.33	233.48	264.27	288.12	305.59	318.34	327.77	334.66
12.00	ELEV	5.16	6.05	7.06	7.99	8.74	9.31	9.72	10.03	10.25	10.42
13.00	DISCHG	338.85	342.00	344.30	345.88	346.87	347.36	347.41	347.05	346.30	345.20
13.00	ELEV	10.55	10.64	10.71	10.76	10.79	10.80	10.81	10.80	10.77	10.74
14.00	DISCHG	343.78	342.09	340.18	338.09	335.87	333.43	330.38	327.25	324.06	320.82
14.00	ELEV	10.70	10.65	10.59	10.52	10.46	10.39	10.31	10.24	10.16	10.09
15.00	DISCHG	317.59	314.40	311.29	308.27	305.35	302.50	299.71	296.98	294.32	291.75
15.00	ELEV	10.01	9.93	9.86	9.79	9.72	9.65	9.58	9.52	9.46	9.39
16.00	DISCHG	289.27	286.89	284.61	282.43	280.35	278.37	276.49	274.66	272.87	271.09
16.00	ELEV	9.34	9.28	9.22	9.17	9.12	9.08	9.03	8.99	8.94	8.90
17.00	DISCHG	269.33	267.60	265.92	264.29	262.72	261.20	259.75	258.34	256.96	255.59
17.00	ELEV	8.86	8.82	8.78	8.74	8.70	8.67	8.63	8.60	8.57	8.53
18.00	DISCHG	254.18	252.72	251.22	249.70	248.22	246.75	245.30	243.90	242.53	241.20
18.00	ELEV	8.50	8.46	8.43	8.39	8.36	8.32	8.28	8.25	8.21	8.18
19.00	DISCHG	239.91	238.66	237.43	236.25	235.09	233.97	232.86	231.79	230.73	229.67
19.00	ELEV	8.15	8.12	8.09	8.06	8.03	8.00	7.97	7.94	7.92	7.89
20.00	DISCHG	228.59	227.46	226.29	225.08	223.85	222.60	221.34	220.08	218.81	217.54
20.00	ELEV	7.86	7.84	7.81	7.78	7.75	7.71	7.68	7.65	7.62	7.59

21.00	DISCHG	216.27	215.00	213.73	212.46	211.19	209.82	207.04	204.36	201.75	199.23
21.00	ELEV	7.56	7.53	7.49	7.46	7.43	7.40	7.37	7.34	7.31	7.28
22.00	DISCHG	196.79	194.41	192.10	189.86	187.68	185.56	183.50	181.49	179.54	177.66
22.00	ELEV	7.25	7.22	7.20	7.17	7.15	7.13	7.10	7.08	7.06	7.04
23.00	DISCHG	175.86	174.14	172.50	170.95	169.46	168.04	166.69	165.41	164.17	162.96
23.00	ELEV	7.02	7.00	6.98	6.96	6.94	6.93	6.91	6.90	6.89	6.87
24.00	DISCHG	161.69	160.31	158.70	156.77	154.49	151.93	149.18	146.32	143.39	140.43
24.00	ELEV	6.86	6.84	6.82	6.80	6.78	6.75	6.72	6.68	6.65	6.62
25.00	DISCHG	137.48	134.54	131.62	128.74	125.90	123.11	120.99	120.93	120.88	120.82
25.00	ELEV	6.59	6.55	6.52	6.49	6.46	6.42	6.39	6.36	6.33	6.29
26.00	DISCHG	120.76	120.70	120.64	120.57	120.51	120.44	120.37	120.30	120.23	120.16
26.00	ELEV	6.26	6.22	6.18	6.14	6.10	6.06	6.02	5.98	5.94	5.89
27.00	DISCHG	120.08	120.01	118.53	116.87	115.23	113.61	112.00	110.42	108.85	107.30
27.00	ELEV	5.85	5.81	5.76	5.72	5.67	5.63	5.59	5.54	5.50	5.46
28.00	DISCHG	105.76	104.25	102.74	101.26	99.79	98.34	96.90	95.48	94.07	92.68
28.00	ELEV	5.42	5.38	5.34	5.30	5.26	5.22	5.18	5.15	5.11	5.07
29.00	DISCHG	91.31	89.93	88.15	86.40	84.68	83.00	81.35	79.74	78.16	76.61
29.00	ELEV	5.03	5.00	4.96	4.93	4.89	4.86	4.83	4.79	4.76	4.73

RUNOFF VOLUME ABOVE BASEFLOW = 2.12 WATERSHED INCHES, 3716.78 CFS-HRS, 307.15 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1000.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 130 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 130 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 73.61 CFS, 21.37 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.56	347.44	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.12 WATERSHED INCHES, 3716.78 CFS-HRS, 307.15 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 130
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 74. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	160.37	(RUNOFF)
23.65	2.37	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 4.05 WATERSHED INCHES, 130.79 CFS-HRS, 10.81 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 130
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.05	264.61	(NULL)
13.45	357.27	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.15 WATERSHED INCHES, 3847.57 CFS-HRS, 317.96 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 60
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.61	280.68	6.74

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.77 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.06	5.09	8.31
11.00	ELEV	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.46	2.54
12.00	DISCHG	12.70	17.26	21.62	30.46	40.47	50.20	60.24	72.78	85.19	97.34
12.00	ELEV	2.67	2.83	2.97	3.12	3.27	3.44	3.60	3.77	3.94	4.10
13.00	DISCHG	109.11	120.45	131.35	140.12	147.72	155.05	162.12	168.91	175.42	180.05
13.00	ELEV	4.25	4.41	4.55	4.69	4.83	4.96	5.08	5.20	5.32	5.43
14.00	DISCHG	180.23	180.41	180.59	180.76	180.93	188.98	201.12	211.98	221.68	230.32
14.00	ELEV	5.54	5.65	5.75	5.86	5.96	6.06	6.15	6.23	6.30	6.37
15.00	DISCHG	238.00	244.78	250.76	256.00	260.55	264.48	267.84	270.70	273.10	275.10
15.00	ELEV	6.43	6.48	6.52	6.56	6.59	6.62	6.65	6.67	6.69	6.70
16.00	DISCHG	276.73	278.03	279.03	279.77	280.27	280.57	280.68	280.61	280.37	280.00
16.00	ELEV	6.71	6.72	6.73	6.74	6.74	6.74	6.74	6.74	6.74	6.74
17.00	DISCHG	279.52	278.93	278.25	277.50	276.67	275.78	274.85	273.88	272.87	271.81
17.00	ELEV	6.74	6.73	6.73	6.72	6.71	6.71	6.70	6.69	6.69	6.68
18.00	DISCHG	270.70	269.55	268.37	267.16	265.93	264.68	263.41	262.13	260.85	259.55
18.00	ELEV	6.67	6.66	6.65	6.64	6.63	6.62	6.62	6.61	6.60	6.59
19.00	DISCHG	258.26	256.96	255.68	254.39	253.12	251.86	250.61	249.37	248.15	246.92
19.00	ELEV	6.58	6.57	6.56	6.55	6.54	6.53	6.52	6.51	6.50	6.49
20.00	DISCHG	245.68	244.44	243.20	241.96	240.73	239.49	238.25	237.02	235.77	234.53
20.00	ELEV	6.48	6.47	6.46	6.45	6.45	6.44	6.43	6.42	6.41	6.40
21.00	DISCHG	233.29	232.04	230.79	229.54	228.29	227.03	225.71	224.27	222.73	221.11
21.00	ELEV	6.39	6.38	6.37	6.36	6.35	6.34	6.33	6.32	6.31	6.30
22.00	DISCHG	219.42	217.67	215.87	214.04	212.17	210.28	208.37	206.46	204.53	202.61
22.00	ELEV	6.29	6.27	6.26	6.25	6.23	6.22	6.20	6.19	6.18	6.16
23.00	DISCHG	200.70	198.80	196.91	195.05	193.22	191.42	189.65	187.92	186.23	184.55
23.00	ELEV	6.15	6.13	6.12	6.10	6.09	6.08	6.06	6.05	6.04	6.03
24.00	DISCHG	182.89	181.22	180.98	180.96	180.93	180.90	180.87	180.83	180.80	180.75
24.00	ELEV	6.01	6.00	5.99	5.97	5.96	5.94	5.92	5.90	5.88	5.85
25.00	DISCHG	180.71	180.66	180.61	180.56	180.50	180.44	180.38	180.32	180.26	180.20
25.00	ELEV	5.83	5.80	5.77	5.74	5.70	5.67	5.63	5.59	5.55	5.52

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26.00	DISCHG	180.13	180.07	180.01	178.16	176.14	174.19	172.31	170.49	168.73	167.03
26.00	ELEV	5.48	5.44	5.40	5.37	5.33	5.30	5.26	5.23	5.20	5.17
27.00	DISCHG	165.39	163.80	162.25	160.69	159.12	157.56	155.99	154.43	152.86	151.29
27.00	ELEV	5.14	5.11	5.08	5.06	5.03	5.00	4.97	4.95	4.92	4.89
28.00	DISCHG	149.72	148.16	146.60	145.03	143.48	141.92	140.37	138.83	137.28	135.75
28.00	ELEV	4.86	4.83	4.81	4.78	4.75	4.72	4.70	4.67	4.64	4.61
29.00	DISCHG	133.96	131.95	129.96	127.98	126.01	124.05	122.11	120.18	118.27	116.37
29.00	ELEV	4.59	4.56	4.53	4.51	4.48	4.45	4.43	4.40	4.38	4.35

RUNOFF VOLUME ABOVE BASEFLOW = 1.96 WATERSHED INCHES, 3501.82 CFS-HRS, 289.39 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 140
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .38 PEAK TRAVEL TIME = .30 HOURS
0 *** WARNING - REACH 140 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 113.37 CFS, 40.83 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.90	280.23	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.94 WATERSHED INCHES, 3470.43 CFS-HRS, 286.80 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 140
OUTPUT HYDROGRAPH= 6
AREA= .20 SQ MI INPUT RUNOFF CURVE= 70. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	576.56	(RUNOFF)
15.16	20.07	(RUNOFF)
16.45	17.49	(RUNOFF)
17.65	14.64	(RUNOFF)
19.65	11.84	(RUNOFF)
23.65	9.02	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.63 WATERSHED INCHES, 468.30 CFS-HRS, 38.70 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 140
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	582.45	(NULL)
16.54	296.10	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.05 WATERSHED INCHES, 3938.73 CFS-HRS, 325.50 ACRE-FEET; BASEFLOW = 3.00 CFS

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OPERATION SAVMOV CROSS SECTION 150
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 149
OUTPUT HYDROGRAPH= 6
AREA= .08 SQ MI INPUT RUNOFF CURVE= 65. TIME OF CONCENTRATION= .42 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0560 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.15	142.32	(RUNOFF)
16.45	6.39	(RUNOFF)
17.67	5.39	(RUNOFF)
19.66	4.37	(RUNOFF)
23.66	3.34	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.10 WATERSHED INCHES, 160.17 CFS-HRS, 13.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 150
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	692.42	(NULL)
14.29	213.29	(NULL)
16.54	302.47	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.08 WATERSHED INCHES, 4098.89 CFS-HRS, 338.73 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 150
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 300.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 150 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 150 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 118.47 CFS, 17.55 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	692.42	(NULL)
14.29	213.29	(NULL)
16.54	302.47	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.08 WATERSHED INCHES, 4098.89 CFS-HRS, 338.73 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 150
OUTPUT HYDROGRAPH= 6
AREA= .01 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= .15 HOURS

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INTERNAL HYDROGRAPH TIME INCREMENT= .0200 HOURS

WARNING-MAIN TIME INCREMENT MAY BE TOO LARGE.
COMPUTED PEAK(4.99) AT EXCEEDS MAX. ADJACENT HYDROGRAPH COORDINATE BY 8 %.
+ XSECTION 150

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.05	4.99	(RUNOFF)

FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .01 SQ.MI.

TIME(HRS)											
11.00	DISCHG	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.05
12.00	DISCHG	4.60	4.46	2.17	1.71	1.28	1.17	1.09	1.02	1.00	.87
13.00	DISCHG	.84	.78	.73	.71	.66	.64	.60	.56	.55	.52
14.00	DISCHG	.52	.50	.48	.47	.44	.43	.41	.38	.38	.38
15.00	DISCHG	.38	.39	.39	.38	.35	.34	.34	.34	.34	.34
16.00	DISCHG	.34	.34	.35	.35	.35	.35	.32	.30	.30	.30
17.00	DISCHG	.30	.30	.30	.30	.30	.30	.30	.30	.30	.26
18.00	DISCHG	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25
19.00	DISCHG	.25	.25	.25	.25	.25	.25	.25	.25	.25	.21
20.00	DISCHG	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19
21.00	DISCHG	.19	.20	.20	.20	.20	.20	.20	.20	.20	.20
22.00	DISCHG	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
23.00	DISCHG	.20	.20	.20	.20	.20	.20	.20	.20	.20	.15
24.00	DISCHG	.14	.08	.01	.00						

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 5.41 CFS-HRS, .45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 150
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	697.38	(NULL)
14.29	213.76	(NULL)
16.53	302.82	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.08 WATERSHED INCHES, 4104.31 CFS-HRS, 339.18 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 180
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 180
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 42. TIME OF CONCENTRATION= .48 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.27	39.64	(RUNOFF)
23.68	2.45	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .99 WATERSHED INCHES, 70.57 CFS-HRS, 5.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 180
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.04	714.15	(NULL)
14.27	220.16	(NULL)
16.53	307.08	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.04 WATERSHED INCHES, 4174.88 CFS-HRS, 345.01 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 180
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .63 PEAK TRAVEL TIME = .20 HOURS
0 *** WARNING - REACH 180 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 118.47 CFS, 17.13 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	633.33	(NULL)
14.41	219.68	(NULL)
16.68	306.64	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.03 WATERSHED INCHES, 4152.71 CFS-HRS, 343.18 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 180
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 41. TIME OF CONCENTRATION= .48 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.28	34.74	(RUNOFF)
23.69	2.34	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 65.08 CFS-HRS, 5.38 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 180
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	665.17	(NULL)
14.40	225.43	(NULL)
16.67	310.60	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 3.28 SQ.MI.

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8.00	DISCHG	3.00	3.00	3.00	3.01	3.07	3.21	3.40	3.61	3.83	4.04
9.00	DISCHG	4.26	4.47	4.73	5.07	5.38	5.67	5.96	6.35	6.86	7.34
10.00	DISCHG	7.79	8.22	8.76	9.43	10.11	11.17	12.27	13.65	15.49	17.21
11.00	DISCHG	19.54	21.84	24.37	27.39	30.24	34.66	39.19	64.54	119.62	186.81
12.00	DISCHG	370.65	592.75	663.22	537.42	414.66	317.25	253.43	216.05	194.50	185.13
13.00	DISCHG	179.62	178.68	180.63	183.57	188.81	193.68	198.96	203.87	207.87	212.43
14.00	DISCHG	216.74	220.96	223.75	224.92	225.43	224.80	223.94	224.60	227.62	233.18
15.00	DISCHG	240.37	248.34	256.46	264.32	271.52	277.08	281.85	286.34	290.54	294.40
16.00	DISCHG	297.86	300.90	303.52	305.76	307.62	309.14	310.32	310.57	309.81	309.07
17.00	DISCHG	308.50	308.06	307.66	307.24	306.77	306.23	305.62	304.93	304.17	303.14
18.00	DISCHG	301.02	298.70	296.71	295.02	293.56	292.22	290.96	289.71	288.48	287.24
19.00	DISCHG	285.99	284.74	283.48	282.21	280.95	279.69	278.43	277.17	275.91	274.46
20.00	DISCHG	271.95	269.30	267.03	265.12	263.49	262.02	260.66	259.36	258.09	256.83
21.00	DISCHG	255.59	254.35	253.12	251.89	250.65	249.42	248.18	246.94	245.68	244.38
22.00	DISCHG	243.02	241.58	240.07	238.49	236.85	235.14	233.39	231.60	229.77	227.92
23.00	DISCHG	226.05	224.16	222.27	220.37	218.48	216.61	214.74	212.90	211.08	209.06
24.00	DISCHG	206.00	202.73	198.46	192.99	188.66	185.69	183.80	182.64	181.94	181.50
25.00	DISCHG	181.23	181.05	180.92	180.82	180.75	180.69	180.63	180.57	180.51	180.45
26.00	DISCHG	180.39	180.33	180.27	180.21	180.15	179.66	178.72	177.44	175.93	174.30
27.00	DISCHG	172.61	170.90	169.21	167.54	165.91	164.30	162.71	161.12	159.55	157.98
28.00	DISCHG	156.41	154.84	153.27	151.70	150.13	148.57	147.01	145.45	143.89	142.34
29.00	DISCHG	140.79	139.24	137.64	135.93	134.12	132.26	130.35	128.43	126.49	124.56

RUNOFF VOLUME ABOVE BASEFLOW = 1.99 WATERSHED INCHES, 4217.80 CFS-HRS, 348.56 ACRE-FEET; BASEFLOW = 3.00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID 1740

\+ COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION ENDJOB RECORD ID 1750

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 90 STORM 1													
STRUCTURE 10	RUNOFF	.84	2	2	.10	.0	7.00	24.00	1.67	---	17.80	96.56	114.9
STRUCTURE 10	RESVOR	.84	2	2	.10	.0	7.00	24.00	1.63	9.50	18.14	96.09	114.4
XSECTION 10	REACH	.84	2	2	.10	.0	7.00	24.00	1.62	---	18.47	98.84	117.7
XSECTION 10	RUNOFF	.20	2	2	.10	.0	7.00	24.00	1.16	---	12.07	150.75	753.8
XSECTION 10	ADDHYD	1.04	2	2	.10	.0	7.00	24.00	1.53	---	12.07	153.76	147.8
STRUCTURE 20	RESVOR	1.04	2	2	.10	.0	7.00	24.00	1.48	9.21	20.08	93.83	90.2
XSECTION 20	REACH	1.04	2	2	.10	.0	7.00	24.00	1.47	---	20.23	93.80	90.2
XSECTION 20	RUNOFF	.28	2	2	.10	.0	7.00	24.00	2.03	---	13.36	102.66	366.6
XSECTION 20	ADDHYD	1.32	2	2	.10	.0	7.00	24.00	1.59	---	13.31	132.15	100.1
STRUCTURE 30	RUNOFF	.37	2	2	.10	.0	7.00	24.00	1.57	---	14.95	60.58	163.7
STRUCTURE 30	RESVOR	.37	2	2	.10	.0	7.00	24.00	1.51	25.91	16.21	48.05	129.9
XSECTION 40	REACH	.37	2	2	.10	.0	7.00	24.00	1.50	---	16.55	47.70	128.9
XSECTION 40	RUNOFF	.06	2	2	.10	.0	7.00	24.00	.84	---	12.72	10.21	170.2
XSECTION 40	ADDHYD	.43	2	2	.10	.0	7.00	24.00	1.41	---	16.54	49.80	115.8
STRUCTURE 40	RESVOR	.43	2	2	.10	.0	7.00	24.00	1.41	10.89	16.60	49.78	115.8
XSECTION 50	REACH	.43	2	2	.10	.0	7.00	24.00	1.40	---	16.72	49.77	115.7
XSECTION 49	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.84	---	13.33	13.76	125.1
XSECTION 50	ADDHYD	.54	2	2	.10	.0	7.00	24.00	1.29	---	16.65	53.98	100.0
XSECTION 50	RUNOFF	.36	2	2	.10	.0	7.00	24.00	5.25	---	12.13	1078.73	2996.5
XSECTION 50	ADDHYD	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	REACH	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	RUNOFF	.05	2	2	.10	.0	7.00	24.00	1.24	---	12.56	16.56	331.2
XSECTION 60	ADDHYD	.95	2	2	.10	.0	7.00	24.00	2.79	---	12.14	1086.21	1143.4
XSECTION 70	ADDHYD	2.27	2	2	.10	.0	7.00	24.00	2.09	---	12.14	1108.12	488.2
XSECTION 80	REACH	2.27	2	2	.10	.0	7.00	24.00	2.09	---	12.14	1108.12	488.2
XSECTION 80	RUNOFF	.02	2	2	.10	.0	7.00	24.00	2.98	---	11.98	54.99	2749.6
XSECTION 80	ADDHYD	2.29	2	2	.10	.0	7.00	24.00	2.10	---	12.13	1129.43	493.2
XSECTION 90	RUNOFF	.24	2	2	.10	.0	7.00	24.00	4.14	---	12.26	458.49	1910.4
XSECTION 100	ADDHYD	2.53	2	2	.10	.0	7.00	24.00	2.29	---	12.16	1536.02	607.1
XSECTION 110	REACH	2.53	2	2	.10	.0	7.00	24.00	2.29	---	12.16	1536.02	607.1
XSECTION 120	REACH	2.53	2	2	.10	.0	7.00	24.00	2.29	---	12.16	1536.02	607.1
XSECTION 120	RUNOFF	.19	2	2	.10	.0	7.00	24.00	2.41	---	12.37	176.25	927.6

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SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 90 STORM 1													
XSECTION 120	ADDHYD	2.72	2	2	.10	.0	7.00	24.00	2.30	---	12.18	1674.69	615.7
STRUCTURE 50	RESVOR	2.72	2	2	.10	.0	7.00	24.00	2.12	10.81	13.56	347.44	127.7
XSECTION 130	REACH	2.72	2	2	.10	.0	7.00	24.00	2.12	---	13.56	347.44	127.7
XSECTION 130	RUNOFF	.05	2	2	.10	.0	7.00	24.00	4.05	---	12.01	160.37	3207.4
XSECTION 130	ADDHYD	2.77	2	2	.10	.0	7.00	24.00	2.15	---	13.45	357.27	129.0
STRUCTURE 60	RESVOR	2.77	2	2	.10	.0	7.00	24.00	1.96	6.74	16.61	280.68	101.3
XSECTION 140	REACH	2.77	2	2	.10	.0	7.00	24.00	1.94	---	16.90	280.23	101.2
XSECTION 140	RUNOFF	.20	2	2	.10	.0	7.00	24.00	3.63	---	12.02	576.56	2882.8
XSECTION 140	ADDHYD	2.97	2	2	.10	.0	7.00	24.00	2.05	---	12.02	582.45	196.1
XSECTION 149	RUNOFF	.08	2	2	.10	.0	7.00	24.00	3.10	---	12.15	142.32	1779.0
XSECTION 150	ADDHYD	3.05	2	2	.10	.0	7.00	24.00	2.08	---	12.03	692.42	227.0
XSECTION 150	REACH	3.05	2	2	.10	.0	7.00	24.00	2.08	---	12.03	692.42	227.0
XSECTION 150	RUNOFF	.01	2	2	.10	.0	7.00	24.00	.84	---	12.05	4.99	499.3
XSECTION 150	ADDHYD	3.06	2	2	.10	.0	7.00	24.00	2.08	---	12.03	697.38	227.9
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.99	---	12.27	39.64	360.4
XSECTION 180	ADDHYD	3.17	2	2	.10	.0	7.00	24.00	2.04	---	12.04	714.15	225.3
XSECTION 180	REACH	3.17	2	2	.10	.0	7.00	24.00	2.03	---	12.18	633.33	199.8
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.92	---	12.28	34.74	315.8
XSECTION 180	ADDHYD	3.28	2	2	.10	.0	7.00	24.00	1.99	---	12.19	665.17	202.8

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

XSEC ID	REACH LENGTH (FT)	HYDROGRAPH INFORMATION: INFLOW PEAK (CFS)	INFLOW TIME (HR)	OUTFLOW PEAK (CFS)	OUTFLOW TIME (HR)	OUTFLOW+ INTERV. PEAK (CFS)	OUTFLOW+ INTERV. TIME (HR)	AREA BASE-FLOW (CFS)	ROUTING PARAMETERS: VOLUME ABOVE BASE (IN)	MAIN TIME INCR (HR)	ITER-ATION #	Q AND A EQUATION COEFF (X)	Q AND A POWER (M)	Q AND A FACTOR (K*)	PEAK RATIO D/I (Q*)	S/Q @PEAK (K) (SEC)	ATT-KIN COEFF (C)	PEAK TRAVEL TIME STOR-AGE (HR)	PEAK TRAVEL TIME KINE-MATIC (HR)
ALTERNATE 90 STORM 1																			
10	1750	99	18.1	99	18.5			3	1.63*	.10	1	1.20	1.10	.021	.997	888	.34	.40	.25
						149	12.1												
20	2900	94	20.1	94	20.2			3	1.48*	.10	1	.280	1.94	.000	1.000	319	.72?	.10	.09
						132	13.3												
40	1300	48	16.2	48	16.5			0	1.51	.10	1	.880	1.10	.027	.992	934	.32	.30	.26
						50	16.5												
50	1700	50	16.6	50	16.7			0	1.41	.10	1	1.60	1.45	.002	1.000	252	.83?	.10	.07
						54	16.6												
60	1400	1064	12.1	1064	12.1			0	2.87	.10	0	.440	1.94	.000	1.000	38	1.00?	.00	.00
						1069	12.1												
80	700	1086	12.1	1086	12.1			3	2.09	.10	0	.300	1.94	.000	1.000	23	1.00?	.00	.00
						1115	12.1												
110	500	1520	12.2	1520	12.2			3	2.29	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						---	---												
120	500	1520	12.2	1520	12.2			3	2.29	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						1669	12.2												

+130	1000	347	13.6	347	13.6			3	2.12‡	.10	0		1.94	.000	1.000		56	1.00?	.00	.00
+						357	13.5													
												.210								
+140	2500	281	16.6	280	16.9			3	1.96‡	.10	1		1.48	.004	.998		779	.38	.30	.22
+						578	12.0													
												.210								
+150	300	678	12.0	678	12.0			3	2.08‡	.10	0		1.48	.000	1.000		70	1.00?	.00	.00
+						683	12.0													
												.210								
+180	1700	695	12.0	630	12.2			3	2.04‡	.10	1		1.48	.005	.907		395	.63	.20	.11
+						663	12.2													

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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 STRUCTURE 60	2.77	
ALTERNATE 90		280.68
0 STRUCTURE 50	2.72	
ALTERNATE 90		347.44
0 STRUCTURE 40	.43	
ALTERNATE 90		49.78
0 STRUCTURE 30	.37	
ALTERNATE 90		48.05
0 STRUCTURE 20	1.04	
ALTERNATE 90		93.83
0 STRUCTURE 10	.84	
ALTERNATE 90		96.09
0 XSECTION 10	1.04	
ALTERNATE 90		153.76
0 XSECTION 20	1.32	
ALTERNATE 90		132.15
0 XSECTION 40	.43	
ALTERNATE 90		49.80
0 XSECTION 49	.11	
ALTERNATE 90		13.76
0 XSECTION 50	.90	
ALTERNATE 90		1079.95
0 XSECTION 60	.95	
ALTERNATE 90		1086.21
0 XSECTION 70	2.27	
ALTERNATE 90		1108.12
0 XSECTION 80	2.29	
ALTERNATE 90		1129.43

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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 XSECTION 90	.24	
+ ALTERNATE 90		458.49
0 XSECTION 100	2.53	
+ ALTERNATE 90		1536.02
0 XSECTION 110	2.53	
+ ALTERNATE 90		1536.02
0 XSECTION 120	2.72	
+ ALTERNATE 90		1674.69
0 XSECTION 130	2.77	
+ ALTERNATE 90		357.27
0 XSECTION 140	2.97	
+ ALTERNATE 90		582.45
0 XSECTION 149	.08	
+ ALTERNATE 90		142.32
0 XSECTION 150	3.06	
+ ALTERNATE 90		697.38
0 XSECTION 180	3.28	
+ ALTERNATE 90		665.17

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

JOB TR-20                    FULLPRINT PASS=001  SUMMARY                    10
TITLE 006 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM    20
TITLE     ALT  91                                                  30
 3 STRUCT      10                                                           40
 8                    7.00        0.00        4.33                          50
 8                    7.4         2.5         5.01                          60
 8                    7.6         5.0         5.36                          70
 8                    7.8         10.0        5.70                          80
 8                    8.2         22.0        6.38                          90
 8                    8.6         52.0        7.07                         100
 8                    9.0         62.0        7.75                         110
 8                    9.5         96.0        8.61                         120
 8                    10.0        126.0       9.47                         130
 8                    11.0        198.0       11.18                        140
 8                    12.0        280.0       12.89                        150
 8                    13.00       360.0       14.79                        160
 8                    14.00       440.0       16.68                        170
 8                    15.00       500.0       18.58                        180
 8                    15.1        600.00      18.60                        190
 9 ENDTBL                                                                  200
 3 STRUCT      20                                                          210
 8                    4.5         0.00        6.80                         220
 8                    4.9         1.5         7.88                         230
 8                    5.1         3.7         8.42                         240
 8                    5.5         11.0        9.51                         250
 8                    5.7         15.0        10.13                        260
 8                    6.1         25.0        11.13                        270
 8                    6.5         40.0        12.21                        280
 8                    7.1         60.0        13.84                        290
 8                    7.9         78.0        16.01                        300
 8                    8.5         79.0        17.63                        310
 8                    9.5         100.0       20.34                        320
 8                    10.5        126.0       23.06                        330
 8                    11.5        150.0       25.76                        340
 8                    11.6        300.0       26.04                        350
 9 ENDTBL                                                                  360
 3 STRUCT      30                                                          370
 8                    21.0        0.00        0.10                         380
 8                    21.4        0.6         0.61                         390
 8                    21.6        1.5         0.86                         400
 8                    21.8        2.5         1.12                         410
 8                    22.2        5.2         1.62                         420
 8                    22.6        8.2         2.13                         430
 8                    23.0        11.0        2.64                         440
 8                    23.5        20.0        3.27                         450
 8                    24.0        27.0        3.91                         460
```

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

8		25.0	39.0	5.18	470
8		26.0	49.0	6.45	480
8		27.0	57.0	7.72	490
8		27.1	200.00	7.74	500
9	ENDTBL				510
3	STRUCT	40			520
8		9.0	0.0	0.38	530
8		9.4	2.2	0.47	540
8		9.6	5.0	0.52	550
8		10.0	14.0	0.62	560
8		10.2	21.0	0.67	570
8		10.6	36.0	0.77	580
8		11.0	55.0	0.86	590
8		11.6	82.0	1.01	600
8		12.4	120.0	1.21	610
8		13.0	121.0	1.35	620
8		14.0	122.0	1.60	630
8		15.0	126.0	1.84	640
8		16.0	150.00	2.08	650
8		16.1	300.0	2.11	660
9	ENDTBL				670
3	STRUCT	50			680
8		2.4	0.00	22.00	690
8		2.8	2.0	26.86	700
8		3.0	7.0	29.29	710
8		3.4	16.0	34.16	720
8		3.6	24.0	36.59	730
8		4.0	40.0	41.46	740
8		4.4	60.0	46.32	750
8		5.0	90.0	53.62	760
8		5.8	120.0	63.35	770
8		6.4	121.0	70.65	780
8		7.4	210.0	82.81	790
8		8.4	250.00	94.98	800
8		10.4	334.0	119.31	810
8		12.4	400.0	143.63	820
8		12.5	800.0	143.70	830
9	ENDTBL				840
3	STRUCT	60			850
8		2.0	0.0	22.20	860
8		2.4	3.0	27.41	870
8		2.6	10.5	30.02	880
8		3.0	22.5	35.24	890
8		3.2	36.0	37.85	900
8		3.6	60.0	43.06	910
8		4.0	90.0	48.28	920

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

8                    4.6        135.0      56.11                        930
8                    5.4        180.0      66.55                        940
8                    6.0        181.0      74.38                        950
8                    7.0        315.0      87.42                        960
8                    8.0        375.0      100.47                       970
8                    8.1        700.0      100.50                       980
9 ENDTBL                                                                990
6 RUNOFF 1    10     6 0.84     51.        7.50       1                1000
6 RESVOR 2    10 6   7 7.0                            1                1010
6 REACH  3 010   7   5 1750.    1.2        1.10       1                1020
6 RUNOFF 1 010       6 0.20     42.        0.19       1                1030
6 ADDHYD 4 010   5 6 7                                1 1              1040
6 SAVMOV 5 010   7   6                                                 1050
6 RESVOR 2    20 6   7 4.5                            1                1060
6 REACH  3 020   7   5 2900.    0.28       1.94       1                1070
6 RUNOFF 1 020       6 0.28     53.        1.02       1                1080
6 ADDHYD 4 020   5 6 7                                1 1              1090
6 SAVMOV 5 020   7   1                                                 1100
6 RUNOFF 1    30     6 0.37     49.        3.90       1                1110
6 RESVOR 2    30 6   7 21.0                           1                1120
6 REACH  3 040   7   5 1300.    0.88       1.10       1                1130
6 RUNOFF 1 040       6 0.06     40.        1.00       1                1140
6 ADDHYD 4 040   5 6 7                                1                1150
6 SAVMOV 5 040   7   6                                                 1160
6 RESVOR 2    40 6   7 9.0                            1                1170
6 REACH  3 050   7   5 1700.    1.6        1.45       1                1180
6 RUNOFF 1 049       6 0.11     40.        1.67       1                1190
6 ADDHYD 4 050   5 6 7                                1                1200
6 SAVMOV 5 050   7   5                                                 1210
6 RUNOFF 1 050       6 0.36     85.        0.42       1                1220
6 ADDHYD 4 050   5 6 7                                1                1230
6 REACH  3 060   7   5 1400.    0.44       1.94       1                1240
6 RUNOFF 1 060       6 0.05     45.        0.90       1                1250
6 ADDHYD 4 060   5 6 7                                1 1              1260
6 SAVMOV 5 070   7   5                                                 1270
6 SAVMOV 5 070   1   6                                                 1280
6 ADDHYD 4 070   5 6 7                                1 1              1290
6 REACH  3 080   7   5 700.     0.30       1.94       1                1300
6 RUNOFF 1 080       6 0.02     64.        0.12       1                1310
6 ADDHYD 4 080   5 6 7                                1                1320
6 SAVMOV 5 100   7   5                                                 1330
6 RUNOFF 1 090       6 0.24     73.        0.62       1                1340
6 ADDHYD 4 100   5 6 7                                1                1350
6 REACH  3 110   7   5 500.     0.30       1.94       1                1360
6 SAVMOV 5 120   5   7                                                 1370
6 REACH  3 120   7   5 500.     0.30       1.94       1                1380
```

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

 6 RUNOFF 1 120       6 0.19        56.        0.74       1                1390
 6 ADDHYD 4 120   5 6 7                                    1 1              1400
 6 SAVMOV 5    50 7   6                                                     1410
 6 RESVOR 2    50 6   7 2.4                                1 1 1            1420
 6 REACH  3 130   7   5 1000.       0.30       1.94       1                1430
 6 RUNOFF 1 130       6 0.05        74.        0.19       1                1440
 6 ADDHYD 4 130   5 6 7                                    1                1450
 6 SAVMOV 5 130   7   6                                                     1460
 6 RESVOR 2    60 6   7 2.0                                1 1 1            1470
 6 REACH  3 140   7   5 2500.       0.21       1.48       1                1480
 6 RUNOFF 1 140       6 0.20        66.        1.15       1                1490
 6 ADDHYD 4 140   5 6 7                                    1                1500
 6 SAVMOV 5 150   7   5                                                     1510
 6 RUNOFF 1 149       6 0.08        50.        0.42       1                1520
 6 ADDHYD 4 150   5 6 7                                                     1530
 6 REACH  3 150   7   5 300.        0.21       1.48       1                1540
 6 RUNOFF 1 150       6 0.01        40.        0.15       1                1550
 6 ADDHYD 4 150   5 6 7                                    1                1560
 6 SAVMOV 5 180   7   5                                                     1570
 6 RUNOFF 1 180       6 0.28        50.        0.61       1                1580
 6 ADDHYD 4 180   5 6 7                                    1                1590
 6 REACH  3 180   7   5 1700.0      0.21       1.48       1                1600
 6 RUNOFF 1 180       6 0.11        41.        0.48       1                1610
 6 ADDHYD 4 180   5 6 7                                    1 1   1   1      1620
   ENDATA                                                                   1630
 7 ALTER  3                                                                 1640
 6 RUNOFF 1 010       6 0.20        44.0       0.19       1                1650
 6 RUNOFF 1 020       6 0.28        54.0       2.00       1                1660
 6 RUNOFF 1 090       6 0.24        75.0       0.62       1                1665
 6 RUNOFF 1 120       6 0.19        62.0       0.74       1                1668
 6 RUNOFF 1 140       6 0.20        70.0       0.19       1                1670
 6 RUNOFF 1 149       6 0.08        65.0       0.42       1                1680
 6 RUNOFF 1 180       6 0.11        42.0       0.48       1                1690
 7 LIST                                                                     1700
 7 BASFLO 5             3.0                                                 1710
 7 INCREM 6             0.1                                                 1720
 7 COMPUT 7    10 180   0.0         7.0        1.0        2 2  91  01      1730
   ENDCMP 1                                                                 1740
   ENDJOB 2                                                                 1750
0*******************************END OF 80-80 LIST*******************************
```


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TR20 XEQ 04-29-86 08:55 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM 20 JOB 1 PASS 1

REV PC 09/83(.2) ALT 91 30 PAGE 1

0CHANGES TO STANDARD CONTROL LIST FOLLOW

EXECUTIVE CONTROL OPERATION ALTER RECORD ID 1640

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 10 RECORD ID 1650

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2000 44.0000 .1900

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 20 RECORD ID 1660

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2800 54.0000 2.0000

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 90 RECORD ID 1665

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2400 75.0000 .6200

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 120 RECORD ID 1668

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .1900 62.0000 .7400

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 140 RECORD ID 1670

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2000 70.0000 .1900

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 149 RECORD ID 1680

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .0800 65.0000 .4200

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 180 RECORD ID 1690

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .1100 42.0000 .4800

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

EXECUTIVE CONTROL OPERATION LIST RECORD ID 1700

LISTING OF CURRENT DATA

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	10			
8		7.00	.00	4.33
8		7.40	2.50	5.01
8		7.60	5.00	5.36
8		7.80	10.00	5.70
8		8.20	22.00	6.38
8		8.60	52.00	7.07
8		9.00	62.00	7.75
8		9.50	96.00	8.61
8		10.00	126.00	9.47
8		11.00	198.00	11.18
8		12.00	280.00	12.89
8		13.00	360.00	14.79
8		14.00	440.00	16.68
8		15.00	500.00	18.58
8		15.10	600.00	18.60
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	20			
8		4.50	.00	6.80
8		4.90	1.50	7.88
8		5.10	3.70	8.42
8		5.50	11.00	9.51
8		5.70	15.00	10.13
8		6.10	25.00	11.13
8		6.50	40.00	12.21
8		7.10	60.00	13.84
8		7.90	78.00	16.01
8		8.50	79.00	17.63
8		9.50	100.00	20.34
8		10.50	126.00	23.06
8		11.50	150.00	25.76
8		11.60	300.00	26.04
9 ENDTBL				

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	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	30			
8		21.00	.00	.10
8		21.40	.60	.61
8		21.60	1.50	.86
8		21.80	2.50	1.12
8		22.20	5.20	1.62
8		22.60	8.20	2.13
8		23.00	11.00	2.64
8		23.50	20.00	3.27
8		24.00	27.00	3.91
8		25.00	39.00	5.18
8		26.00	49.00	6.45
8		27.00	57.00	7.72
8		27.10	200.00	7.74
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	40			
8		9.00	.00	.38
8		9.40	2.20	.47
8		9.60	5.00	.52
8		10.00	14.00	.62
8		10.20	21.00	.67
8		10.60	36.00	.77
8		11.00	55.00	.86
8		11.60	82.00	1.01
8		12.40	120.00	1.21
8		13.00	121.00	1.35
8		14.00	122.00	1.60
8		15.00	126.00	1.84
8		16.00	150.00	2.08
8		16.10	300.00	2.11
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	50			
8		2.40	.00	22.00
8		2.80	2.00	26.86
8		3.00	7.00	29.29
8		3.40	16.00	34.16
8		3.60	24.00	36.59
8		4.00	40.00	41.46
8		4.40	60.00	46.32
8		5.00	90.00	53.62

```
8                    5.80      120.00      63.35
8                    6.40      121.00      70.65
8                    7.40      210.00      82.81
8                    8.40      250.00      94.98
8                   10.40      334.00     119.31
8                   12.40      400.00     143.63
8                   12.50      800.00     143.70
9 ENDTBL

          STRUCT NO.     ELEVATION   DISCHARGE     STORAGE
3 STRUCT      60

8                    2.00         .00      22.20
8                    2.40        3.00      27.41
8                    2.60       10.50      30.02
8                    3.00       22.50      35.24
8                    3.20       36.00      37.85
8                    3.60       60.00      43.06
8                    4.00       90.00      48.28
8                    4.60      135.00      56.11
8                    5.40      180.00      66.55
8                    6.00      181.00      74.38
8                    7.00      315.00      87.42
8                    8.00      375.00     100.47
8                    8.10      700.00     100.50
9 ENDTBL

                  TIME INCREMENT
4 DIMHYD                .0200

8              .0000     .0300     .1000     .1900     .3100
8              .4700     .6600     .8200     .9300     .9900
8             1.0000     .9900     .9300     .8600     .7800
8              .6800     .5600     .4600     .3900     .3300
8              .2800     .2410     .2070     .1740     .1470
8              .1260     .1070     .0910     .0770     .0660
8              .0550     .0470     .0400     .0340     .0290
8              .0250     .0210     .0180     .0150     .0130
8              .0110     .0090     .0080     .0070     .0060
8              .0050     .0040     .0030     .0020     .0010
8              .0000     .0000     .0000     .0000     .0000
9 ENDTBL

  COMPUTED PEAK RATE FACTOR =  484.00
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	TABLE NO.	TIME INCREMENT				
5	RAINFL 1		.5000			
8		.0000	.0080	.0170	.0260	.0350
8		.0450	.0550	.0650	.0760	.0870
8		.0990	.1120	.1260	.1400	.1560
8		.1740	.1940	.2190	.2540	.3030
8		.5150	.5830	.6240	.6550	.6820
8		.7060	.7280	.7480	.7660	.7830
8		.7990	.8150	.8300	.8440	.8570
8		.8700	.8820	.8930	.9050	.9160
8		.9260	.9360	.9460	.9560	.9650
8		.9740	.9830	.9920	1.0000	1.0000
9	ENDTBL					

	TABLE NO.	TIME INCREMENT				
5	RAINFL 2		.2500			
8		.0000	.0020	.0050	.0080	.0110
8		.0140	.0170	.0200	.0230	.0260
8		.0290	.0320	.0350	.0380	.0410
8		.0440	.0480	.0520	.0560	.0600
8		.0640	.0680	.0720	.0760	.0800
8		.0850	.0900	.0950	.1000	.1050
8		.1100	.1150	.1200	.1260	.1330
8		.1400	.1470	.1550	.1630	.1720
8		.1810	.1910	.2030	.2180	.2360
8		.2570	.2830	.3870	.6630	.7070
8		.7350	.7580	.7760	.7910	.8040
8		.8150	.8250	.8340	.8420	.8490
8		.8560	.8630	.8690	.8750	.8810
8		.8870	.8930	.8980	.9030	.9080
8		.9130	.9180	.9220	.9260	.9300
8		.9340	.9380	.9420	.9460	.9500
8		.9530	.9560	.9590	.9620	.9650
8		.9680	.9710	.9740	.9770	.9800
8		.9830	.9860	.9890	.9920	.9950
8		.9980	1.0000	1.0000	1.0000	1.0000
9	ENDTBL					

	TABLE NO.	TIME INCREMENT				
5	RAINFL 3		.5000			
8		.0000	.0100	.0220	.0360	.0510
8		.0670	.0830	.0990	.1160	.1350

```
8              .1560      .1790      .2040      .2330      .2680
8              .3100      .4250      .4800      .5200      .5500
8              .5770      .6010      .6230      .6440      .6640
8              .6830      .7010      .7190      .7360      .7530
8              .7690      .7850      .8000      .8150      .8300
8              .8440      .8580      .8710      .8840      .8960
8              .9080      .9200      .9320      .9440      .9560
8              .9670      .9780      .9890     1.0000     1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 4                .5000

8              .0000      .0040      .0080      .0120      .0160
8              .0200      .0250      .0300      .0350      .0400
8              .0450      .0500      .0550      .0600      .0650
8              .0700      .0750      .0810      .0870      .0930
8              .0990      .1050      .1110      .1180      .1250
8              .1320      .1400      .1480      .1560      .1650
8              .1740      .1840      .1950      .2070      .2200
8              .2360      .2550      .2770      .3030      .4090
8              .5150      .5490      .5830      .6050      .6240
8              .6400      .6550      .6690      .6820      .6940
8              .7050      .7160      .7270      .7380      .7480
8              .7580      .7670      .7760      .7840      .7920
8              .8000      .8080      .8160      .8230      .8300
8              .8370      .8440      .8510      .8580      .8640
8              .8700      .8760      .8820      .8880      .8940
8              .9000      .9060      .9110      .9160      .9210
8              .9260      .9310      .9360      .9410      .9460
8              .9510      .9560      .9610      .9660      .9710
8              .9760      .9800      .9840      .9880      .9920
8              .9960     1.0000     1.0000     1.0000     1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 5                .5000

8              .0000      .0020      .0050      .0080      .0110
8              .0140      .0170      .0200      .0230      .0260
8              .0290      .0320      .0350      .0380      .0410
8              .0440      .0470      .0510      .0550      .0590
8              .0630      .0670      .0710      .0750      .0790
8              .0840      .0890      .0940      .0990      .1040
8              .1090      .1140      .1200      .1260      .1330
8              .1400      .1470      .1540      .1620      .1710
8              .1810      .1920      .2040      .2170      .2330
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8              .2520      .2770      .3180      .6380      .6980
8              .7290      .7520      .7700      .7850      .7980
8              .8090      .8190      .8290      .8380      .8460
8              .8540      .8610      .8680      .8740      .8800
8              .8860      .8920      .8970      .9020      .9070
8              .9120      .9170      .9210      .9250      .9290
8              .9330      .9370      .9410      .9450      .9490
8              .9530      .9570      .9600      .9630      .9660
8              .9690      .9720      .9750      .9780      .9810
8              .9840      .9870      .9900      .9930      .9960
8              .9980     1.0000     1.0000     1.0000     1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 6                .0200

8              .0000      .0080      .0162      .0246      .0333
8              .0425      .0524      .0630      .0743      .0863
8              .0990      .1124      .1265      .1420      .1595
8              .1800      .2050      .2550      .3450      .4370
8              .5300      .6030      .6330      .6600      .6840
8              .7050      .7240      .7420      .7590      .7750
8              .7900      .8043      .8180      .8312      .8439
8              .8561      .8678      .8790      .8898      .9002
8              .9103      .9201      .9297      .9391      .9483
8              .9573      .9661      .9747      .9832      .9916
8             1.0000     1.0000     1.0000     1.0000     1.0000
9 ENDTBL
```

0 STANDARD CONTROL INSTRUCTIONS

```
6 RUNOFF 1   10    6      .8400    51.0000     7.50001 0 0 1 0 1
6 RESVOR 2   10 6  7     7.0000                     1 0 0 1 0 1
6 REACH  3  10  7  5  1750.0000     1.2000     1.10001 0 0 1 0 1
6 RUNOFF 1  10     6      .2000    44.0000      .19001 0 0 1 0 1
6 ADDHYD 4  10  5 6 7                             1 1 0 1 0 1
6 SAVMOV 5  10  7  6
6 RESVOR 2   20 6  7     4.5000                     1 0 0 1 0 1
6 REACH  3  20  7  5  2900.0000      .2800     1.94001 0 0 1 0 1
6 RUNOFF 1  20     6      .2800    54.0000     2.00001 0 0 1 0 1
6 ADDHYD 4  20  5 6 7                             1 1 0 1 0 1
6 SAVMOV 5  20  7  1
6 RUNOFF 1   30    6      .3700    49.0000     3.90001 0 0 1 0 1
6 RESVOR 2   30 6  7    21.0000                     1 0 0 1 0 1
6 REACH  3  40  7  5  1300.0000      .8800     1.10001 0 0 1 0 1
6 RUNOFF 1  40     6      .0600    40.0000     1.00001 0 0 1 0 1
6 ADDHYD 4  40  5 6 7                             1 0 0 1 0 1
6 SAVMOV 5  40  7  6
6 RESVOR 2   40 6  7     9.0000                     1 0 0 1 0 1
6 REACH  3  50  7  5  1700.0000     1.6000     1.45001 0 0 1 0 1
6 RUNOFF 1  49     6      .1100    40.0000     1.67001 0 0 1 0 1
6 ADDHYD 4  50  5 6 7                             1 0 0 1 0 1
6 SAVMOV 5  50  7  5
6 RUNOFF 1  50     6      .3600    85.0000      .42001 0 0 1 0 1
6 ADDHYD 4  50  5 6 7                             1 0 0 1 0 1
6 REACH  3  60  7  5  1400.0000      .4400     1.94001 0 0 1 0 1
6 RUNOFF 1  60     6      .0500    45.0000      .90001 0 0 1 0 1
6 ADDHYD 4  60  5 6 7                             1 1 0 1 0 1
6 SAVMOV 5  70  7  5
6 SAVMOV 5  70  1  6
6 ADDHYD 4  70  5 6 7                             1 1 0 1 0 1
6 REACH  3  80  7  5   700.0000      .3000     1.94001 0 0 1 0 1
6 RUNOFF 1  80     6      .0200    64.0000      .12001 0 0 1 0 1
6 ADDHYD 4  80  5 6 7                             1 0 0 1 0 1
6 SAVMOV 5 100  7  5
6 RUNOFF 1  90     6      .2400    75.0000      .62001 0 0 1 0 1
6 ADDHYD 4 100  5 6 7                             1 0 0 1 0 1
6 REACH  3 110  7  5   500.0000      .3000     1.94001 0 0 1 0 1
6 SAVMOV 5 120  5  7
6 REACH  3 120  7  5   500.0000      .3000     1.94001 0 0 1 0 1
6 RUNOFF 1 120     6      .1900    62.0000      .74001 0 0 1 0 1
6 ADDHYD 4 120  5 6 7                             1 1 0 1 0 1
6 SAVMOV 5   50 7  6
6 RESVOR 2   50 6  7     2.4000                     1 1 1 1 0 1
6 REACH  3 130  7  5  1000.0000      .3000     1.94001 0 0 1 0 1
6 RUNOFF 1 130     6      .0500    74.0000      .19001 0 0 1 0 1
```


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```
6 ADDHYD 4 130   5 6 7                              1 0 0 1 0 1
6 SAVMOV 5 130   7   6
6 RESVOR 2    60 6   7      2.0000                  1 1 1 1 0 1
6 REACH  3 140   7   5   2500.0000      .2100      1.48001 0 0 1 0 1
6 RUNOFF 1 140       6      .2000     70.0000       .19001 0 0 1 0 1
6 ADDHYD 4 140   5 6 7                              1 0 0 1 0 1
6 SAVMOV 5 150   7   5
6 RUNOFF 1 149       6      .0800     65.0000       .42001 0 0 1 0 1
6 ADDHYD 4 150   5 6 7                              1 0 0 1 0 1
6 REACH  3 150   7   5    300.0000      .2100      1.48001 0 0 1 0 1
6 RUNOFF 1 150       6      .0100     40.0000       .15001 0 0 1 0 1
6 ADDHYD 4 150   5 6 7                              1 0 0 1 0 1
6 SAVMOV 5 180   7   5
6 RUNOFF 1 180       6      .1100     42.0000       .48001 0 0 1 0 1
6 ADDHYD 4 180   5 6 7                              1 0 0 1 0 1
6 REACH  3 180   7   5   1700.0000      .2100      1.48001 0 0 1 0 1
6 RUNOFF 1 180       6      .1100     41.0000       .48001 0 0 1 0 1
6 ADDHYD 4 180   5 6 7                              1 1 0 1 0 1
  ENDATA

END OF LISTING
```

```
TR20 XEQ 04-29-86  08:55      COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM      20          JOB  1   PASS   1

     REV PC 09/83(.2)         ALT  91                                                  30                          PAGE  10



EXECUTIVE CONTROL OPERATION BASFLO                                                                          RECORD ID     1710

+                                    NEW BASEFLOW =   3.00 CFS


EXECUTIVE CONTROL OPERATION INCREM                                                                          RECORD ID     1720

+                                    MAIN TIME INCREMENT =   .10 HOURS


EXECUTIVE CONTROL OPERATION COMPUT                                                                          RECORD ID     1730

+                                    FROM STRUCTURE 10
+                                                  TO XSECTION 180
        STARTING TIME =   .00    RAIN DEPTH =  7.00    RAIN DURATION=  1.00    RAIN TABLE NO.= 2    ANT. MOIST. COND= 2
        ALTERNATE NO.=91         STORM NO.= 1    MAIN TIME INCREMENT =   .10 HOURS


OPERATION RUNOFF   STRUCTURE 10
          OUTPUT HYDROGRAPH=  6
          AREA=    .84 SQ MI   INPUT RUNOFF CURVE= 51.    TIME OF CONCENTRATION=  7.50 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .1000 HOURS

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)           PEAK ELEVATION(FEET)
             17.80                          96.56                        (RUNOFF)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.67 WATERSHED INCHES,    906.24 CFS-HRS,    74.89 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION RESVOR   STRUCTURE 10
          INPUT HYDROGRAPH= 6     OUTPUT HYDROGRAPH= 7
          SURFACE ELEVATION=    7.00

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)           PEAK ELEVATION(FEET)
             18.14                          96.09                          9.50

  RUNOFF VOLUME ABOVE BASEFLOW =  1.63 WATERSHED INCHES,    884.09 CFS-HRS,    73.06 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION REACH    CROSS SECTION  10
          INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5
          LENGTH =   1750.00 FEET      INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA,  X=  1.20,   M= 1.10
0         MODIFIED ATT-KIN ROUTING COEFFICIENT =  .34      PEAK TRAVEL TIME =    .40 HOURS
0    *** WARNING - REACH  10 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT      18.15 CFS,  18.88 % OF PEAK.

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)           PEAK ELEVATION(FEET)
             18.47                          98.84                        (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.62 WATERSHED INCHES,    878.37 CFS-HRS,    72.59 ACRE-FEET;   BASEFLOW =   3.00 CFS


OPERATION RUNOFF   CROSS SECTION  10
          OUTPUT HYDROGRAPH=  6
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AREA= .20 SQ MI INPUT RUNOFF CURVE= 44. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.07	150.75	(RUNOFF)
15.19	9.64	(RUNOFF)
16.46	8.67	(RUNOFF)
17.67	7.42	(RUNOFF)
19.66	6.17	(RUNOFF)
23.65	4.88	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.16 WATERSHED INCHES, 149.25 CFS-HRS, 12.33 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 10
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.07	153.76	(NULL)
18.48	104.86	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.04 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	7.21	53.07
12.00	DISCHG	135.64	149.19	80.95	56.13	42.16	35.91	33.02	30.56	29.72	27.02
13.00	DISCHG	25.58	24.44	22.95	22.58	21.54	21.15	20.62	19.89	20.05	20.05
14.00	DISCHG	20.75	21.68	22.70	24.32	25.72	27.54	29.37	31.56	35.09	39.12
15.00	DISCHG	43.24	47.29	51.18	54.82	57.52	59.78	61.92	63.90	65.78	67.63
16.00	DISCHG	69.47	71.98	75.00	78.16	81.27	84.22	86.55	88.36	90.42	92.43
17.00	DISCHG	94.31	96.02	97.59	99.01	100.31	101.48	102.52	103.43	104.09	103.97
18.00	DISCHG	104.02	104.29	104.55	104.73	104.84	104.86	104.81	104.67	104.47	104.19
19.00	DISCHG	103.84	103.42	102.93	102.36	101.72	101.00	100.20	99.32	98.25	96.45
20.00	DISCHG	94.87	93.59	92.37	91.15	89.91	88.67	87.43	86.21	85.01	83.83
21.00	DISCHG	82.67	81.54	80.43	79.34	78.27	77.22	76.20	75.19	74.21	73.24
22.00	DISCHG	72.30	71.42	70.72	70.11	69.56	69.03	68.51	67.98	67.44	66.89
23.00	DISCHG	66.33	65.76	65.17	64.57	63.96	63.34	62.72	62.09	61.34	59.73
24.00	DISCHG	58.17	55.97	53.27	51.71	50.62	49.72	48.91	48.18	47.50	46.85
25.00	DISCHG	46.24	45.66	45.10	44.55	44.02	43.50	42.98	42.48	41.98	41.49
26.00	DISCHG	41.00	40.51	40.03	39.55	39.07	38.60	38.12	37.63	37.15	36.66
27.00	DISCHG	36.16	35.66	35.15	34.64	34.13	33.61	33.09	32.57	32.04	31.51
28.00	DISCHG	30.97	30.44	29.90	29.36	28.82	28.28	27.74	27.21	26.67	26.13
29.00	DISCHG	25.68	25.30	24.94	24.59	24.24	23.89	23.52	23.14	22.75	22.35

RUNOFF VOLUME ABOVE BASEFLOW = 1.53 WATERSHED INCHES, 1027.62 CFS-HRS, 84.92 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 10
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 20
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 4.50

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.65	31.90	6.28
20.08	93.83	9.21

RUNOFF VOLUME ABOVE BASEFLOW = 1.48 WATERSHED INCHES, 990.65 CFS-HRS, 81.87 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2900.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .28, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .72 PEAK TRAVEL TIME = .10 HOURS

*** WARNING REACH 20 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 20 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 23.17 CFS, 25.51 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.82	31.79	(NULL)
20.23	93.80	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.47 WATERSHED INCHES, 987.44 CFS-HRS, 81.60 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 20
OUTPUT HYDROGRAPH= 6
AREA= .28 SQ MI INPUT RUNOFF CURVE= 54. TIME OF CONCENTRATION= 2.00 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1026 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.36	102.66	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.03 WATERSHED INCHES, 366.74 CFS-HRS, 30.31 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 20
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.31	132.15	(NULL)
20.11	106.29	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.32 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.01	3.02	3.06	3.18	3.47	4.17	5.78
12.00	DISCHG	9.45	17.69	29.98	44.84	59.25	72.98	86.02	98.12	108.61	117.14
13.00	DISCHG	123.73	128.34	131.09	132.14	131.53	129.60	126.63	122.67	117.70	111.97
14.00	DISCHG	106.02	100.46	95.56	91.20	87.22	83.67	80.54	77.77	75.29	73.28
15.00	DISCHG	71.78	70.81	70.32	70.22	70.47	70.99	71.70	72.40	73.11	73.90
16.00	DISCHG	74.80	75.76	76.81	78.00	79.36	80.88	82.38	83.57	84.72	85.90
17.00	DISCHG	87.14	88.42	89.73	91.05	92.39	93.73	95.06	95.63	95.66	95.54
18.00	DISCHG	95.38	95.22	95.06	94.90	94.74	95.60	96.75	97.91	99.01	100.03

19.00	DISCHG	100.97	101.82	102.60	103.31	103.94	104.50	104.99	105.42	105.77	106.05
20.00	DISCHG	106.23	106.29	106.25	106.12	105.90	105.59	105.20	104.74	104.21	103.61
21.00	DISCHG	102.97	102.29	101.57	100.82	100.05	99.26	98.45	97.64	96.82	95.99
22.00	DISCHG	95.17	94.34	93.51	92.69	91.87	91.07	90.29	89.53	88.78	88.48
23.00	DISCHG	88.34	88.25	88.16	88.09	88.01	87.93	87.85	87.77	87.68	87.59
24.00	DISCHG	87.49	87.36	86.62	85.25	83.64	81.94	80.19	78.40	76.60	74.78
25.00	DISCHG	72.98	71.20	69.44	67.74	66.08	64.38	62.48	60.62	58.85	57.20
26.00	DISCHG	55.67	54.24	52.92	51.68	50.52	49.43	48.40	47.43	46.50	45.62
27.00	DISCHG	44.78	43.98	43.21	42.46	41.74	41.04	40.34	39.62	38.90	38.21
28.00	DISCHG	37.53	36.87	36.22	35.58	34.96	34.34	33.73	33.13	32.54	31.95
29.00	DISCHG	31.37	30.80	30.24	29.70	29.17	28.67	28.18	27.71	27.25	26.80

RUNOFF VOLUME ABOVE BASEFLOW = 1.59 WATERSHED INCHES, 1354.18 CFS-HRS, 111.91 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 1

OPERATION RUNOFF STRUCTURE 30
OUTPUT HYDROGRAPH= 6
AREA= .37 SQ MI INPUT RUNOFF CURVE= 49. TIME OF CONCENTRATION= 3.90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
14.95	60.58	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.57 WATERSHED INCHES, 375.61 CFS-HRS, 31.04 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 30
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 21.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.21	48.05	25.91

RUNOFF VOLUME ABOVE BASEFLOW = 1.51 WATERSHED INCHES, 360.28 CFS-HRS, 29.77 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1300.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .88, M= 1.10
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .32 PEAK TRAVEL TIME = .30 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.55	47.70	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.50 WATERSHED INCHES, 358.97 CFS-HRS, 29.67 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 40

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OUTPUT HYDROGRAPH= 6
AREA= .06 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= 1.00 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0952 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.72	10.21	(RUNOFF)
23.76	1.21	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 32.57 CFS-HRS, 2.69 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 40
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.73	10.35	(NULL)
16.54	49.80	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 391.54 CFS-HRS, 32.36 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 40
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 9.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.90	9.83	9.81
16.60	49.78	10.89

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 389.94 CFS-HRS, 32.22 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= 1.60, M= 1.45
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .83 PEAK TRAVEL TIME = .10 HOURS

*** WARNING REACH 50 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.02	9.78	(NULL)
16.72	49.77	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.40 WATERSHED INCHES, 389.36 CFS-HRS, 32.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 49
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= 1.67 HOURS

INTERNAL HYDROGRAPH TIME INCREMENT= .1012 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)	
13.33	13.76	(RUNOFF)	
23.80	2.20	(RUNOFF)	
+	*	*	FIRST POINT OF FLAT PEAK

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 59.78 CFS-HRS, 4.94 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 50
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.16	22.91	(NULL)
16.65	53.98	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.29 WATERSHED INCHES, 449.14 CFS-HRS, 37.12 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 50
OUTPUT HYDROGRAPH= 6
AREA= .36 SQ MI INPUT RUNOFF CURVE= 85. TIME OF CONCENTRATION= .42 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0560 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1078.73	(RUNOFF)
19.65	24.75	(RUNOFF)
23.65	18.64	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 5.25 WATERSHED INCHES, 1220.14 CFS-HRS, 100.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 50
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1079.95	(NULL)
16.49	90.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.87 WATERSHED INCHES, 1669.27 CFS-HRS, 137.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 60
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1400.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .44, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

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*** WARNING REACH 60 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1079.95	(NULL)
16.49	90.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.87 WATERSHED INCHES, 1669.27 CFS-HRS, 137.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 60
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 45. TIME OF CONCENTRATION= .90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.56	16.56	(RUNOFF)
23.72	1.26	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.24 WATERSHED INCHES, 39.88 CFS-HRS, 3.30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 60
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1086.21	(NULL)
16.49	93.02	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .95 SQ.MI.

4.00	DISCHG	.00	.00	.00	.02	.10	.26	.49	.75	1.04	1.33
5.00	DISCHG	1.62	1.91	2.20	2.49	2.77	3.04	3.32	3.58	3.84	4.10
6.00	DISCHG	4.36	4.67	5.18	5.80	6.40	6.89	7.32	7.71	8.07	8.41
7.00	DISCHG	8.75	9.07	9.38	9.69	9.99	10.29	10.58	10.86	11.14	11.41
8.00	DISCHG	11.68	12.08	12.82	13.80	14.96	16.27	17.48	18.44	19.17	19.76
9.00	DISCHG	20.27	20.91	21.91	23.16	24.29	25.16	26.02	27.23	28.66	29.92
10.00	DISCHG	30.90	31.86	33.18	34.84	37.10	40.08	43.57	47.95	52.84	58.21
11.00	DISCHG	64.10	70.07	76.45	83.02	90.75	101.27	130.10	208.30	333.15	539.50
12.00	DISCHG	836.25	1068.68	1030.91	805.58	576.69	421.03	324.82	265.51	227.09	199.69
13.00	DISCHG	178.52	161.72	147.53	136.12	127.20	119.75	113.25	107.02	101.45	96.86
14.00	DISCHG	93.29	90.54	88.31	86.99	86.63	86.30	86.13	85.74	85.37	85.47
15.00	DISCHG	86.26	87.42	88.85	90.29	90.92	90.62	90.19	90.11	90.41	90.86
16.00	DISCHG	91.35	91.83	92.25	92.60	92.86	93.02	92.76	91.64	89.95	88.43
17.00	DISCHG	87.35	86.55	85.87	85.24	84.63	84.03	83.43	82.82	82.11	80.76
18.00	DISCHG	78.62	76.40	74.60	73.30	72.20	71.21	70.27	69.38	68.51	67.67
19.00	DISCHG	66.86	66.07	65.33	64.68	63.99	63.30	62.62	61.96	61.19	59.85
20.00	DISCHG	57.76	55.58	53.88	52.62	51.60	50.72	49.94	49.23	48.56	47.93
21.00	DISCHG	47.34	46.79	46.26	45.76	45.28	44.83	44.40	43.97	43.53	43.10
22.00	DISCHG	42.70	42.29	41.89	41.51	41.15	40.80	40.46	40.14	39.84	39.55
23.00	DISCHG	39.27	39.01	38.75	38.51	38.28	38.06	37.85	37.65	37.37	36.46

24.00	DISCHG	34.72	32.26	28.67	24.55	21.18	18.97	17.56	16.54	15.77	15.13
25.00	DISCHG	14.59	14.12	13.71	13.34	13.02	12.72	12.45	12.20	11.96	11.76
26.00	DISCHG	11.57	11.41	11.25	11.11	10.97	10.84	10.71	10.57	10.42	10.28
27.00	DISCHG	10.13	9.97	9.81	9.64	9.47	9.29	9.11	8.93	8.74	8.54
28.00	DISCHG	8.34	8.13	7.93	7.72	7.51	7.29	7.08	6.87	6.67	6.46
29.00	DISCHG	6.26	6.06	5.87	5.68	5.49	5.32	5.14	4.99	4.87	4.74

RUNOFF VOLUME ABOVE BASEFLOW = 2.79 WATERSHED INCHES, 1709.15 CFS-HRS, 141.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 1 OUTPUT HYDROGRAPH= 6

OPERATION ADDHYD CROSS SECTION 70
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1108.12	(NULL)
17.64	178.57	(NULL)
19.30	167.99	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.27 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.41
7.00	DISCHG	11.75	12.07	12.38	12.69	12.99	13.29	13.58	13.86	14.14	14.41
8.00	DISCHG	14.68	15.08	15.82	16.80	17.96	19.27	20.48	21.44	22.17	22.76
9.00	DISCHG	23.27	23.91	24.91	26.16	27.29	28.16	29.02	30.23	31.66	32.92
10.00	DISCHG	33.90	34.86	36.18	37.84	40.10	43.08	46.57	50.95	55.84	61.21
11.00	DISCHG	67.10	73.07	79.45	86.03	93.78	104.34	133.28	211.78	337.32	545.28
12.00	DISCHG	845.70	1086.37	1060.89	950.42	635.93	494.01	410.84	363.63	335.70	316.84
13.00	DISCHG	302.25	290.06	278.62	268.25	258.73	249.35	239.88	229.68	219.15	208.83
14.00	DISCHG	199.31	191.00	183.87	178.18	173.85	169.97	166.66	163.51	160.66	158.75
15.00	DISCHG	158.04	158.23	159.17	160.51	161.38	161.60	161.89	162.51	163.52	164.76
16.00	DISCHG	166.15	167.59	169.06	170.60	172.22	173.90	175.15	175.21	174.67	174.33
17.00	DISCHG	174.49	174.97	175.59	176.29	177.03	177.77	178.49	178.45	177.77	176.30
18.00	DISCHG	174.00	171.61	169.66	168.20	166.94	166.81	167.02	167.29	167.52	167.70
19.00	DISCHG	167.83	167.90	167.93	167.99	167.93	167.80	167.61	167.37	166.96	165.90
20.00	DISCHG	163.99	161.88	160.13	158.74	157.50	156.32	155.15	153.96	152.76	151.55
21.00	DISCHG	150.31	149.07	147.83	146.58	145.33	144.09	142.85	141.60	140.35	139.10
22.00	DISCHG	137.86	136.63	135.40	134.20	133.02	131.87	130.75	129.67	128.62	128.03
23.00	DISCHG	127.61	127.25	126.92	126.60	126.29	125.99	125.70	125.42	125.06	124.05
24.00	DISCHG	122.21	119.62	115.28	109.80	104.83	100.91	97.75	94.95	92.36	89.91
25.00	DISCHG	87.57	85.32	83.15	81.08	79.10	77.11	74.93	72.81	70.82	68.96

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26.00	DISCH6	67.24	65.65	64.17	62.79	61.49	60.27	59.11	57.99	56.93	55.90
27.00	DISCH6	54.91	53.95	53.02	52.10	51.21	50.33	49.45	48.54	47.64	46.75
28.00	DISCH6	45.87	45.00	44.14	43.30	42.46	41.63	40.81	40.00	39.20	38.41
29.00	DISCH6	37.63	36.86	36.10	35.37	34.67	33.99	33.33	32.70	32.12	31.53

RUNOFF VOLUME ABOVE BASEFLOW = 2.09 WATERSHED INCHES, 3063.33 CFS-HRS, 253.15 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 80
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 80 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1108.12	(NULL)
17.64	178.57	(NULL)
19.30	167.99	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.09 WATERSHED INCHES, 3063.33 CFS-HRS, 253.15 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 80
OUTPUT HYDROGRAPH= 6
AREA= .02 SQ MI INPUT RUNOFF CURVE= 64. TIME OF CONCENTRATION= .12 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0160 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.98	54.99	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.98 WATERSHED INCHES, 38.49 CFS-HRS, 3.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 80
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1129.43	(NULL)
17.64	179.89	(NULL)
19.30	169.06	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.10 WATERSHED INCHES, 3101.82 CFS-HRS, 256.33 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 100
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 90
OUTPUT HYDROGRAPH= 6
AREA= .24 SQ MI INPUT RUNOFF CURVE= 75. TIME OF CONCENTRATION= .62 HOURS

INTERNAL HYDROGRAPH TIME INCREMENT= .0827 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.26	458.49	(RUNOFF)
19.66	15.09	(RUNOFF)
23.66	11.44	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 4.14 WATERSHED INCHES, 641.76 CFS-HRS, 53.03 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 100
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1536.02	(NULL)
16.63	198.86	(NULL)
17.64	198.71	(NULL)
19.30	184.14	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.29 WATERSHED INCHES, 3743.57 CFS-HRS, 309.37 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 110
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 110 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1536.02	(NULL)
16.63	198.86	(NULL)
17.64	198.71	(NULL)
19.30	184.14	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.29 WATERSHED INCHES, 3743.57 CFS-HRS, 309.37 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 120
INPUT HYDROGRAPH= 5 OUTPUT HYDROGRAPH= 7

OPERATION REACH CROSS SECTION 120
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 120 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.16	1536.02	(NULL)
16.63	198.86	(NULL)
17.64	198.71	(NULL)
19.30	184.14	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.29 WATERSHED INCHES, 3743.57 CFS-HRS, 309.37 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 120
OUTPUT HYDROGRAPH= 6
AREA= .19 SQ MI INPUT RUNOFF CURVE= 62. TIME OF CONCENTRATION= .74 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0987 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.36	210.53	(RUNOFF)
19.67	9.82	(RUNOFF)
23.66	7.53	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.80 WATERSHED INCHES, 343.12 CFS-HRS, 28.36 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 120
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	1706.92	(NULL)
15.35	205.97	(NULL)
16.62	213.14	(NULL)
17.63	210.91	(NULL)
19.29	193.96	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.42
7.00	DISCHG	11.77	12.13	12.52	12.93	13.36	13.79	14.23	14.67	15.11	15.54
8.00	DISCHG	15.98	16.55	17.48	18.71	20.15	21.78	23.35	24.68	25.76	26.68
9.00	DISCHG	27.51	28.47	29.83	31.49	33.06	34.37	35.71	37.41	39.40	41.24
10.00	DISCHG	42.79	44.36	46.33	48.77	52.04	56.22	61.31	67.58	74.73	82.80
11.00	DISCHG	91.67	101.12	111.25	121.99	134.59	151.00	196.40	303.10	483.36	799.54
12.00	DISCHG	1250.49	1624.90	1701.78	1522.28	1260.25	1026.78	845.25	716.35	626.33	560.22
13.00	DISCHG	510.65	470.41	436.88	408.75	384.73	363.87	344.56	326.09	308.32	291.66
14.00	DISCHG	276.98	264.18	253.18	244.10	236.65	230.05	224.01	218.29	213.04	208.98
15.00	DISCHG	206.49	205.32	205.29	205.88	205.89	205.20	204.41	203.92	203.96	204.45
16.00	DISCHG	205.33	206.42	207.66	209.05	210.59	212.19	213.12	212.68	211.35	210.04
17.00	DISCHG	209.25	208.91	208.94	209.24	209.70	210.26	210.87	210.75	209.91	207.97
18.00	DISCHG	205.04	201.73	198.77	196.39	194.42	193.78	193.64	193.68	193.75	193.83
19.00	DISCHG	193.88	193.91	193.92	193.96	193.90	193.77	193.58	193.35	192.84	191.35

20.00	DISCHG	188.82	185.78	183.02	180.70	178.73	177.03	175.52	174.10	172.73	171.40
21.00	DISCHG	170.09	168.80	167.52	166.25	164.99	163.74	162.50	161.26	160.01	158.76
22.00	DISCHG	157.53	156.30	155.08	153.89	152.71	151.57	150.46	149.39	148.35	147.76
23.00	DISCHG	147.35	147.00	146.67	146.36	146.06	145.77	145.48	145.21	144.74	143.29
24.00	DISCHG	140.75	136.60	130.20	122.16	114.41	107.96	102.73	98.39	94.74	91.57
25.00	DISCHG	88.72	86.12	83.70	81.46	79.35	77.28	75.05	72.89	70.86	68.98
26.00	DISCHG	67.25	65.66	64.17	62.79	61.49	60.27	59.11	57.99	56.93	55.90
27.00	DISCHG	54.91	53.95	53.02	52.10	51.21	50.33	49.45	48.54	47.64	46.75
28.00	DISCHG	45.87	45.00	44.14	43.30	42.46	41.63	40.81	40.00	39.20	38.41
29.00	DISCHG	37.63	36.86	36.10	35.37	34.67	33.99	33.33	32.70	32.12	31.53

RUNOFF VOLUME ABOVE BASEFLOW = 2.33 WATERSHED INCHES, 4086.70 CFS-HRS, 337.72 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV STRUCTURE 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 50
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.55	353.43	10.99

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

9.00	DISCHG	3.00	3.00	3.28	3.75	4.23	4.72	5.24	5.76	6.31	6.89
9.00	ELEV	2.84	2.84	2.85	2.87	2.89	2.91	2.93	2.95	2.97	3.00
10.00	DISCHG	7.43	7.98	8.55	9.14	9.76	10.44	11.17	11.98	12.87	13.87
10.00	ELEV	3.02	3.04	3.07	3.09	3.12	3.15	3.19	3.22	3.26	3.31
11.00	DISCHG	14.98	16.38	18.79	21.42	24.29	27.46	31.38	37.23	48.45	68.27
11.00	ELEV	3.35	3.41	3.47	3.54	3.61	3.69	3.78	3.93	4.17	4.57
12.00	DISCHG	97.70	120.51	186.33	237.40	269.24	293.83	311.90	325.09	334.65	340.39
12.00	ELEV	5.21	6.11	7.13	8.09	8.86	9.44	9.87	10.19	10.42	10.59
13.00	DISCHG	344.72	347.95	350.30	351.90	352.90	353.37	353.39	352.99	352.20	351.04
13.00	ELEV	10.72	10.82	10.89	10.94	10.97	10.99	10.99	10.98	10.95	10.92
14.00	DISCHG	349.56	347.81	345.83	343.68	341.38	338.99	336.50	333.93	330.60	327.24
14.00	ELEV	10.87	10.82	10.76	10.69	10.62	10.55	10.48	10.40	10.32	10.24
15.00	DISCHG	323.88	320.56	317.32	314.17	311.13	308.16	305.25	302.41	299.64	296.95
15.00	ELEV	10.16	10.08	10.00	9.93	9.86	9.78	9.72	9.65	9.58	9.52
16.00	DISCHG	294.36	291.87	289.49	287.20	285.03	282.95	280.98	279.06	277.18	275.31
16.00	ELEV	9.46	9.40	9.34	9.29	9.23	9.18	9.14	9.09	9.05	9.00
17.00	DISCHG	273.46	271.65	269.88	268.17	266.52	264.93	263.40	261.92	260.47	259.02
17.00	ELEV	8.96	8.92	8.87	8.83	8.79	8.76	8.72	8.68	8.65	8.61
18.00	DISCHG	257.54	256.02	254.45	252.85	251.23	249.64	248.15	246.69	245.27	243.89
18.00	ELEV	8.58	8.54	8.51	8.47	8.43	8.39	8.35	8.32	8.28	8.25
19.00	DISCHG	242.55	241.24	239.97	238.74	237.54	236.37	235.22	234.10	233.01	231.91
19.00	ELEV	8.21	8.18	8.15	8.12	8.09	8.06	8.03	8.00	7.98	7.95
20.00	DISCHG	230.79	229.62	228.41	227.16	225.89	224.61	223.31	222.01	220.71	219.40
20.00	ELEV	7.92	7.89	7.86	7.83	7.80	7.77	7.73	7.70	7.67	7.64

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21.00	DISCHG	218.10	216.80	215.49	214.19	212.89	211.59	210.29	207.79	205.02	202.34
21.00	ELEV	7.60	7.57	7.54	7.50	7.47	7.44	7.41	7.38	7.34	7.31
22.00	DISCHG	199.75	197.23	194.79	192.43	190.13	187.90	185.73	183.63	181.59	179.62
22.00	ELEV	7.28	7.26	7.23	7.20	7.18	7.15	7.13	7.10	7.08	7.06
23.00	DISCHG	177.74	175.95	174.24	172.61	171.06	169.58	168.18	166.84	165.55	164.29
23.00	ELEV	7.04	7.02	7.00	6.98	6.96	6.95	6.93	6.92	6.90	6.89
24.00	DISCHG	162.98	161.55	159.90	157.92	155.59	152.99	150.19	147.28	144.30	141.30
24.00	ELEV	6.87	6.86	6.84	6.81	6.79	6.76	6.73	6.70	6.66	6.63
25.00	DISCHG	138.29	135.31	132.35	129.43	126.55	123.72	121.00	120.95	120.89	120.83
25.00	ELEV	6.59	6.56	6.53	6.49	6.46	6.43	6.40	6.37	6.33	6.30
26.00	DISCHG	120.77	120.71	120.65	120.58	120.52	120.45	120.38	120.31	120.24	120.17
26.00	ELEV	6.26	6.23	6.19	6.15	6.11	6.07	6.03	5.99	5.94	5.90
27.00	DISCHG	120.09	120.02	118.77	117.10	115.46	113.83	112.22	110.63	109.06	107.50
27.00	ELEV	5.86	5.81	5.77	5.72	5.68	5.64	5.59	5.55	5.51	5.47
28.00	DISCHG	105.96	104.44	102.93	101.44	99.97	98.51	97.07	95.64	94.23	92.84
28.00	ELEV	5.43	5.39	5.34	5.31	5.27	5.23	5.19	5.15	5.11	5.08
29.00	DISCHG	91.46	90.10	88.34	86.58	84.86	83.17	81.52	79.90	78.31	76.76
29.00	ELEV	5.04	5.00	4.97	4.93	4.90	4.86	4.83	4.80	4.77	4.74

RUNOFF VOLUME ABOVE BASEFLOW = 2.14 WATERSHED INCHES, 3764.10 CFS-HRS, 311.06 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1000.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 130 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 130 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 73.76 CFS, 21.05 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.55	353.43	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.14 WATERSHED INCHES, 3764.10 CFS-HRS, 311.06 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 130
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 74. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	160.37	(RUNOFF)
23.65	2.37	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 4.05 WATERSHED INCHES, 130.79 CFS-HRS, 10.81 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 130
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.05	265.73	(NULL)
13.45	363.29	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.18 WATERSHED INCHES, 3894.89 CFS-HRS, 321.87 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 60
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.54	286.61	6.79

TIME(HRS)		FIRST HYDROGRAPH POINT = .00 HOURS				TIME INCREMENT = .10 HOURS			DRAINAGE AREA =		2.77 SQ.MI.
11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.14	5.20	8.45
11.00	ELEV	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.46	2.55
12.00	DISCHG	12.84	17.42	21.85	31.18	41.25	51.15	61.65	74.43	87.08	99.43
12.00	ELEV	2.68	2.83	2.98	3.13	3.29	3.45	3.62	3.79	3.96	4.13
13.00	DISCHG	111.37	122.89	133.95	142.20	149.94	157.40	164.60	171.51	178.14	180.14
13.00	ELEV	4.28	4.44	4.59	4.73	4.87	5.00	5.13	5.25	5.37	5.48
14.00	DISCHG	180.32	180.51	180.69	180.87	184.81	197.97	209.85	220.52	230.07	238.55
14.00	ELEV	5.59	5.71	5.81	5.92	6.03	6.13	6.22	6.29	6.37	6.43
15.00	DISCHG	246.08	252.71	258.54	263.63	268.04	271.82	275.03	277.75	280.02	281.88
15.00	ELEV	6.49	6.54	6.58	6.62	6.65	6.68	6.70	6.72	6.74	6.75
16.00	DISCHG	283.38	284.55	285.42	286.03	286.41	286.59	286.58	286.38	286.03	285.55
16.00	ELEV	6.76	6.77	6.78	6.78	6.79	6.79	6.79	6.79	6.78	6.78
17.00	DISCHG	284.95	284.26	283.47	282.61	281.68	280.69	279.66	278.59	277.48	276.33
17.00	ELEV	6.78	6.77	6.76	6.76	6.75	6.74	6.74	6.73	6.72	6.71
18.00	DISCHG	275.13	273.89	272.63	271.33	270.01	268.67	267.31	265.94	264.57	263.19
18.00	ELEV	6.70	6.69	6.68	6.67	6.66	6.65	6.64	6.63	6.62	6.61
19.00	DISCHG	261.82	260.45	259.08	257.73	256.39	255.06	253.74	252.44	251.15	249.86
19.00	ELEV	6.60	6.59	6.58	6.57	6.56	6.55	6.54	6.53	6.52	6.51
20.00	DISCHG	248.56	247.26	245.97	244.68	243.39	242.10	240.81	239.53	238.24	236.95
20.00	ELEV	6.50	6.49	6.48	6.48	6.47	6.46	6.45	6.44	6.43	6.42
21.00	DISCHG	235.65	234.36	233.07	231.77	230.48	229.19	227.89	226.55	225.10	223.54
21.00	ELEV	6.41	6.40	6.39	6.38	6.37	6.36	6.35	6.34	6.33	6.32
22.00	DISCHG	221.90	220.19	218.41	216.58	214.71	212.81	210.88	208.94	206.99	205.03
22.00	ELEV	6.31	6.29	6.28	6.27	6.25	6.24	6.22	6.21	6.19	6.18
23.00	DISCHG	203.07	201.13	199.20	197.29	195.41	193.56	191.74	189.96	188.21	186.49
23.00	ELEV	6.16	6.15	6.14	6.12	6.11	6.09	6.08	6.07	6.05	6.04
24.00	DISCHG	184.77	183.05	181.29	180.98	180.95	180.93	180.90	180.86	180.82	180.78
24.00	ELEV	6.03	6.02	6.00	5.99	5.97	5.96	5.94	5.92	5.89	5.87
25.00	DISCHG	180.74	180.70	180.65	180.59	180.54	180.48	180.42	180.36	180.29	180.23
25.00	ELEV	5.84	5.82	5.79	5.76	5.72	5.69	5.65	5.61	5.58	5.54

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26.00	DISCHG	180.17	180.10	180.04	179.31	177.25	175.26	173.34	171.49	169.70	167.97
26.00	ELEV	5.50	5.46	5.43	5.39	5.35	5.32	5.28	5.25	5.22	5.19
27.00	DISCHG	166.29	164.67	163.09	161.51	159.92	158.34	156.75	155.17	153.58	152.00
27.00	ELEV	5.16	5.13	5.10	5.07	5.04	5.01	4.99	4.96	4.93	4.90
28.00	DISCHG	150.41	148.83	147.25	145.67	144.10	142.53	140.96	139.40	137.85	136.29
28.00	ELEV	4.87	4.85	4.82	4.79	4.76	4.73	4.71	4.68	4.65	4.62
29.00	DISCHG	134.67	132.63	130.62	128.61	126.62	124.65	122.69	120.74	118.81	116.89
29.00	ELEV	4.60	4.57	4.54	4.51	4.49	4.46	4.44	4.41	4.38	4.36

RUNOFF VOLUME ABOVE BASEFLOW = 1.98 WATERSHED INCHES, 3548.28 CFS-HRS, 293.23 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 140
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .38 PEAK TRAVEL TIME = .30 HOURS
0 *** WARNING - REACH 140 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 113.89 CFS, 40.16 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.83	286.13	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.97 WATERSHED INCHES, 3516.90 CFS-HRS, 290.64 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 140
OUTPUT HYDROGRAPH= 6
AREA= .20 SQ MI INPUT RUNOFF CURVE= 70. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	576.56	(RUNOFF)
15.16	20.07	(RUNOFF)
16.45	17.49	(RUNOFF)
17.65	14.64	(RUNOFF)
19.65	11.84	(RUNOFF)
23.65	9.02	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.63 WATERSHED INCHES, 468.30 CFS-HRS, 38.70 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 140
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	582.56	(NULL)
16.53	302.43	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.08 WATERSHED INCHES, 3985.21 CFS-HRS, 329.34 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 150
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 149
OUTPUT HYDROGRAPH= 6
AREA= .08 SQ MI INPUT RUNOFF CURVE= 65. TIME OF CONCENTRATION= .42 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0560 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.15	142.32	(RUNOFF)
16.45	6.39	(RUNOFF)
17.67	5.39	(RUNOFF)
19.66	4.37	(RUNOFF)
23.66	3.34	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.10 WATERSHED INCHES, 160.17 CFS-HRS, 13.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 150
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	692.53	(NULL)
16.53	308.81	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.11 WATERSHED INCHES, 4145.37 CFS-HRS, 342.57 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 150
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 300.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 150 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 150 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 119.01 CFS, 17.63 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	692.53	(NULL)
16.53	308.81	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.11 WATERSHED INCHES, 4145.37 CFS-HRS, 342.57 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 150
OUTPUT HYDROGRAPH= 6
AREA= .01 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= .15 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0200 HOURS

*** WARNING-MAIN TIME INCREMENT MAY BE TOO LARGE.
COMPUTED PEAK(4.99) AT EXCEEDS MAX. ADJACENT HYDROGRAPH COORDINATE BY 8 %.
+ XSECTION 150

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.05	4.99	(RUNOFF)

TIME(HRS)		FIRST HYDROGRAPH POINT = .00 HOURS				TIME INCREMENT = .10 HOURS			DRAINAGE AREA =		.01 SQ.MI.
11.00	DISCHG	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.05
12.00	DISCHG	4.60	4.46	2.17	1.71	1.28	1.17	1.09	1.02	1.00	.87
13.00	DISCHG	.84	.78	.73	.71	.66	.64	.60	.56	.55	.52
14.00	DISCHG	.52	.50	.48	.47	.44	.43	.41	.38	.38	.38
15.00	DISCHG	.38	.39	.39	.38	.35	.34	.34	.34	.34	.34
16.00	DISCHG	.34	.34	.35	.35	.35	.35	.32	.30	.30	.30
17.00	DISCHG	.30	.30	.30	.30	.30	.30	.30	.30	.30	.26
18.00	DISCHG	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25
19.00	DISCHG	.25	.25	.25	.25	.25	.25	.25	.25	.25	.21
20.00	DISCHG	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19
21.00	DISCHG	.19	.20	.20	.20	.20	.20	.20	.20	.20	.20
22.00	DISCHG	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
23.00	DISCHG	.20	.20	.20	.20	.20	.20	.20	.20	.20	.15
24.00	DISCHG	.14	.08	.01	.00						

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 5.41 CFS-HRS, .45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 150
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	697.49	(NULL)
14.28	214.31	(NULL)
16.52	309.15	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.10 WATERSHED INCHES, 4150.79 CFS-HRS, 343.02 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVHOV CROSS SECTION 180
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 180
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 42. TIME OF CONCENTRATION= .48 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.27	39.64	(RUNOFF)
23.68	2.45	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .99 WATERSHED INCHES, 70.57 CFS-HRS, 5.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 180
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.04	714.27	(NULL)
14.26	220.74	(NULL)
16.52	313.42	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.06 WATERSHED INCHES, 4221.36 CFS-HRS, 348.85 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 180
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .63 PEAK TRAVEL TIME = .20 HOURS
0 *** WARNING - REACH 180 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 119.01 CFS, 17.20 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	633.45	(NULL)
16.67	312.99	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.05 WATERSHED INCHES, 4199.10 CFS-HRS, 347.01 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 180
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 41. TIME OF CONCENTRATION= .48 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.28	34.74	(RUNOFF)
23.69	2.34	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 65.08 CFS-HRS, 5.38 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 180
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.19	665.28	(NULL)
16.66	316.97	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 3.28 SQ.MI.

8.00	DISCHG	3.00	3.00	3.00	3.01	3.07	3.21	3.40	3.61	3.83	4.04
9.00	DISCHG	4.26	4.47	4.73	5.07	5.38	5.67	5.96	6.35	6.86	7.34

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10.00	DISCHG	7.79	8.22	8.76	9.43	10.11	11.17	12.27	13.65	15.49	17.21
11.00	DISCHG	19.54	21.84	24.37	27.39	30.24	34.66	39.19	64.54	119.62	186.83
12.00	DISCHG	370.70	592.84	663.34	537.56	414.83	317.59	253.93	216.72	195.42	186.31
13.00	DISCHG	181.07	180.39	182.56	185.72	191.15	196.04	201.32	206.26	210.31	214.95
14.00	DISCHG	219.35	223.02	225.22	225.94	226.14	225.30	225.18	227.86	232.67	239.50
15.00	DISCHG	247.51	255.96	264.33	272.29	279.49	284.99	289.67	294.04	298.11	301.83
16.00	DISCHG	305.15	308.04	310.53	312.62	314.34	315.73	316.78	316.89	316.00	315.13
17.00	DISCHG	314.44	313.87	313.36	312.82	312.24	311.59	310.86	310.07	309.20	308.07
18.00	DISCHG	305.85	303.43	301.34	299.55	298.00	296.58	295.22	293.89	292.56	291.23
19.00	DISCHG	289.89	288.55	287.21	285.86	284.52	283.18	281.84	280.51	279.18	277.66
20.00	DISCHG	275.09	272.37	270.04	268.07	266.37	264.85	263.43	262.07	260.75	259.44
21.00	DISCHG	258.15	256.86	255.58	254.30	253.02	251.74	250.46	249.17	247.89	246.60
22.00	DISCHG	245.26	243.87	242.42	240.88	239.28	237.60	235.87	234.09	232.26	230.40
23.00	DISCHG	228.51	226.60	224.68	222.76	220.83	218.91	217.00	215.12	213.24	211.18
24.00	DISCHG	208.07	204.75	200.43	194.91	190.18	186.76	184.52	183.12	182.25	181.71
25.00	DISCHG	181.37	181.14	180.99	180.88	180.80	180.73	180.67	180.61	180.55	180.49
26.00	DISCHG	180.43	180.37	180.30	180.24	180.18	179.96	179.27	178.16	176.76	175.19
27.00	DISCHG	173.53	171.82	170.12	168.44	166.78	165.15	163.53	161.93	160.33	158.74
28.00	DISCHG	157.15	155.56	153.97	152.39	150.80	149.22	147.64	146.07	144.49	142.92
29.00	DISCHG	141.36	139.79	138.22	136.53	134.74	132.88	130.96	129.02	127.07	125.12

RUNOFF VOLUME ABOVE BASEFLOW = 2.01 WATERSHED INCHES, 4264.19 CFS-HRS, 352.39 ACRE-FEET; BASEFLOW = 3.00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID 1740

\+ COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION ENDJOB RECORD ID 1750

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 91 STORM 1													
STRUCTURE 10	RUNOFF	.84	2	2	.10	.0	7.00	24.00	1.67	---	17.80	96.56	114.9
STRUCTURE 10	RESVOR	.84	2	2	.10	.0	7.00	24.00	1.63	9.50	18.14	96.09	114.4
XSECTION 10	REACH	.84	2	2	.10	.0	7.00	24.00	1.62	---	18.47	98.84	117.7
XSECTION 10	RUNOFF	.20	2	2	.10	.0	7.00	24.00	1.16	---	12.07	150.75	753.8
XSECTION 10	ADDHYD	1.04	2	2	.10	.0	7.00	24.00	1.53	---	12.07	153.76	147.8
STRUCTURE 20	RESVOR	1.04	2	2	.10	.0	7.00	24.00	1.48	9.21	20.08	93.83	90.2
XSECTION 20	REACH	1.04	2	2	.10	.0	7.00	24.00	1.47	---	20.23	93.80	90.2
XSECTION 20	RUNOFF	.28	2	2	.10	.0	7.00	24.00	2.03	---	13.36	102.66	366.6
XSECTION 20	ADDHYD	1.32	2	2	.10	.0	7.00	24.00	1.59	---	13.31	132.15	100.1
STRUCTURE 30	RUNOFF	.37	2	2	.10	.0	7.00	24.00	1.57	---	14.95	60.58	163.7
STRUCTURE 30	RESVOR	.37	2	2	.10	.0	7.00	24.00	1.51	25.91	16.21	48.05	129.9
XSECTION 40	REACH	.37	2	2	.10	.0	7.00	24.00	1.50	---	16.55	47.70	128.9
XSECTION 40	RUNOFF	.06	2	2	.10	.0	7.00	24.00	.84	---	12.72	10.21	170.2
XSECTION 40	ADDHYD	.43	2	2	.10	.0	7.00	24.00	1.41	---	16.54	49.80	115.8
STRUCTURE 40	RESVOR	.43	2	2	.10	.0	7.00	24.00	1.41	10.89	16.60	49.78	115.8
XSECTION 50	REACH	.43	2	2	.10	.0	7.00	24.00	1.40	---	16.72	49.77	115.7
XSECTION 49	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.84	---	13.33	13.76	125.1
XSECTION 50	ADDHYD	.54	2	2	.10	.0	7.00	24.00	1.29	---	16.65	53.98	100.0
XSECTION 50	RUNOFF	.36	2	2	.10	.0	7.00	24.00	5.25	---	12.13	1078.73	2996.5
XSECTION 50	ADDHYD	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	REACH	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	RUNOFF	.05	2	2	.10	.0	7.00	24.00	1.24	---	12.56	16.56	331.2
XSECTION 60	ADDHYD	.95	2	2	.10	.0	7.00	24.00	2.79	---	12.14	1086.21	1143.4
XSECTION 70	ADDHYD	2.27	2	2	.10	.0	7.00	24.00	2.09	---	12.14	1108.12	488.2
XSECTION 80	REACH	2.27	2	2	.10	.0	7.00	24.00	2.09	---	12.14	1108.12	488.2
XSECTION 80	RUNOFF	.02	2	2	.10	.0	7.00	24.00	2.98	---	11.98	54.99	2749.6
XSECTION 80	ADDHYD	2.29	2	2	.10	.0	7.00	24.00	2.10	---	12.13	1129.43	493.2
XSECTION 90	RUNOFF	.24	2	2	.10	.0	7.00	24.00	4.14	---	12.26	458.49	1910.4
XSECTION 100	ADDHYD	2.53	2	2	.10	.0	7.00	24.00	2.29	---	12.16	1536.02	607.1
XSECTION 110	REACH	2.53	2	2	.10	.0	7.00	24.00	2.29	---	12.16	1536.02	607.1
XSECTION 120	REACH	2.53	2	2	.10	.0	7.00	24.00	2.29	---	12.16	1536.02	607.1
XSECTION 120	RUNOFF	.19	2	2	.10	.0	7.00	24.00	2.90	---	12.36	210.53	1108.1

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SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 91 STORM 1													
XSECTION 120	ADDHYD	2.72	2	2	.10	.0	7.00	24.00	2.33	---	12.18	1706.92	627.5
STRUCTURE 50	RESVOR	2.72	2	2	.10	.0	7.00	24.00	2.14	10.99	13.55	353.43	129.9
XSECTION 130	REACH	2.72	2	2	.10	.0	7.00	24.00	2.14	---	13.55	353.43	129.9
XSECTION 130	RUNOFF	.05	2	2	.10	.0	7.00	24.00	4.05	---	12.01	160.37	3207.4
XSECTION 130	ADDHYD	2.77	2	2	.10	.0	7.00	24.00	2.18	---	13.45	363.29	131.2
STRUCTURE 60	RESVOR	2.77	2	2	.10	.0	7.00	24.00	1.98	6.79	16.54	286.61	103.5
XSECTION 140	REACH	2.77	2	2	.10	.0	7.00	24.00	1.97	---	16.83	286.13	103.3
XSECTION 140	RUNOFF	.20	2	2	.10	.0	7.00	24.00	3.63	---	12.02	576.56	2882.8
XSECTION 140	ADDHYD	2.97	2	2	.10	.0	7.00	24.00	2.08	---	12.02	582.56	196.1
XSECTION 149	RUNOFF	.08	2	2	.10	.0	7.00	24.00	3.10	---	12.15	142.32	1779.0
XSECTION 150	ADDHYD	3.05	2	2	.10	.0	7.00	24.00	2.11	---	12.03	692.53	227.1
XSECTION 150	REACH	3.05	2	2	.10	.0	7.00	24.00	2.11	---	12.03	692.53	227.1
XSECTION 150	RUNOFF	.01	2	2	.10	.0	7.00	24.00	.84	---	12.05	4.99	499.3
XSECTION 150	ADDHYD	3.06	2	2	.10	.0	7.00	24.00	2.10	---	12.03	697.49	227.9
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.99	---	12.27	39.64	360.4
XSECTION 180	ADDHYD	3.17	2	2	.10	.0	7.00	24.00	2.06	---	12.04	714.27	225.3
XSECTION 180	REACH	3.17	2	2	.10	.0	7.00	24.00	2.05	---	12.18	633.45	199.8
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.92	---	12.28	34.74	315.8
XSECTION 180	ADDHYD	3.28	2	2	.10	.0	7.00	24.00	2.01	---	12.19	665.28	202.8

SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

XSEC ID	REACH LENGTH (FT)	HYDROGRAPH INFORMATION INFLOW PEAK (CFS)	INFLOW TIME (HR)	OUTFLOW PEAK (CFS)	OUTFLOW TIME (HR)	OUTFLOW+ INTERV. PEAK (CFS)	INTERV. TIME (HR)	AREA BASE-FLOW (CFS)	ROUTING PARAMETERS VOLUME BASE (IN)	MAIN INCR (HR)	ITER-ATION #	Q AND A EQUATION COEFF (X)	POWER (M)	LENGTH FACTOR (K*)	PEAK RATIO Q/I	S/Q PEAK (K) (SEC)	ATT-KIN COEFF (C)	PEAK TRAVEL TIME STOR-AGE (HR)	PEAK TRAVEL TIME KINE-MATIC (HR)
	ALTERNATE 91 STORM 1																		
10	1750	99	18.1	99	18.5			3	1.63*	.10	1	1.20	1.10	.021	.997	888	.34	.40	.25
						149	12.1												
20	2900	94	20.1	94	20.2			3	1.48*	.10	1	.280	1.94	.000	1.000	319	.72?	.10	.09
						132	13.3												
40	1300	48	16.2	48	16.5			0	1.51	.10	1	.880	1.10	.027	.992	934	.32	.30	.26
						50	16.5												
50	1700	50	16.6	50	16.7			0	1.41	.10	1	1.60	1.45	.002	1.000	252	.83?	.10	.07
						54	16.6												
60	1400	1064	12.1	1064	12.1			0	2.87	.10	0	.440	1.94	.000	1.000	38	1.00?	.00	.00
						1069	12.1												
80	700	1086	12.1	1086	12.1			3	2.09	.10	0	.300	1.94	.000	1.000	23	1.00?	.00	.00
						1115	12.1												
110	500	1520	12.2	1520	12.2			3	2.29	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						---	---												
120	500	1520	12.2	1520	12.2			3	2.29	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						1702	12.2												
												.300							

+130	1000	353	13.6	353	13.6		3	2.14#	.10	0		1.94	.000	1.000	56	1.00?	.00	.00
+						363	13.5											
+140	2500	287	16.5	286	16.8		3	1.98#	.10	1	.210	1.48	.004	.998	774	.38	.30	.22
+						578	12.0											
+150	300	678	12.0	678	12.0		3	2.11#	.10	0	.210	1.48	.000	1.000	70	1.00?	.00	.00
+						683	12.0											
+180	1700	695	12.0	630	12.2		3	2.06#	.10	1	.210	1.48	.005	.907	395	.63	.20	.11
+						663	12.2											

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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 STRUCTURE 60	2.77	
+ ALTERNATE 91		286.61
0 STRUCTURE 50	2.72	
+ ALTERNATE 91		353.43
0 STRUCTURE 40	.43	
+ ALTERNATE 91		49.78
0 STRUCTURE 30	.37	
+ ALTERNATE 91		48.05
0 STRUCTURE 20	1.04	
+ ALTERNATE 91		93.83
0 STRUCTURE 10	.84	
+ ALTERNATE 91		96.09
0 XSECTION 10	1.04	
+ ALTERNATE 91		153.76
0 XSECTION 20	1.32	
+ ALTERNATE 91		132.15
0 XSECTION 40	.43	
+ ALTERNATE 91		49.80
0 XSECTION 49	.11	
+ ALTERNATE 91		13.76
0 XSECTION 50	.90	
+ ALTERNATE 91		1079.95
0 XSECTION 60	.95	
+ ALTERNATE 91		1086.21
0 XSECTION 70	2.27	
+ ALTERNATE 91		1108.12
0 XSECTION 80	2.29	
+ ALTERNATE 91		1129.43

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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 XSECTION 90	.24	
+		
ALTERNATE 91		458.49
0 XSECTION 100	2.53	
+		
ALTERNATE 91		1536.02
0 XSECTION 110	2.53	
+		
ALTERNATE 91		1536.02
0 XSECTION 120	2.72	
+		
ALTERNATE 91		1706.92
0 XSECTION 130	2.77	
+		
ALTERNATE 91		363.29
0 XSECTION 140	2.97	
+		
ALTERNATE 91		582.56
0 XSECTION 149	.08	
+		
ALTERNATE 91		142.32
0 XSECTION 150	3.06	
+		
ALTERNATE 91		697.49
0 XSECTION 180	3.28	
+		
ALTERNATE 91		665.28

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

JOB TR-20                    FULLPRINT PASS=001  SUMMARY                    10
TITLE 007 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM    20
TITLE     ALT  92                                                  30
 3 STRUCT      10                                                            40
 8                    7.00       0.00       4.33                             50
 8                    7.4        2.5        5.01                             60
 8                    7.6        5.0        5.36                             70
 8                    7.8        10.0       5.70                             80
 8                    8.2        22.0       6.38                             90
 8                    8.6        52.0       7.07                            100
 8                    9.0        62.0       7.75                            110
 8                    9.5        96.0       8.61                            120
 8                    10.0       126.0      9.47                            130
 8                    11.0       198.0      11.18                           140
 8                    12.0       280.0      12.89                           150
 8                    13.00      360.0      14.79                           160
 8                    14.00      440.0      16.68                           170
 8                    15.00      500.0      18.58                           180
 8                    15.1       600.00     18.60                           190
 9 ENDTBL                                                                   200
 3 STRUCT      20                                                           210
 8                    4.5        0.00       6.80                            220
 8                    4.9        1.5        7.88                            230
 8                    5.1        3.7        8.42                            240
 8                    5.5        11.0       9.51                            250
 8                    5.7        15.0       10.13                           260
 8                    6.1        25.0       11.13                           270
 8                    6.5        40.0       12.21                           280
 8                    7.1        60.0       13.84                           290
 8                    7.9        78.0       16.01                           300
 8                    8.5        79.0       17.63                           310
 8                    9.5        100.0      20.34                           320
 8                    10.5       126.0      23.06                           330
 8                    11.5       150.0      25.76                           340
 8                    11.6       300.0      26.04                           350
 9 ENDTBL                                                                   360
 3 STRUCT      30                                                           370
 8                    21.0       0.00       0.10                            380
 8                    21.4       0.6        0.61                            390
 8                    21.6       1.5        0.86                            400
 8                    21.8       2.5        1.12                            410
 8                    22.2       5.2        1.62                            420
 8                    22.6       8.2        2.13                            430
 8                    23.0       11.0       2.64                            440
 8                    23.5       20.0       3.27                            450
 8                    24.0       27.0       3.91                            460
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**********80-80 LIST OF INPUT DATA (CONTINUED)**********

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8                    25.0      39.0      5.18                    470
8                    26.0      49.0      6.45                    480
8                    27.0      57.0      7.72                    490
8                    27.1      200.00    7.74                    500
9 ENDTBL                                                         510
3 STRUCT      40                                                 520
8                    9.0       0.0       0.38                    530
8                    9.4       2.2       0.47                    540
8                    9.6       5.0       0.52                    550
8                    10.0      14.0      0.62                    560
8                    10.2      21.0      0.67                    570
8                    10.6      36.0      0.77                    580
8                    11.0      55.0      0.86                    590
8                    11.6      82.0      1.01                    600
8                    12.4      120.0     1.21                    610
8                    13.0      121.0     1.35                    620
8                    14.0      122.0     1.60                    630
8                    15.0      126.0     1.84                    640
8                    16.0      150.00    2.08                    650
8                    16.1      300.0     2.11                    660
9 ENDTBL                                                         670
3 STRUCT      50                                                 680
8                    2.4       0.00      22.00                   690
8                    2.8       2.0       26.86                   700
8                    3.0       7.0       29.29                   710
8                    3.4       16.0      34.16                   720
8                    3.6       24.0      36.59                   730
8                    4.0       40.0      41.46                   740
8                    4.4       60.0      46.32                   750
8                    5.0       90.0      53.62                   760
8                    5.8       120.0     63.35                   770
8                    6.4       121.0     70.65                   780
8                    7.4       210.0     82.81                   790
8                    8.4       250.00    94.98                   800
8                    10.4      334.0     119.31                  810
8                    12.4      400.0     143.63                  820
8                    12.5      800.0     143.70                  830
9 ENDTBL                                                         840
3 STRUCT      60                                                 850
8                    2.0       0.0       22.20                   860
8                    2.4       3.0       27.41                   870
8                    2.6       10.5      30.02                   880
8                    3.0       22.5      35.24                   890
8                    3.2       36.0      37.85                   900
8                    3.6       60.0      43.06                   910
8                    4.0       90.0      48.28                   920
```


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

8                    4.6        135.0      56.11                        930
8                    5.4        180.0      66.55                        940
8                    6.0        181.0      74.38                        950
8                    7.0        315.0      87.42                        960
8                    8.0        375.0      100.47                       970
8                    8.1        700.0      100.50                       980
9 ENDTBL                                                                990
6 RUNOFF 1    10     6 0.84     51.        7.50       1                1000
6 RESVOR 2    10 6   7 7.0                            1                1010
6 REACH  3 010   7   5 1750.    1.2        1.10       1                1020
6 RUNOFF 1 010       6 0.20     42.        0.19       1                1030
6 ADDHYD 4 010   5 6 7                                1 1              1040
6 SAVMOV 5 010   7   6                                                 1050
6 RESVOR 2    20 6   7 4.5                            1                1060
6 REACH  3 020   7   5 2900.    0.28       1.94       1                1070
6 RUNOFF 1 020       6 0.28     53.        1.02       1                1080
6 ADDHYD 4 020   5 6 7                                1 1              1090
6 SAVMOV 5 020   7   1                                                 1100
6 RUNOFF 1    30     6 0.37     49.        3.90       1                1110
6 RESVOR 2    30 6   7 21.0                           1                1120
6 REACH  3 040   7   5 1300.    0.88       1.10       1                1130
6 RUNOFF 1 040       6 0.06     40.        1.00       1                1140
6 ADDHYD 4 040   5 6 7                                1                1150
6 SAVMOV 5 040   7   6                                                 1160
6 RESVOR 2    40 6   7 9.0                            1                1170
6 REACH  3 050   7   5 1700.    1.6        1.45       1                1180
6 RUNOFF 1 049       6 0.11     40.        1.67       1                1190
6 ADDHYD 4 050   5 6 7                                1                1200
6 SAVMOV 5 050   7   5                                                 1210
6 RUNOFF 1 050       6 0.36     85.        0.42       1                1220
6 ADDHYD 4 050   5 6 7                                1                1230
6 REACH  3 060   7   5 1400.    0.44       1.94       1                1240
6 RUNOFF 1 060       6 0.05     45.        0.90       1                1250
6 ADDHYD 4 060   5 6 7                                1 1              1260
6 SAVMOV 5 070   7   5                                                 1270
6 SAVMOV 5 070   1   6                                                 1280
6 ADDHYD 4 070   5 6 7                                1 1              1290
6 REACH  3 080   7   5 700.     0.30       1.94       1                1300
6 RUNOFF 1 080       6 0.02     64.        0.12       1                1310
6 ADDHYD 4 080   5 6 7                                1                1320
6 SAVMOV 5 100   7   5                                                 1330
6 RUNOFF 1 090       6 0.24     73.        0.62       1                1340
6 ADDHYD 4 100   5 6 7                                1                1350
6 REACH  3 110   7   5 500.     0.30       1.94       1                1360
6 SAVMOV 5 120   5   7                                                 1370
6 REACH  3 120   7   5 500.     0.30       1.94       1                1380
```

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

 6 RUNOFF 1 120       6 0.19        56.         0.74        1                1390
 6 ADDHYD 4 120   5 6 7                                     1 1              1400
 6 SAVMOV 5    50 7   6                                                      1410
 6 RESVOR 2    50 6   7 2.4                                 1 1 1            1420
 6 REACH  3 130   7   5 1000.       0.30        1.94        1                1430
 6 RUNOFF 1 130       6 0.05        74.         0.19        1                1440
 6 ADDHYD 4 130   5 6 7                                     1                1450
 6 SAVMOV 5 130   7   6                                                      1460
 6 RESVOR 2    60 6   7 2.0                                 1 1 1            1470
 6 REACH  3 140   7   5 2500.       0.21        1.48        1                1480
 6 RUNOFF 1 140       6 0.20        66.         1.15        1                1490
 6 ADDHYD 4 140   5 6 7                                     1                1500
 6 SAVMOV 5 150   7   5                                                      1510
 6 RUNOFF 1 149       6 0.08        50.         0.42        1                1520
 6 ADDHYD 4 150   5 6 7                                                      1530
 6 REACH  3 150   7   5 300.        0.21        1.48        1                1540
 6 RUNOFF 1 150       6 0.01        40.         0.15        1                1550
 6 ADDHYD 4 150   5 6 7                                     1                1560
 6 SAVMOV 5 180   7   5                                                      1570
 6 RUNOFF 1 180       6 0.28        50.         0.61        1                1580
 6 ADDHYD 4 180   5 6 7                                     1                1590
 6 REACH  3 180   7   5 1700.0      0.21        1.48        1                1600
 6 RUNOFF 1 180       6 0.11        41.         0.48        1                1610
 6 ADDHYD 4 180   5 6 7                                     1 1   1   1      1620
   ENDATA                                                                    1630
 7 ALTER  3                                                                  1640
 6 RUNOFF 1 010       6 0.20        48.0        0.19        1                1650
 6 RUNOFF 1 020       6 0.28        55.0        2.00        1                1660
 6 RUNOFF 1 090       6 0.24        75.0        0.62        1                1665
 6 RUNOFF 1 120       6 0.19        66.0        0.74        1                1668
 6 RUNOFF 1 140       6 0.20        71.0        0.19        1                1670
 6 RUNOFF 1 149       6 0.08        65.0        0.42        1                1680
 6 RUNOFF 1 180       6 0.11        42.0        0.48        1                1690
 7 LIST                                                                      1700
 7 BASFLO 5             3.0                                                  1710
 7 INCREM 6             0.1                                                  1720
 7 COMPUT 7    10 180   0.0         7.0         1.0         2 2  92  01      1730
   ENDCMP 1                                                                   740
   ENDJOB 2                                                                  ./50
0*******************************END OF 80-80 LIST*******************************
```


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TR20 XEQ 04-29-86 09:08 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM 20 JOB 1 PASS 1

REV PC 09/83(.2) ALT 92 30 PAGE 1

0CHANGES TO STANDARD CONTROL LIST FOLLOW

EXECUTIVE CONTROL OPERATION ALTER RECORD ID 1640

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 10 RECORD ID 1650

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2000 48.0000 .1900

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 20 RECORD ID 1660

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2800 55.0000 2.0000

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 90 RECORD ID 1665

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2400 75.0000 .6200

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 120 RECORD ID 1668

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .1900 66.0000 .7400

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 140 RECORD ID 1670

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .2000 71.0000 .1900

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 149 RECORD ID 1680

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .0900 65.0000 .4200

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

STANDARD CONTROL OPERATION RUNOFF CROSS SECTION 180 RECORD ID 1690

OUTPUT HYDROGRAPH = 6 DATA FIELD VALUES = .1100 42.0000 .4800

OUTPUT OPTIONS IN EFFECT PEAK VOL SUM

EXECUTIVE CONTROL OPERATION LIST RECORD ID 1700

LISTING OF CURRENT DATA

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	10			
8		7.00	.00	4.33
8		7.40	2.50	5.01
8		7.60	5.00	5.36
8		7.80	10.00	5.70
8		8.20	22.00	6.38
8		8.60	52.00	7.07
8		9.00	62.00	7.75
8		9.50	96.00	8.61
8		10.00	126.00	9.47
8		11.00	198.00	11.18
8		12.00	280.00	12.89
8		13.00	360.00	14.79
8		14.00	440.00	16.68
8		15.00	500.00	18.58
8		15.10	600.00	18.60
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	20			
8		4.50	.00	6.80
8		4.90	1.50	7.88
8		5.10	3.70	8.42
8		5.50	11.00	9.51
8		5.70	15.00	10.13
8		6.10	25.00	11.13
8		6.50	40.00	12.21
8		7.10	60.00	13.84
8		7.90	78.00	16.01
8		8.50	79.00	17.63
8		9.50	100.00	20.34
8		10.50	126.00	23.06
8		11.50	150.00	25.76
8		11.60	300.00	26.04
9 ENDTBL				

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	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	30			
8		21.00	.00	.10
8		21.40	.60	.61
8		21.60	1.50	.86
8		21.80	2.50	1.12
8		22.20	5.20	1.62
8		22.60	8.20	2.13
8		23.00	11.00	2.64
8		23.50	20.00	3.27
8		24.00	27.00	3.91
8		25.00	39.00	5.18
8		26.00	49.00	6.45
8		27.00	57.00	7.72
8		27.10	200.00	7.74
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	40			
8		9.00	.00	.38
8		9.40	2.20	.47
8		9.60	5.00	.52
8		10.00	14.00	.62
8		10.20	21.00	.67
8		10.60	36.00	.77
8		11.00	55.00	.86
8		11.60	82.00	1.01
8		12.40	120.00	1.21
8		13.00	121.00	1.35
8		14.00	122.00	1.60
8		15.00	126.00	1.84
8		16.00	150.00	2.08
8		16.10	300.00	2.11
9 ENDTBL				

	STRUCT NO.	ELEVATION	DISCHARGE	STORAGE
3 STRUCT	50			
8		2.40	.00	22.00
8		2.80	2.00	26.86
8		3.00	7.00	29.29
8		3.40	16.00	34.16
8		3.60	24.00	36.59
8		4.00	40.00	41.46
8		4.40	60.00	46.32
8		5.00	90.00	53.62

```
8                    5.80      120.00      63.35
8                    6.40      121.00      70.65
8                    7.40      210.00      82.81
8                    8.40      250.00      94.98
8                   10.40      334.00     119.31
8                   12.40      400.00     143.63
8                   12.50      800.00     143.70
9 ENDTBL

          STRUCT NO.     ELEVATION   DISCHARGE     STORAGE
3 STRUCT      60

8                    2.00         .00      22.20
8                    2.40        3.00      27.41
8                    2.60       10.50      30.02
8                    3.00       22.50      35.24
8                    3.20       36.00      37.85
8                    3.60       60.00      43.06
8                    4.00       90.00      48.28
8                    4.60      135.00      56.11
8                    5.40      180.00      66.55
8                    6.00      181.00      74.38
8                    7.00      315.00      87.42
8                    8.00      375.00     100.47
8                    8.10      700.00     100.50
9 ENDTBL

                TIME INCREMENT
4 DIMHYD              .0200

8              .0000     .0300     .1000     .1900     .3100
8              .4700     .6600     .8200     .9300     .9900
8             1.0000     .9900     .9300     .8600     .7800
8              .6800     .5600     .4600     .3900     .3300
8              .2800     .2410     .2070     .1740     .1470
8              .1260     .1070     .0910     .0770     .0660
8              .0550     .0470     .0400     .0340     .0290
8              .0250     .0210     .0180     .0150     .0130
8              .0110     .0090     .0080     .0070     .0060
8              .0050     .0040     .0030     .0020     .0010
8              .0000     .0000     .0000     .0000     .0000
9 ENDTBL

  COMPUTED PEAK RATE FACTOR =  484.00
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     TABLE NO.       TIME INCREMENT
5 RAINFL 1                .5000

8              .0000     .0080     .0170     .0260     .0350
8              .0450     .0550     .0650     .0760     .0870
8              .0990     .1120     .1260     .1400     .1560
8              .1740     .1940     .2190     .2540     .3030
8              .5150     .5830     .6240     .6550     .6820
8              .7060     .7280     .7480     .7660     .7830
8              .7990     .8150     .8300     .8440     .8570
8              .8700     .8820     .8930     .9050     .9160
8              .9260     .9360     .9460     .9560     .9650
8              .9740     .9830     .9920    1.0000    1.0000
9 ENDTBL

     TABLE NO.       TIME INCREMENT
5 RAINFL 2                .2500

8              .0000     .0020     .0050     .0080     .0110
8              .0140     .0170     .0200     .0230     .0260
8              .0290     .0320     .0350     .0380     .0410
8              .0440     .0480     .0520     .0560     .0600
8              .0640     .0680     .0720     .0760     .0800
8              .0850     .0900     .0950     .1000     .1050
8              .1100     .1150     .1200     .1260     .1330
8              .1400     .1470     .1550     .1630     .1720
8              .1810     .1910     .2030     .2180     .2360
8              .2570     .2830     .3870     .6630     .7070
8              .7350     .7580     .7760     .7910     .8040
8              .8150     .8250     .8340     .8420     .8490
8              .8560     .8630     .8690     .8750     .8810
8              .8870     .8930     .8980     .9030     .9080
8              .9130     .9180     .9220     .9260     .9300
8              .9340     .9380     .9420     .9460     .9500
8              .9530     .9560     .9590     .9620     .9650
8              .9680     .9710     .9740     .9770     .9800
8              .9830     .9860     .9890     .9920     .9950
8              .9980    1.0000    1.0000    1.0000    1.0000
9 ENDTBL

     TABLE NO.       TIME INCREMENT
5 RAINFL 3                .5000

8              .0000     .0100     .0220     .0360     .0510
8              .0670     .0830     .0990     .1160     .1350
```

8	.1560	.1790	.2040	.2330	.2680
8	.3100	.4250	.4800	.5200	.5500
8	.5770	.6010	.6230	.6440	.6640
8	.6830	.7010	.7190	.7360	.7530
8	.7690	.7850	.8000	.8150	.8300
8	.8440	.8580	.8710	.8840	.8960
8	.9080	.9200	.9320	.9440	.9560
8	.9670	.9780	.9890	1.0000	1.0000

9 ENDTBL

TABLE NO.	TIME INCREMENT
5 RAINFL 4	.5000

8	.0000	.0040	.0080	.0120	.0160
8	.0200	.0250	.0300	.0350	.0400
8	.0450	.0500	.0550	.0600	.0650
8	.0700	.0750	.0810	.0870	.0930
8	.0990	.1050	.1110	.1180	.1250
8	.1320	.1400	.1480	.1560	.1650
8	.1740	.1840	.1950	.2070	.2200
8	.2360	.2550	.2770	.3030	.4090
8	.5150	.5490	.5830	.6050	.6240
8	.6400	.6550	.6690	.6820	.6940
8	.7050	.7160	.7270	.7380	.7480
8	.7580	.7670	.7760	.7840	.7920
8	.8000	.8080	.8160	.8230	.8300
8	.8370	.8440	.8510	.8580	.8640
8	.8700	.8760	.8820	.8880	.8940
8	.9000	.9060	.9110	.9160	.9210
8	.9260	.9310	.9360	.9410	.9460
8	.9510	.9560	.9610	.9660	.9710
8	.9760	.9800	.9840	.9880	.9920
8	.9960	1.0000	1.0000	1.0000	1.0000

9 ENDTBL

TABLE NO.	TIME INCREMENT
5 RAINFL 5	.5000

8	.0000	.0020	.0050	.0080	.0110
8	.0140	.0170	.0200	.0230	.0260
8	.0290	.0320	.0350	.0380	.0410
8	.0440	.0470	.0510	.0550	.0590
8	.0630	.0670	.0710	.0750	.0790
8	.0840	.0890	.0940	.0990	.1040
8	.1090	.1140	.1200	.1260	.1330
8	.1400	.1470	.1540	.1620	.1710
8	.1810	.1920	.2040	.2170	.2330

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8              .2520     .2770     .3180     .6380     .6980
8              .7290     .7520     .7700     .7850     .7980
8              .8090     .8190     .8290     .8380     .8460
8              .8540     .8610     .8680     .8740     .8800
8              .8860     .8920     .8970     .9020     .9070
8              .9120     .9170     .9210     .9250     .9290
8              .9330     .9370     .9410     .9450     .9490
8              .9530     .9570     .9600     .9630     .9660
8              .9690     .9720     .9750     .9780     .9810
8              .9840     .9870     .9900     .9930     .9960
8              .9980    1.0000    1.0000    1.0000    1.0000
9 ENDTBL

     TABLE NO.      TIME INCREMENT
5 RAINFL 6                .0200

8              .0000     .0080     .0162     .0246     .0333
8              .0425     .0524     .0630     .0743     .0863
8              .0990     .1124     .1265     .1420     .1595
8              .1800     .2050     .2550     .3450     .4370
8              .5300     .6030     .6330     .6600     .6840
8              .7050     .7240     .7420     .7590     .7750
8              .7900     .8043     .8180     .8312     .8439
8              .8561     .8678     .8790     .8898     .9002
8              .9103     .9201     .9297     .9391     .9483
8              .9573     .9661     .9747     .9832     .9916
8             1.0000    1.0000    1.0000    1.0000    1.0000
9 ENDTBL
```

0 STANDARD CONTROL INSTRUCTIONS

```
6 RUNOFF 1   10    6      .8400    51.0000     7.50001 0 0 1 0 1
6 RESVOR 2   10 6  7     7.0000                     1 0 0 1 0 1
6 REACH  3 10  7   5  1750.0000     1.2000     1.10001 0 0 1 0 1
6 RUNOFF 1 10      6      .2000    48.0000      .19001 0 0 1 0 1
6 ADDHYD 4 10  5 6 7                               1 1 0 1 0 1
6 SAVMOV 5 10  7   6
6 RESVOR 2   20 6  7     4.5000                     1 0 0 1 0 1
6 REACH  3 20  7   5  2900.0000      .2800     1.94001 0 0 1 0 1
6 RUNOFF 1 20      6      .2800    55.0000     2.00001 0 0 1 0 1
6 ADDHYD 4 20  5 6 7                               1 1 0 1 0 1
6 SAVMOV 5 20  7   1
6 RUNOFF 1   30    6      .3700    49.0000     3.90001 0 0 1 0 1
6 RESVOR 2   30 6  7    21.0000                     1 0 0 1 0 1
6 REACH  3 40  7   5  1300.0000      .8800     1.10001 0 0 1 0 1
6 RUNOFF 1 40      6      .0600    40.0000     1.00001 0 0 1 0 1
6 ADDHYD 4 40  5 6 7                               1 0 0 1 0 1
6 SAVMOV 5 40  7   6
6 RESVOR 2   40 6  7     9.0000                     1 0 0 1 0 1
6 REACH  3 50  7   5  1700.0000     1.6000     1.45001 0 0 1 0 1
6 RUNOFF 1 49      6      .1100    40.0000     1.67001 0 0 1 0 1
6 ADDHYD 4 50  5 6 7                               1 0 0 1 0 1
6 SAVMOV 5 50  7   5
6 RUNOFF 1 50      6      .3600    85.0000      .42001 0 0 1 0 1
6 ADDHYD 4 50  5 6 7                               1 0 0 1 0 1
6 REACH  3 60  7   5  1400.0000      .4400     1.94001 0 0 1 0 1
6 RUNOFF 1 60      6      .0500    45.0000      .90001 0 0 1 0 1
6 ADDHYD 4 60  5 6 7                               1 1 0 1 0 1
6 SAVMOV 5 70  7   5
6 SAVMOV 5 70  1   6
6 ADDHYD 4 70  5 6 7                               1 1 0 1 0 1
6 REACH  3 80  7   5   700.0000      .3000     1.94001 0 0 1 0 1
6 RUNOFF 1 80      6      .0200    64.0000      .12001 0 0 1 0 1
6 ADDHYD 4 80  5 6 7                               1 0 0 1 0 1
6 SAVMOV 5 100 7   5
6 RUNOFF 1 90      6      .2400    75.0000      .62001 0 0 1 0 1
6 ADDHYD 4 100 5 6 7                               1 0 0 1 0 1
6 REACH  3 110 7   5   500.0000      .3000     1.94001 0 0 1 0 1
6 SAVMOV 5 120 5   7
6 REACH  3 120 7   5   500.0000      .3000     1.94001 0 0 1 0 1
6 RUNOFF 1 120     6      .1900    66.0000      .74001 0 0 1 0 1
6 ADDHYD 4 120 5 6 7                               1 1 0 1 0 1
6 SAVMOV 5   50 7  6
6 RESVOR 2   50 6  7     2.4000                     1 1 1 1 0 1
6 REACH  3 130 7   5  1000.0000      .3000     1.94001 0 0 1 0 1
6 RUNOFF 1 130     6      .0500    74.0000      .19001 0 0 1 0 1
```


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```
& ADDHYD 4 130   5 6 7                              1 0 0 1 0 1
& SAVMOV 5 130   7   6
& RESVOR 2    60 6   7      2.0000                   1 1 1 1 0 1
& REACH  3 140   7   5   2500.0000       .2100    1.48001 0 0 1 0 1
& RUNOFF 1 140       6       .2000     71.0000     .19001 0 0 1 0 1
& ADDHYD 4 140   5 6 7                              1 0 0 1 0 1
& SAVMOV 5 150   7   5
& RUNOFF 1 149       6       .0800     65.0000     .42001 0 0 1 0 1
& ADDHYD 4 150   5 6 7                              1 0 0 1 0 1
& REACH  3 150   7   5    300.0000       .2100    1.48001 0 0 1 0 1
& RUNOFF 1 150       6       .0100     40.0000     .15001 0 0 1 0 1
& ADDHYD 4 150   5 6 7                              1 0 0 1 0 1
& SAVMOV 5 180   7   5
& RUNOFF 1 180       6       .1100     42.0000     .48001 0 0 1 0 1
& ADDHYD 4 180   5 6 7                              1 0 0 1 0 1
& REACH  3 180   7   5   1700.0000       .2100    1.48001 0 0 1 0 1
& RUNOFF 1 180       6       .1100     41.0000     .48001 0 0 1 0 1
& ADDHYD 4 180   5 6 7                              1 1 0 1 0 1
  ENDATA

END OF LISTING
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TR20 XEQ 04-29-86  09:08       COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM      20          JOB  1   PASS   1
     REV PC 09/83(.2)          ALT  92                                                  30                          PAGE  10


EXECUTIVE CONTROL OPERATION BASFLO                                                                          RECORD ID     1710

+                                    NEW BASEFLOW =   3.00 CFS


EXECUTIVE CONTROL OPERATION INCREM                                                                          RECORD ID     1720

+                                    MAIN TIME INCREMENT =   .10 HOURS


EXECUTIVE CONTROL OPERATION COMPUT                                                                          RECORD ID     1730

+                                    FROM STRUCTURE 10
+                                                   TO XSECTION 180
        STARTING TIME =   .00    RAIN DEPTH =  7.00    RAIN DURATION=  1.00    RAIN TABLE NO.= 2    ANT. MOIST. COND= 2
        ALTERNATE NO.=92         STORM NO.= 1    MAIN TIME INCREMENT =   .10 HOURS


OPERATION RUNOFF   STRUCTURE 10
          OUTPUT HYDROGRAPH=  6
          AREA=    .84 SQ MI   INPUT RUNOFF CURVE= 51.    TIME OF CONCENTRATION=  7.50 HOURS
          INTERNAL HYDROGRAPH TIME INCREMENT=  .1000 HOURS

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             17.80                          96.56                        (RUNOFF)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.67 WATERSHED INCHES,    906.24 CFS-HRS,    74.89 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION RESVOR   STRUCTURE 10
          INPUT HYDROGRAPH= 6     OUTPUT HYDROGRAPH= 7
          SURFACE ELEVATION=    7.00

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             18.14                          96.09                         9.50

  RUNOFF VOLUME ABOVE BASEFLOW =  1.63 WATERSHED INCHES,    884.09 CFS-HRS,    73.06 ACRE-FEET;   BASEFLOW =    .00 CFS


OPERATION REACH    CROSS SECTION  10
          INPUT HYDROGRAPH= 7     OUTPUT HYDROGRAPH= 5
          LENGTH =   1750.00 FEET      INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA,  X=  1.20,   M= 1.10
0         MODIFIED ATT-KIN ROUTING COEFFICIENT =  .34      PEAK TRAVEL TIME =    .40 HOURS
0    *** WARNING - REACH  10 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT      18.15 CFS,  18.88 % OF PEAK.

          PEAK TIME(HRS)              PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
             18.47                          98.84                        (NULL)

  RUNOFF VOLUME ABOVE BASEFLOW =  1.62 WATERSHED INCHES,    878.37 CFS-HRS,    72.59 ACRE-FEET;   BASEFLOW =   3.00 CFS


OPERATION RUNOFF   CROSS SECTION  10
          OUTPUT HYDROGRAPH=  6
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AREA= .20 SQ MI INPUT RUNOFF CURVE= 48. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

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*** WARNING-MAIN TIME INCREMENT MAY BE TOO LARGE.
COMPUTED PEAK(211.47) AT EXCEEDS MAX. ADJACENT HYDROGRAPH COORDINATE BY 5 %.
+ XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.05	211.47	(RUNOFF)
15.19	11.49	(RUNOFF)
16.45	10.25	(RUNOFF)
17.66	8.73	(RUNOFF)
19.66	7.21	(RUNOFF)
23.65	5.65	(RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .20 SQ.MI.

11.00	DISCHG	.00	.00	.00	.00	.00	.00	.10	4.73	23.48	98.78
12.00	DISCHG	198.70	199.79	103.14	68.30	49.45	41.05	37.14	33.86	32.58	29.03
13.00	DISCHG	27.04	25.39	23.29	22.55	20.96	20.13	19.10	17.65	17.13	16.30
14.00	DISCHG	15.86	15.33	14.60	14.29	13.47	13.01	12.44	11.67	11.44	11.40
15.00	DISCHG	11.42	11.45	11.49	11.43	10.60	10.13	10.01	10.00	10.02	10.04
16.00	DISCHG	10.07	10.10	10.12	10.15	10.17	10.20	9.72	8.92	8.66	8.60
17.00	DISCHG	8.60	8.61	8.63	8.65	8.67	8.68	8.70	8.72	8.61	7.75
18.00	DISCHG	7.22	7.08	7.05	7.05	7.06	7.07	7.08	7.09	7.10	7.11
19.00	DISCHG	7.12	7.13	7.14	7.15	7.16	7.18	7.19	7.20	7.08	6.18
20.00	DISCHG	5.63	5.48	5.45	5.44	5.44	5.45	5.46	5.46	5.47	5.47
21.00	DISCHG	5.48	5.48	5.49	5.50	5.50	5.51	5.51	5.52	5.52	5.53
22.00	DISCHG	5.54	5.54	5.55	5.55	5.56	5.56	5.57	5.58	5.58	5.59
23.00	DISCHG	5.59	5.60	5.60	5.61	5.62	5.62	5.63	5.63	5.50	4.56
24.00	DISCHG	3.97	2.71	.95	.23	.06	.01	.00			

RUNOFF VOLUME ABOVE BASEFLOW = 1.49 WATERSHED INCHES, 192.76 CFS-HRS, 15.93 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 10
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

*** WARNING-MAIN TIME INCREMENT MAY BE TOO LARGE.
COMPUTED PEAK(214.47) AT EXCEEDS MAX. ADJACENT HYDROGRAPH COORDINATE BY 5 %.
+ XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.05	214.47	(NULL)
18.48	105.90	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.04 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.10	7.73	26.48	101.78
12.00	DISCHG	201.70	202.80	106.16	71.34	52.51	44.15	40.29	37.07	35.88	32.43
13.00	DISCHG	30.56	29.06	27.14	26.60	25.25	24.68	23.94	22.93	22.99	22.83
14.00	DISCHG	23.44	24.26	25.15	26.71	27.96	29.68	31.42	33.47	36.95	40.97
15.00	DISCHG	45.09	49.13	53.02	56.65	59.21	61.39	63.50	65.48	67.36	69.20
16.00	DISCHG	71.04	73.56	76.58	79.74	82.85	85.80	88.04	89.73	91.74	93.74
17.00	DISCHG	95.62	97.33	98.89	100.32	101.62	102.79	103.83	104.73	105.37	105.12

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18.00	DISCHG	105.09	105.34	105.59	105.77	105.88	105.90	105.84	105.71	105.50	105.23
19.00	DISCHG	104.88	104.46	103.97	103.40	102.75	102.03	101.23	100.36	99.27	97.33
20.00	DISCHG	95.67	94.37	93.15	91.92	90.69	89.45	88.21	86.98	85.78	84.60
21.00	DISCHG	83.44	82.31	81.20	80.11	79.04	77.99	76.97	75.96	74.98	74.01
22.00	DISCHG	73.07	72.19	71.48	70.88	70.33	69.80	69.28	68.75	68.21	67.66
23.00	DISCHG	67.10	66.52	65.93	65.33	64.72	64.11	63.48	62.86	62.09	60.35
24.00	DISCHG	58.71	56.33	53.38	51.74	50.63	49.72	48.91	48.18	47.50	46.85
25.00	DISCHG	46.24	45.66	45.10	44.55	44.02	43.50	42.98	42.48	41.98	41.49
26.00	DISCHG	41.00	40.51	40.03	39.55	39.07	38.60	38.12	37.63	37.15	36.66
27.00	DISCHG	36.16	35.66	35.15	34.64	34.13	33.61	33.09	32.57	32.04	31.51
28.00	DISCHG	30.97	30.44	29.90	29.36	28.82	28.28	27.74	27.21	26.67	26.13
29.00	DISCHG	25.68	25.30	24.94	24.59	24.24	23.89	23.52	23.14	22.75	22.35

RUNOFF VOLUME ABOVE BASEFLOW = 1.60 WATERSHED INCHES, 1071.12 CFS-HRS, 88.52 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 10
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 20
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 4.50

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.45	48.97	6.77
20.05	95.07	9.27

RUNOFF VOLUME ABOVE BASEFLOW = 1.54 WATERSHED INCHES, 1034.01 CFS-HRS, 85.45 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2900.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .28, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .72 PEAK TRAVEL TIME = .20 HOURS

*** WARNING REACH 20 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 20 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 23.18 CFS, 25.18 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.63	48.51	(NULL)
20.19	95.04	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.54 WATERSHED INCHES, 1030.71 CFS-HRS, 85.18 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 20
OUTPUT HYDROGRAPH= 6
AREA= .28 SQ MI INPUT RUNOFF CURVE= 55. TIME OF CONCENTRATION= 2.00 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1026 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.35	108.69	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.12 WATERSHED INCHES, 383.61 CFS-HRS, 31.70 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 20
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.27	150.11	(NULL)
20.08	107.90	(NULL)

FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 1.32 SQ.MI.

TIME(HRS)											
11.00	DISCHG	3.00	3.00	3.01	3.03	3.06	3.13	3.29	3.67	4.50	6.54
12.00	DISCHG	12.21	23.37	42.89	64.00	80.57	94.77	107.72	119.54	129.62	137.67
13.00	DISCHG	143.70	147.67	149.73	150.02	148.57	145.69	141.74	136.80	130.86	124.17
14.00	DISCHG	117.26	110.78	105.06	99.98	95.40	91.32	87.76	84.64	81.86	79.46
15.00	DISCHG	77.58	76.27	75.46	75.08	75.06	75.35	75.65	76.07	76.61	77.25
16.00	DISCHG	78.02	78.87	79.82	80.91	82.19	83.58	84.62	85.67	86.77	87.93
17.00	DISCHG	89.14	90.40	91.68	92.99	94.31	95.64	96.41	96.47	96.34	96.18
18.00	DISCHG	96.00	95.83	95.66	95.50	96.44	97.62	98.82	99.96	101.02	102.00
19.00	DISCHG	102.90	103.72	104.46	105.13	105.73	106.27	106.73	107.12	107.45	107.71
20.00	DISCHG	107.86	107.90	107.83	107.66	107.41	107.07	106.66	106.16	105.60	104.99
21.00	DISCHG	104.32	103.61	102.87	102.10	101.31	100.50	99.68	98.85	98.01	97.18
22.00	DISCHG	96.34	95.50	94.66	93.82	93.00	92.19	91.41	90.64	89.88	89.15
23.00	DISCHG	88.75	88.59	88.49	88.41	88.33	88.26	88.18	88.10	88.02	87.93
24.00	DISCHG	87.83	87.70	87.53	86.67	85.14	83.39	81.56	79.69	77.81	75.92
25.00	DISCHG	74.04	72.18	70.36	68.59	66.87	65.21	63.37	61.46	59.62	57.90
26.00	DISCHG	56.29	54.81	53.42	52.14	50.93	49.80	48.74	47.73	46.78	45.87
27.00	DISCHG	45.01	44.18	43.39	42.62	41.89	41.17	40.47	39.73	39.01	38.30
28.00	DISCHG	37.61	36.94	36.28	35.64	35.01	34.38	33.77	33.17	32.57	31.98
29.00	DISCHG	31.39	30.82	30.25	29.71	29.19	28.68	28.19	27.72	27.26	26.80

RUNOFF VOLUME ABOVE BASEFLOW = 1.66 WATERSHED INCHES, 1414.31 CFS-HRS, 116.88 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVHOV CROSS SECTION 20
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 1

OPERATION RUNOFF STRUCTURE 30
OUTPUT HYDROGRAPH= 6
AREA= .37 SQ MI INPUT RUNOFF CURVE= 49. TIME OF CONCENTRATION= 3.90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
14.95	60.58	(RUNOFF)

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RUNOFF VOLUME ABOVE BASEFLOW = 1.57 WATERSHED INCHES, 375.61 CFS-HRS, 31.04 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RESVOR STRUCTURE 30
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 21.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.21	48.05	25.91

RUNOFF VOLUME ABOVE BASEFLOW = 1.51 WATERSHED INCHES, 360.28 CFS-HRS, 29.77 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1300.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .88, M= 1.10
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .32 PEAK TRAVEL TIME = .30 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.55	47.70	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.50 WATERSHED INCHES, 358.97 CFS-HRS, 29.67 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 40
OUTPUT HYDROGRAPH= 6
AREA= .06 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= 1.00 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0952 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.72	10.21	(RUNOFF)
23.76	1.21	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 32.57 CFS-HRS, 2.69 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 40
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.73	10.35	(NULL)
16.54	49.80	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 391.54 CFS-HRS, 32.36 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 40
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 40

INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 9.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.90	9.83	9.81
16.60	49.78	10.89

RUNOFF VOLUME ABOVE BASEFLOW = 1.41 WATERSHED INCHES, 389.94 CFS-HRS, 32.22 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= 1.60, M= 1.45
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .83 PEAK TRAVEL TIME = .10 HOURS

*** WARNING REACH 50 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.02	9.78	(NULL)
16.72	49.77	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.40 WATERSHED INCHES, 389.36 CFS-HRS, 32.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 49
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= 1.67 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1012 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)	
13.33	13.76	(RUNOFF)	
23.80	2.20	(RUNOFF)	
+	*		* FIRST POINT OF FLAT PEAK

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 59.78 CFS-HRS, 4.94 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 50
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.16	22.91	(NULL)
16.65	53.98	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 1.29 WATERSHED INCHES, 449.14 CFS-HRS, 37.12 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 50
OUTPUT HYDROGRAPH= 6
AREA= .36 SQ MI INPUT RUNOFF CURVE= 85. TIME OF CONCENTRATION= .42 HOURS

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INTERNAL HYDROGRAPH TIME INCREMENT= .0560 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1078.73	(RUNOFF)
19.65	24.75	(RUNOFF)
23.65	18.64	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 5.25 WATERSHED INCHES, 1220.14 CFS-HRS, 100.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 50
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1079.95	(NULL)
16.49	90.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.87 WATERSHED INCHES, 1669.27 CFS-HRS, 137.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION REACH CROSS SECTION 60
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1400.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .44, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

WARNING REACH 60 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.13	1079.95	(NULL)
16.49	90.76	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.87 WATERSHED INCHES, 1669.27 CFS-HRS, 137.95 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION RUNOFF CROSS SECTION 60
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 45. TIME OF CONCENTRATION= .90 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .1000 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.56	16.56	(RUNOFF)
23.72	1.26	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 1.24 WATERSHED INCHES, 39.88 CFS-HRS, 3.30 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 60
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1086.21	(NULL)
16.49	93.02	(NULL)

FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .95 SQ.MI.

TIME(HRS)											
4.00	DISCHG	.00	.00	.00	.02	.10	.26	.49	.75	1.04	1.33
5.00	DISCHG	1.62	1.91	2.20	2.49	2.77	3.04	3.32	3.58	3.84	4.10
6.00	DISCHG	4.36	4.67	5.18	5.80	6.40	6.89	7.32	7.71	8.07	8.41
7.00	DISCHG	8.75	9.07	9.38	9.69	9.99	10.29	10.58	10.86	11.14	11.41
8.00	DISCHG	11.68	12.08	12.82	13.80	14.96	16.27	17.48	18.44	19.17	19.76
9.00	DISCHG	20.27	20.91	21.91	23.16	24.29	25.16	26.02	27.23	28.66	29.92
10.00	DISCHG	30.90	31.86	33.18	34.84	37.10	40.08	43.57	47.95	52.84	58.21
11.00	DISCHG	64.10	70.07	76.45	83.02	90.75	101.27	130.10	208.30	333.15	539.50
12.00	DISCHG	836.25	1068.68	1030.91	805.58	576.69	421.03	324.82	265.51	227.09	199.69
13.00	DISCHG	178.52	161.72	147.53	136.12	127.20	119.75	113.25	107.02	101.45	96.86
14.00	DISCHG	93.29	90.54	88.31	86.99	86.63	86.30	86.13	85.74	85.37	85.47
15.00	DISCHG	86.26	87.42	88.95	90.29	90.92	90.62	90.19	90.11	90.41	90.86
16.00	DISCHG	91.35	91.83	92.25	92.60	92.86	93.02	92.76	91.64	89.95	88.43
17.00	DISCHG	87.35	86.55	85.87	85.24	84.63	84.03	83.43	82.82	82.11	80.76
18.00	DISCHG	78.62	76.40	74.60	73.30	72.20	71.21	70.27	69.38	68.51	67.67
19.00	DISCHG	66.86	66.07	65.33	64.68	63.99	63.30	62.62	61.96	61.19	59.85
20.00	DISCHG	57.76	55.58	53.88	52.62	51.60	50.72	49.94	49.23	48.56	47.93
21.00	DISCHG	47.34	46.79	46.26	45.76	45.28	44.83	44.40	43.97	43.53	43.10
22.00	DISCHG	42.70	42.29	41.89	41.51	41.15	40.80	40.46	40.14	39.84	39.55
23.00	DISCHG	39.27	39.01	38.75	38.51	38.28	38.06	37.85	37.65	37.37	36.46
24.00	DISCHG	34.72	32.26	28.67	24.55	21.18	18.97	17.56	16.54	15.77	15.13
25.00	DISCHG	14.59	14.12	13.71	13.34	13.02	12.72	12.45	12.20	11.96	11.76
26.00	DISCHG	11.57	11.41	11.25	11.11	10.97	10.84	10.71	10.57	10.42	10.28
27.00	DISCHG	10.13	9.97	9.81	9.64	9.47	9.29	9.11	8.93	8.74	8.54
28.00	DISCHG	8.34	8.13	7.93	7.72	7.51	7.29	7.08	6.87	6.67	6.46
29.00	DISCHG	6.26	6.06	5.87	5.68	5.49	5.32	5.14	4.99	4.87	4.74

RUNOFF VOLUME ABOVE BASEFLOW = 2.79 WATERSHED INCHES, 1709.15 CFS-HRS, 141.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION SAVMOV CROSS SECTION 70
INPUT HYDROGRAPH= 1 OUTPUT HYDROGRAPH= 6

OPERATION ADDHYD CROSS SECTION 70
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1116.29	(NULL)
16.64	177.46	(NULL)
17.57	179.86	(NULL)
19.27	169.82	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.27 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.41
7.00	DISCHG	11.75	12.07	12.38	12.69	12.99	13.29	13.58	13.86	14.14	14.41
8.00	DISCHG	14.68	15.08	15.82	16.80	17.96	19.27	20.48	21.44	22.17	22.76
9.00	DISCHG	23.27	23.91	24.91	26.16	27.29	28.16	29.02	30.23	31.66	32.92
10.00	DISCHG	33.90	34.86	36.18	37.84	40.10	43.08	46.57	50.95	55.84	61.21
11.00	DISCHG	67.10	73.07	79.46	86.04	93.81	104.40	133.39	211.97	337.64	546.04
12.00	DISCHG	848.46	1092.05	1073.80	869.58	657.26	515.80	432.54	385.05	356.71	337.37
13.00	DISCHG	322.22	309.40	297.26	286.13	275.78	265.44	254.99	243.81	232.31	221.03
14.00	DISCHG	210.55	201.32	193.36	186.97	182.02	177.62	173.89	170.38	167.23	164.94
15.00	DISCHG	163.84	163.69	164.31	165.37	165.98	165.96	165.84	166.19	167.01	168.11
16.00	DISCHG	169.37	170.69	172.07	173.51	175.05	176.60	177.39	177.31	176.72	176.35
17.00	DISCHG	176.49	176.95	177.55	178.23	178.95	179.67	179.84	179.28	178.45	176.94
18.00	DISCHG	174.62	172.23	170.26	168.80	168.64	168.83	169.09	169.34	169.53	169.67
19.00	DISCHG	169.76	169.79	169.79	169.81	169.73	169.56	169.35	169.08	168.65	167.56
20.00	DISCHG	165.62	163.48	161.71	160.28	159.01	157.80	156.60	155.39	154.16	152.92
21.00	DISCHG	151.66	150.40	149.13	147.86	146.59	145.33	144.07	142.81	141.55	140.28
22.00	DISCHG	139.03	137.79	136.55	135.34	134.15	132.99	131.87	130.78	129.72	128.69
23.00	DISCHG	128.02	127.60	127.25	126.92	126.62	126.32	126.03	125.76	125.40	124.39
24.00	DISCHG	122.55	119.96	116.20	111.22	106.32	102.36	99.12	96.24	93.57	91.05
25.00	DISCHG	88.63	86.30	84.07	81.93	79.89	77.93	75.82	73.65	71.58	69.65
26.00	DISCHG	67.86	66.21	64.68	63.25	61.91	60.64	59.44	58.30	57.20	56.15
27.00	DISCHG	55.13	54.15	53.20	52.27	51.36	50.46	49.58	48.66	47.74	46.84
28.00	DISCHG	45.95	45.07	44.21	43.35	42.51	41.68	40.85	40.04	39.23	38.44
29.00	DISCHG	37.65	36.88	36.12	35.39	34.68	34.00	33.34	32.71	32.13	31.54

RUNOFF VOLUME ABOVE BASEFLOW = 2.13 WATERSHED INCHES, 3123.47 CFS-HRS, 259.12 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 80
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

WARNING REACH 80 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1116.29	(NULL)
16.64	177.46	(NULL)
17.57	179.86	(NULL)
19.27	169.82	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.13 WATERSHED INCHES, 3123.47 CFS-HRS, 258.12 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 80
OUTPUT HYDROGRAPH= 6
AREA= .02 SQ MI INPUT RUNOFF CURVE= 64. TIME OF CONCENTRATION= .12 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0160 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
11.98	54.99	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 2.98 WATERSHED INCHES, 38.49 CFS-HRS, 3.18 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 80
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.14	1137.15	(NULL)
16.63	178.84	(NULL)
17.57	181.19	(NULL)
19.27	170.89	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.14 WATERSHED INCHES, 3161.95 CFS-HRS, 261.30 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVHOV CROSS SECTION 100
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 90
OUTPUT HYDROGRAPH= 6
AREA= .24 SQ MI INPUT RUNOFF CURVE= 75. TIME OF CONCENTRATION= .62 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0827 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.26	458.49	(RUNOFF)
19.66	15.09	(RUNOFF)
23.66	11.44	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 4.14 WATERSHED INCHES, 641.76 CFS-HRS, 53.03 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 100
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

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PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	1546.52	(NULL)
15.36	193.69	(NULL)
16.60	201.06	(NULL)
17.57	200.03	(NULL)
19.27	185.97	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.33 WATERSHED INCHES, 3803.71 CFS-HRS, 314.34 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 110
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 110 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	1546.52	(NULL)
15.36	193.69	(NULL)
16.60	201.06	(NULL)
17.57	200.03	(NULL)
19.27	185.97	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.33 WATERSHED INCHES, 3803.71 CFS-HRS, 314.34 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 120
INPUT HYDROGRAPH= 5 OUTPUT HYDROGRAPH= 7

OPERATION REACH CROSS SECTION 120
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 120 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.17	1546.52	(NULL)
15.36	193.69	(NULL)
16.60	201.06	(NULL)
17.57	200.03	(NULL)
19.27	185.97	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.33 WATERSHED INCHES, 3803.71 CFS-HRS, 314.34 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 120
OUTPUT HYDROGRAPH= 6
AREA= .19 SQ MI INPUT RUNOFF CURVE= 66. TIME OF CONCENTRATION= .74 HOURS

TR20 XEQ 04-29-86 09:08 COGDELL'S CREEK WATERSHED STUDY NV5010 24 HR 10YR TYPE 2 STORM 20 JOB 1 PASS 1

REV PC 09/83(.2) ALT 92 30 PAGE 21

INTERNAL HYDROGRAPH TIME INCREMENT= .0987 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.35	245.11	(RUNOFF)
19.66	10.55	(RUNOFF)
23.65	8.06	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.20 WATERSHED INCHES, 392.54 CFS-HRS, 32.44 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 120
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	1751.46	(NULL)
15.30	212.19	(NULL)
16.59	216.51	(NULL)
17.56	213.23	(NULL)
19.26	196.53	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

4.00	DISCHG	3.00	3.00	3.00	3.02	3.10	3.26	3.49	3.75	4.04	4.33
5.00	DISCHG	4.62	4.91	5.20	5.49	5.77	6.04	6.32	6.58	6.84	7.10
6.00	DISCHG	7.36	7.67	8.18	8.80	9.40	9.89	10.32	10.71	11.07	11.42
7.00	DISCHG	11.77	12.13	12.52	12.93	13.36	13.79	14.23	14.67	15.11	15.54
8.00	DISCHG	15.98	16.55	17.48	18.71	20.15	21.78	23.35	24.68	25.76	26.68
9.00	DISCHG	27.51	28.47	29.84	31.53	33.15	34.55	36.01	37.88	40.05	42.12
10.00	DISCHG	43.90	45.70	47.90	50.55	54.01	58.39	63.67	70.15	77.54	85.86
11.00	DISCHG	95.01	104.76	115.21	126.29	139.25	156.15	202.42	310.72	493.94	815.14
12.00	DISCHG	1274.46	1658.82	1748.24	1576.73	1315.08	1077.89	891.10	757.03	662.79	593.32
13.00	DISCHG	541.00	498.41	462.85	432.90	407.21	384.73	363.91	344.02	324.91	306.99
14.00	DISCHG	291.09	277.14	265.12	255.16	246.96	239.74	233.17	227.00	221.35	216.82
15.00	DISCHG	213.89	212.31	211.92	212.19	211.90	210.94	209.71	208.91	208.73	209.04
16.00	DISCHG	209.77	210.72	211.85	213.14	214.59	216.05	216.51	215.92	214.51	213.15
17.00	DISCHG	212.30	211.91	211.90	212.16	212.59	213.13	213.17	212.53	211.54	209.54
18.00	DISCHG	206.57	203.23	200.23	197.83	196.92	196.58	196.48	196.49	196.52	196.55
19.00	DISCHG	196.56	196.54	196.52	196.52	196.43	196.26	196.05	195.79	195.25	193.74
20.00	DISCHG	191.16	188.06	185.25	182.87	180.85	179.10	177.54	176.08	174.69	173.32
21.00	DISCHG	171.99	170.67	169.37	168.07	166.79	165.52	164.26	163.00	161.74	160.48
22.00	DISCHG	159.24	158.00	156.77	155.56	154.37	153.22	152.11	151.03	149.98	148.95
23.00	DISCHG	148.29	147.87	147.53	147.21	146.91	146.62	146.34	146.07	145.60	144.14
24.00	DISCHG	141.60	137.42	131.54	123.95	116.21	109.64	104.27	99.81	96.04	92.77
25.00	DISCHG	89.83	87.13	84.65	82.33	80.16	78.12	75.94	73.73	71.63	69.68
26.00	DISCHG	67.88	66.22	64.68	63.25	61.91	60.64	59.44	58.30	57.20	56.15
27.00	DISCHG	55.13	54.15	53.20	52.27	51.36	50.46	49.58	48.66	47.74	46.84
28.00	DISCHG	45.95	45.07	44.21	43.35	42.51	41.68	40.85	40.04	39.23	38.44
29.00	DISCHG	37.65	36.88	36.12	35.39	34.68	34.00	33.34	32.71	32.13	31.54

RUNOFF VOLUME ABOVE BASEFLOW = 2.39 WATERSHED INCHES, 4196.24 CFS-HRS, 346.78 ACRE-FEET; BASEFLOW = 3.00 CFS

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OPERATION SAVMOV STRUCTURE 50
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

OPERATION RESVOR STRUCTURE 50
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.40

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.60	365.02	11.34

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.72 SQ.MI.

9.00	DISCHG	3.00	3.00	3.28	3.75	4.23	4.73	5.24	5.78	6.34	6.92
9.00	ELEV	2.84	2.84	2.85	2.87	2.89	2.91	2.93	2.95	2.97	3.00
10.00	DISCHG	7.48	8.04	8.63	9.25	9.90	10.60	11.37	12.21	13.14	14.18
10.00	ELEV	3.02	3.05	3.07	3.10	3.13	3.16	3.19	3.23	3.27	3.32
11.00	DISCHG	15.34	17.09	19.59	22.30	25.27	28.55	32.58	38.58	50.40	70.59
11.00	ELEV	3.37	3.43	3.49	3.56	3.63	3.71	3.81	3.96	4.21	4.61
12.00	DISCHG	99.89	120.64	195.35	242.63	276.12	302.01	321.21	335.07	343.38	349.70
12.00	ELEV	5.26	6.19	7.24	8.22	9.02	9.64	10.10	10.43	10.68	10.88
13.00	DISCHG	354.52	358.18	360.90	362.83	364.10	364.80	365.02	364.77	364.10	363.03
13.00	ELEV	11.02	11.13	11.22	11.27	11.31	11.33	11.34	11.33	11.31	11.28
14.00	DISCHG	361.61	359.89	357.92	355.75	353.43	350.99	348.45	345.83	343.13	340.38
14.00	ELEV	11.24	11.18	11.12	11.06	10.99	10.91	10.84	10.76	10.68	10.59
15.00	DISCHG	337.60	334.84	331.62	328.25	324.98	321.79	318.65	315.58	312.57	309.66
15.00	ELEV	10.51	10.43	10.34	10.26	10.19	10.11	10.03	9.96	9.89	9.82
16.00	DISCHG	306.84	304.12	301.51	299.00	296.61	294.32	292.13	289.99	287.89	285.80
16.00	ELEV	9.75	9.69	9.63	9.57	9.51	9.46	9.40	9.35	9.30	9.25
17.00	DISCHG	283.75	281.73	279.77	277.86	276.02	274.24	272.52	270.85	269.19	267.54
17.00	ELEV	9.20	9.16	9.11	9.06	9.02	8.98	8.94	8.90	8.86	8.82
18.00	DISCHG	265.87	264.15	262.40	260.61	258.84	257.09	255.38	253.73	252.12	250.55
18.00	ELEV	8.78	8.74	8.70	8.65	8.61	8.57	8.53	8.49	8.45	8.41
19.00	DISCHG	249.08	247.67	246.30	244.97	243.67	242.40	241.16	239.95	238.76	237.57
19.00	ELEV	8.38	8.34	8.31	8.27	8.24	8.21	8.18	8.15	8.12	8.09
20.00	DISCHG	236.36	235.11	233.81	232.48	231.12	229.75	228.37	226.99	225.61	224.22
20.00	ELEV	8.06	8.03	8.00	7.96	7.93	7.89	7.86	7.82	7.79	7.76
21.00	DISCHG	222.84	221.46	220.08	218.71	217.33	215.96	214.59	213.23	211.86	210.50
21.00	ELEV	7.72	7.69	7.65	7.62	7.58	7.55	7.51	7.48	7.45	7.41
22.00	DISCHG	208.13	205.22	202.41	199.70	197.07	194.53	192.07	189.70	187.39	185.17
22.00	ELEV	7.38	7.35	7.31	7.28	7.25	7.23	7.20	7.17	7.15	7.12
23.00	DISCHG	183.02	180.97	179.02	177.16	175.39	173.71	172.11	170.59	169.14	167.71
23.00	ELEV	7.10	7.07	7.05	7.03	7.01	6.99	6.97	6.96	6.94	6.92
24.00	DISCHG	166.25	164.68	162.91	160.85	158.45	155.78	152.91	149.93	146.87	143.79
24.00	ELEV	6.91	6.89	6.87	6.85	6.82	6.79	6.76	6.73	6.69	6.66
25.00	DISCHG	140.71	137.64	134.61	131.60	128.65	125.74	122.88	120.98	120.93	120.87
25.00	ELEV	6.62	6.59	6.55	6.52	6.49	6.45	6.42	6.39	6.36	6.32
26.00	DISCHG	120.81	120.75	120.69	120.62	120.56	120.49	120.42	120.35	120.28	120.21
26.00	ELEV	6.29	6.25	6.21	6.17	6.13	6.09	6.05	6.01	5.97	5.93

27.00	DISCHG	120.14	120.06	119.73	118.05	116.38	114.73	113.10	111.49	109.90	108.33
27.00	ELEV	5.88	5.84	5.79	5.75	5.70	5.66	5.62	5.57	5.53	5.49
28.00	DISCHG	106.77	105.23	103.70	102.19	100.70	99.23	97.77	96.33	94.90	93.49
28.00	ELEV	5.45	5.41	5.37	5.33	5.29	5.25	5.21	5.17	5.13	5.09
29.00	DISCHG	92.10	90.72	89.14	87.36	85.61	83.90	82.22	80.58	78.97	77.39
29.00	ELEV	5.06	5.02	4.98	4.95	4.91	4.88	4.84	4.81	4.78	4.75

RUNOFF VOLUME ABOVE BASEFLOW = 2.21 WATERSHED INCHES, 3871.54 CFS-HRS, 319.94 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1000.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .30, M= 1.94
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 130 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 130 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 74.39 CFS, 20.55 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.60	365.02	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.21 WATERSHED INCHES, 3871.54 CFS-HRS, 319.94 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 130
OUTPUT HYDROGRAPH= 6
AREA= .05 SQ MI INPUT RUNOFF CURVE= 74. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.01	160.37	(RUNOFF)
23.65	2.37	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 4.05 WATERSHED INCHES, 130.79 CFS-HRS, 10.81 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 130
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.04	267.23	(NULL)
13.49	374.66	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.24 WATERSHED INCHES, 4002.33 CFS-HRS, 330.75 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVHOV CROSS SECTION 130
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 6

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OPERATION RESVOR STRUCTURE 60
INPUT HYDROGRAPH= 6 OUTPUT HYDROGRAPH= 7
SURFACE ELEVATION= 2.00

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.46	299.80	6.89

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 2.77 SQ.MI.

11.00	DISCHG	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.34	5.43	9.72
11.00	ELEV	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.41	2.46	2.55
12.00	DISCHG	13.10	17.69	22.20	32.25	42.39	52.53	63.70	76.84	89.81	102.45
12.00	ELEV	2.69	2.84	2.99	3.14	3.31	3.48	3.65	3.82	4.00	4.17
13.00	DISCHG	114.70	126.52	137.18	145.45	153.45	161.19	168.66	175.84	180.08	180.28
13.00	ELEV	4.33	4.49	4.64	4.79	4.93	5.07	5.20	5.33	5.45	5.57
14.00	DISCHG	180.48	180.68	180.88	186.48	200.71	213.56	225.14	235.54	244.86	253.18
14.00	ELEV	5.69	5.81	5.93	6.04	6.15	6.24	6.33	6.41	6.48	6.54
15.00	DISCHG	260.61	267.20	273.01	278.08	282.45	286.17	289.32	291.96	294.13	295.89
15.00	ELEV	6.59	6.64	6.69	6.72	6.76	6.78	6.81	6.83	6.84	6.86
16.00	DISCHG	297.27	298.31	299.05	299.52	299.76	299.78	299.61	299.26	298.74	298.09
16.00	ELEV	6.87	6.88	6.88	6.88	6.89	6.89	6.89	6.88	6.88	6.87
17.00	DISCHG	297.31	296.44	295.48	294.43	293.32	292.15	290.94	289.68	288.39	287.06
17.00	ELEV	6.87	6.86	6.85	6.85	6.84	6.83	6.82	6.81	6.80	6.79
18.00	DISCHG	285.67	284.24	282.78	281.30	279.80	278.27	276.73	275.17	273.61	272.05
18.00	ELEV	6.78	6.77	6.76	6.75	6.74	6.73	6.71	6.70	6.69	6.68
19.00	DISCHG	270.49	268.94	267.41	265.89	264.38	262.90	261.43	259.98	258.55	257.13
19.00	ELEV	6.67	6.66	6.64	6.63	6.62	6.61	6.60	6.59	6.58	6.57
20.00	DISCHG	255.69	254.26	252.84	251.43	250.02	248.61	247.21	245.81	244.41	243.01
20.00	ELEV	6.56	6.55	6.54	6.53	6.52	6.50	6.49	6.48	6.47	6.46
21.00	DISCHG	241.62	240.22	238.83	237.44	236.05	234.66	233.27	231.88	230.50	229.12
21.00	ELEV	6.45	6.44	6.43	6.42	6.41	6.40	6.39	6.38	6.37	6.36
22.00	DISCHG	227.69	226.17	224.54	222.82	221.02	219.16	217.24	215.29	213.30	211.29
22.00	ELEV	6.35	6.34	6.32	6.31	6.30	6.28	6.27	6.26	6.24	6.23
23.00	DISCHG	209.27	207.24	205.21	203.19	201.19	199.21	197.26	195.34	193.46	191.59
23.00	ELEV	6.21	6.20	6.18	6.17	6.15	6.14	6.12	6.11	6.09	6.08
24.00	DISCHG	189.73	187.87	185.97	184.02	182.04	180.99	180.96	180.93	180.89	180.86
24.00	ELEV	6.07	6.05	6.04	6.02	6.01	5.99	5.98	5.96	5.94	5.91
25.00	DISCHG	180.82	180.77	180.72	180.67	180.62	180.56	180.51	180.44	180.38	180.32
25.00	ELEV	5.89	5.86	5.83	5.80	5.77	5.74	5.70	5.67	5.63	5.59
26.00	DISCHG	180.26	180.19	180.13	180.07	180.00	178.05	176.04	174.09	172.21	170.39
26.00	ELEV	5.55	5.52	5.48	5.44	5.40	5.37	5.33	5.29	5.26	5.23
27.00	DISCHG	168.63	166.93	165.29	163.66	162.04	160.41	158.78	157.16	155.53	153.91
27.00	ELEV	5.20	5.17	5.14	5.11	5.08	5.05	5.02	4.99	4.96	4.94
28.00	DISCHG	152.28	150.66	149.05	147.43	145.82	144.22	142.62	141.02	139.43	137.85
28.00	ELEV	4.91	4.88	4.85	4.82	4.79	4.76	4.74	4.71	4.68	4.65
29.00	DISCHG	136.27	134.61	132.53	130.48	128.44	126.41	124.40	122.41	120.43	118.47
29.00	ELEV	4.62	4.59	4.57	4.54	4.51	4.49	4.46	4.43	4.41	4.38

RUNOFF VOLUME ABOVE BASEFLOW = 2.04 WATERSHED INCHES, 3652.58 CFS-HRS, 301.85 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 140
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 2500.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .38 PEAK TRAVEL TIME = .21 HOURS
0 *** WARNING - REACH 140 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 115.47 CFS, 38.91 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
16.75	299.29	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.03 WATERSHED INCHES, 3621.25 CFS-HRS, 299.26 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 140
OUTPUT HYDROGRAPH= 6
AREA= .20 SQ MI INPUT RUNOFF CURVE= 71. TIME OF CONCENTRATION= .19 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0253 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	592.96	(RUNOFF)
15.16	20.38	(RUNOFF)
16.45	17.75	(RUNOFF)
17.65	14.85	(RUNOFF)
19.65	12.01	(RUNOFF)
23.65	9.13	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.73 WATERSHED INCHES, 481.90 CFS-HRS, 39.82 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 140
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.02	599.16	(NULL)
16.51	316.26	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.14 WATERSHED INCHES, 4103.15 CFS-HRS, 339.08 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 150
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 149
OUTPUT HYDROGRAPH= 6
AREA= .08 SQ MI INPUT RUNOFF CURVE= 65. TIME OF CONCENTRATION= .42 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0560 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.15	142.32	(RUNOFF)
16.45	6.39	(RUNOFF)
17.67	5.39	(RUNOFF)
19.66	4.37	(RUNOFF)
23.66	3.34	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = 3.10 WATERSHED INCHES, 160.17 CFS-HRS, 13.24 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 150
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	708.73	(NULL)
16.51	322.65	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.17 WATERSHED INCHES, 4263.32 CFS-HRS, 352.32 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION REACH CROSS SECTION 150
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 300.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = 1.00 PEAK TRAVEL TIME = .00 HOURS

*** WARNING REACH 150 ATT-KIN COEFF.(C) GREATER THAN 0.667, CONSIDER REDUCING MAIN TIME INCREMENT ***
0 *** WARNING - REACH 150 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 120.64 CFS, 17.43 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	708.73	(NULL)
16.51	322.65	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.17 WATERSHED INCHES, 4263.32 CFS-HRS, 352.32 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 150
OUTPUT HYDROGRAPH= 6
AREA= .01 SQ MI INPUT RUNOFF CURVE= 40. TIME OF CONCENTRATION= .15 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0200 HOURS

*** WARNING-MAIN TIME INCREMENT MAY BE TOO LARGE.
COMPUTED PEAK(4.99) AT EXCEEDS MAX. ADJACENT HYDROGRAPH COORDINATE BY 8 %.
+ XSECTION 150

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.05	4.99	(RUNOFF)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = .01 SQ.MI.

11.00	DISCHG	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.05
12.00	DISCHG	4.60	4.46	2.17	1.71	1.28	1.17	1.09	1.02	1.00	.87

13.00	DISCHG	.84	.78	.73	.71	.66	.64	.60	.56	.55	.52
14.00	DISCHG	.52	.50	.48	.47	.44	.43	.41	.38	.38	.38
15.00	DISCHG	.38	.39	.39	.38	.35	.34	.34	.34	.34	.34
16.00	DISCHG	.34	.34	.35	.35	.35	.35	.32	.30	.30	.30
17.00	DISCHG	.30	.30	.30	.30	.30	.30	.30	.30	.30	.26
18.00	DISCHG	.25	.25	.25	.25	.25	.25	.25	.25	.25	.25
19.00	DISCHG	.25	.25	.25	.25	.25	.25	.25	.25	.25	.21
20.00	DISCHG	.19	.19	.19	.19	.19	.19	.19	.19	.19	.19
21.00	DISCHG	.19	.20	.20	.20	.20	.20	.20	.20	.20	.20
22.00	DISCHG	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
23.00	DISCHG	.20	.20	.20	.20	.20	.20	.20	.20	.20	.15
24.00	DISCHG	.14	.08	.01	.00						

RUNOFF VOLUME ABOVE BASEFLOW = .84 WATERSHED INCHES, 5.41 CFS-HRS, .45 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 150
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.03	713.69	(NULL)
16.51	322.99	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.16 WATERSHED INCHES, 4268.73 CFS-HRS, 352.77 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION SAVMOV CROSS SECTION 180
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5

OPERATION RUNOFF CROSS SECTION 180
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 42. TIME OF CONCENTRATION= .48 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.27	39.64	(RUNOFF)
23.68	2.45	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .99 WATERSHED INCHES, 70.57 CFS-HRS, 5.83 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 180
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.04	730.28	(NULL)
16.51	327.26	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.12 WATERSHED INCHES, 4339.30 CFS-HRS, 358.60 ACRE-FEET; BASEFLOW = 3.00 CFS

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OPERATION REACH CROSS SECTION 180
INPUT HYDROGRAPH= 7 OUTPUT HYDROGRAPH= 5
LENGTH = 1700.00 FEET INPUT = COEFFICIENTS RELATED TO CROSS SECTIONAL AREA, X= .21, M= 1.48
0 MODIFIED ATT-KIN ROUTING COEFFICIENT = .63 PEAK TRAVEL TIME = .20 HOURS
0 *** WARNING - REACH 180 INFLOW HYDROGRAPH VOLUME TRUNCATED ABOVE BASEFLOW AT 120.64 CFS, 17.02 % OF PEAK.

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	648.50	(NULL)
16.65	326.85	(NULL)

RUNOFF VOLUME ABOVE BASEFLOW = 2.11 WATERSHED INCHES, 4316.76 CFS-HRS, 356.74 ACRE-FEET; BASEFLOW = 3.00 CFS

OPERATION RUNOFF CROSS SECTION 180
OUTPUT HYDROGRAPH= 6
AREA= .11 SQ MI INPUT RUNOFF CURVE= 41. TIME OF CONCENTRATION= .48 HOURS
INTERNAL HYDROGRAPH TIME INCREMENT= .0640 HOURS

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.28	34.74	(RUNOFF)
23.69	2.34	(RUNOFF)

RUNOFF VOLUME ABOVE BASEFLOW = .92 WATERSHED INCHES, 65.08 CFS-HRS, 5.38 ACRE-FEET; BASEFLOW = .00 CFS

OPERATION ADDHYD CROSS SECTION 180
INPUT HYDROGRAPHS= 5,6 OUTPUT HYDROGRAPH= 7

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.18	680.21	(NULL)
16.65	330.83	(NULL)

TIME(HRS) FIRST HYDROGRAPH POINT = .00 HOURS TIME INCREMENT = .10 HOURS DRAINAGE AREA = 3.28 SQ.MI.

8.00	DISCHG	3.00	3.03	3.12	3.25	3.41	3.63	3.87	4.10	4.33	4.55
9.00	DISCHG	4.77	4.99	5.27	5.63	5.97	6.27	6.57	6.98	7.52	8.03
10.00	DISCHG	8.49	8.93	9.48	10.18	10.90	12.02	13.18	14.64	16.59	18.38
11.00	DISCHG	20.83	23.23	25.85	28.98	31.91	36.51	41.18	67.85	125.42	194.68
12.00	DISCHG	383.69	609.39	677.69	545.85	419.49	320.57	256.33	219.08	198.01	189.26
13.00	DISCHG	184.32	183.94	186.41	189.83	195.38	200.28	205.62	210.64	214.82	219.63
14.00	DISCHG	223.57	226.31	227.67	227.76	227.52	227.68	231.15	237.10	244.27	252.62
15.00	DISCHG	261.54	270.50	279.15	287.24	294.49	299.98	304.63	308.95	312.96	316.61
16.00	DISCHG	319.84	322.64	325.02	326.99	328.58	329.83	330.74	330.69	329.62	328.58
17.00	DISCHG	327.72	326.98	326.30	325.59	324.83	323.99	323.09	322.11	321.06	319.74
18.00	DISCHG	317.32	314.69	312.41	310.43	308.69	307.08	305.53	304.01	302.50	300.98
19.00	DISCHG	299.46	297.94	296.40	294.87	293.35	291.83	290.32	288.83	287.33	285.65
20.00	DISCHG	282.91	280.03	277.54	275.43	273.60	271.95	270.40	268.92	267.48	266.05
21.00	DISCHG	264.64	263.24	261.85	260.46	259.08	257.69	256.31	254.93	253.55	252.17
22.00	DISCHG	250.79	249.42	248.04	246.62	245.15	243.61	241.99	240.30	238.54	236.72

23.00	DISCHG	234.85	232.94	230.99	229.02	227.03	225.04	223.04	221.05	219.07	216.88
24.00	DISCHG	213.63	210.15	205.68	199.98	195.09	191.18	188.02	185.57	183.89	182.78
25.00	DISCHG	182.07	181.61	181.31	181.10	180.96	180.86	180.78	180.71	180.64	180.58
26.00	DISCHG	180.52	180.45	180.39	180.33	180.26	180.20	180.14	179.62	178.64	177.32
27.00	DISCHG	175.79	174.14	172.44	170.72	169.02	167.35	165.68	164.04	162.40	160.76
28.00	DISCHG	159.13	157.50	155.87	154.25	152.62	151.00	149.39	147.77	146.16	144.56
29.00	DISCHG	142.96	141.36	139.77	138.17	136.45	134.62	132.71	130.76	128.78	126.80

RUNOFF VOLUME ABOVE BASEFLOW = 2.07 WATERSHED INCHES, 4381.85 CFS-HRS, 362.12 ACRE-FEET; BASEFLOW = 3.00 CFS

EXECUTIVE CONTROL OPERATION ENDCMP RECORD ID 1740

\+ COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL OPERATION ENDJOB RECORD ID 1750

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SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 92 STORM 1													
STRUCTURE 10	RUNOFF	.84	2	2	.10	.0	7.00	24.00	1.67	---	17.80	96.56	114.9
STRUCTURE 10	RESVOR	.84	2	2	.10	.0	7.00	24.00	1.63	9.50	18.14	96.09	114.4
XSECTION 10	REACH	.84	2	2	.10	.0	7.00	24.00	1.62	---	18.47	98.84	117.7
XSECTION 10	RUNOFF	.20	2	2	.10	.0	7.00	24.00	1.49	---	12.05	211.47	1057.4
XSECTION 10	ADDHYD	1.04	2	2	.10	.0	7.00	24.00	1.60	---	12.05	214.47	206.2
STRUCTURE 20	RESVOR	1.04	2	2	.10	.0	7.00	24.00	1.54	9.27	20.05	95.07	91.4
XSECTION 20	REACH	1.04	2	2	.10	.0	7.00	24.00	1.54	---	20.19	95.04	91.4
XSECTION 20	RUNOFF	.28	2	2	.10	.0	7.00	24.00	2.12	---	13.35	108.69	388.2
XSECTION 20	ADDHYD	1.32	2	2	.10	.0	7.00	24.00	1.66	---	13.27	150.11	113.7
STRUCTURE 30	RUNOFF	.37	2	2	.10	.0	7.00	24.00	1.57	---	14.95	60.58	163.7
STRUCTURE 30	RESVOR	.37	2	2	.10	.0	7.00	24.00	1.51	25.91	16.21	48.05	129.9
XSECTION 40	REACH	.37	2	2	.10	.0	7.00	24.00	1.50	---	16.55	47.70	128.9
XSECTION 40	RUNOFF	.06	2	2	.10	.0	7.00	24.00	.84	---	12.72	10.21	170.2
XSECTION 40	ADDHYD	.43	2	2	.10	.0	7.00	24.00	1.41	---	16.54	49.80	115.8
STRUCTURE 40	RESVOR	.43	2	2	.10	.0	7.00	24.00	1.41	10.89	16.60	49.78	115.8
XSECTION 50	REACH	.43	2	2	.10	.0	7.00	24.00	1.40	---	16.72	49.77	115.7
XSECTION 49	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.84	---	13.33	13.76	125.1
XSECTION 50	ADDHYD	.54	2	2	.10	.0	7.00	24.00	1.29	---	16.65	53.98	100.0
XSECTION 50	RUNOFF	.36	2	2	.10	.0	7.00	24.00	5.25	---	12.13	1078.73	2996.5
XSECTION 50	ADDHYD	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	REACH	.90	2	2	.10	.0	7.00	24.00	2.87	---	12.13	1079.95	1199.9
XSECTION 60	RUNOFF	.05	2	2	.10	.0	7.00	24.00	1.24	---	12.56	16.56	331.2
XSECTION 60	ADDHYD	.95	2	2	.10	.0	7.00	24.00	2.79	---	12.14	1086.21	1143.4
XSECTION 70	ADDHYD	2.27	2	2	.10	.0	7.00	24.00	2.13	---	12.14	1116.29	491.8
XSECTION 80	REACH	2.27	2	2	.10	.0	7.00	24.00	2.13	---	12.14	1116.29	491.8
XSECTION 80	RUNOFF	.02	2	2	.10	.0	7.00	24.00	2.98	---	11.98	54.99	2749.6
XSECTION 80	ADDHYD	2.29	2	2	.10	.0	7.00	24.00	2.14	---	12.14	1137.16	496.6
XSECTION 90	RUNOFF	.24	2	2	.10	.0	7.00	24.00	4.14	---	12.26	458.49	1910.4
XSECTION 100	ADDHYD	2.53	2	2	.10	.0	7.00	24.00	2.33	---	12.17	1546.52	611.3
XSECTION 110	REACH	2.53	2	2	.10	.0	7.00	24.00	2.33	---	12.17	1546.52	611.3
XSECTION 120	REACH	2.53	2	2	.10	.0	7.00	24.00	2.33	---	12.17	1546.52	611.3
XSECTION 120	RUNOFF	.19	2	2	.10	.0	7.00	24.00	3.20	---	12.35	245.11	1290.1

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED
(A STAR(*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION BEGIN (HR)	PRECIPITATION AMOUNT (IN)	PRECIPITATION DURATION (HR)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 92 STORM 1													
XSECTION 120	ADDHYD	2.72	2	2	.10	.0	7.00	24.00	2.39	---	12.18	1751.46	643.9
STRUCTURE 50	RESVOR	2.72	2	2	.10	.0	7.00	24.00	2.21	11.34	13.60	365.02	134.2
XSECTION 130	REACH	2.72	2	2	.10	.0	7.00	24.00	2.21	---	13.60	365.02	134.2
XSECTION 130	RUNOFF	.05	2	2	.10	.0	7.00	24.00	4.05	---	12.01	160.37	3207.4
XSECTION 130	ADDHYD	2.77	2	2	.10	.0	7.00	24.00	2.24	---	13.49	374.66	135.3
STRUCTURE 60	RESVOR	2.77	2	2	.10	.0	7.00	24.00	2.04	6.89	16.46	299.80	108.2
XSECTION 140	REACH	2.77	2	2	.10	.0	7.00	24.00	2.03	---	16.75	299.29	108.0
XSECTION 140	RUNOFF	.20	2	2	.10	.0	7.00	24.00	3.73	---	12.02	592.96	2964.8
XSECTION 140	ADDHYD	2.97	2	2	.10	.0	7.00	24.00	2.14	---	12.02	599.16	201.7
XSECTION 149	RUNOFF	.08	2	2	.10	.0	7.00	24.00	3.10	---	12.15	142.32	1779.0
XSECTION 150	ADDHYD	3.05	2	2	.10	.0	7.00	24.00	2.17	---	12.03	708.73	232.4
XSECTION 150	REACH	3.05	2	2	.10	.0	7.00	24.00	2.17	---	12.03	708.73	232.4
XSECTION 150	RUNOFF	.01	2	2	.10	.0	7.00	24.00	.94	---	12.05	4.99	499.3
XSECTION 150	ADDHYD	3.06	2	2	.10	.0	7.00	24.00	2.16	---	12.03	713.69	233.2
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.99	---	12.27	39.64	360.4
XSECTION 180	ADDHYD	3.17	2	2	.10	.0	7.00	24.00	2.12	---	12.04	730.28	230.4
XSECTION 180	REACH	3.17	2	2	.10	.0	7.00	24.00	2.11	---	12.18	648.50	204.6
XSECTION 180	RUNOFF	.11	2	2	.10	.0	7.00	24.00	.92	---	12.28	34.74	315.8
XSECTION 180	ADDHYD	3.29	2	2	.10	.0	7.00	24.00	2.07	---	12.18	680.21	207.4

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SUMMARY TABLE 2 - SELECTED MODIFIED ATT-KIN REACH ROUTINGS IN ORDER OF STANDARD EXECUTIVE CONTROL INSTRUCTIONS
(A STAR(*) AFTER VOLUME ABOVE BASE(IN) INDICATES A HYDROGRAPH TRUNCATED AT A VALUE EXCEEDING BASE + 10% OF PEAK
A QUESTION MARK(?) AFTER COEFF.(C) INDICATES PARAMETERS OUTSIDE ACCEPTABLE LIMITS, SEE PREVIOUS WARNINGS)

XSEC ID	REACH LENGTH (FT)	HYDROGRAPH INFORMATION INFLOW PEAK (CFS)	INFLOW TIME (HR)	OUTFLOW PEAK (CFS)	OUTFLOW TIME (HR)	OUTFLOW+ INTERV. AREA PEAK (CFS)	INTERV. AREA TIME (HR)	BASE-FLOW (CFS)	ROUTING PARAMETERS VOLUME ABOVE BASE (IN)	MAIN TIME INCR (HR)	ITER-ATION #	Q AND A EQUATION COEFF (X)	Q AND A EQUATION POWER (M)	LENGTH FACTOR (K*)	PEAK RATIO Q/I (Q*)	S/Q @PEAK (K) (SEC)	ATT-KIN COEFF (C)	PEAK TRAVEL TIME STOR-AGE (HR)	PEAK TRAVEL TIME KINE-MATIC (HR)
ALTERNATE 92 STORM 1																			
10	1750	99	18.1	99	18.5			3	1.63*	.10	1	1.20	1.10	.021	.997	888	.34	.40	.25
						203	12.1												
20	2900	95	20.0	95	20.2			3	1.54*	.10	1	.280	1.94	.000	1.000	317	.72?	.20	.09
						150	13.3												
40	1300	48	16.2	48	16.5			0	1.51	.10	1	.880	1.10	.027	.992	934	.32	.30	.26
						50	16.5												
50	1700	50	16.6	50	16.7			0	1.41	.10	1	1.60	1.45	.002	1.000	252	.83?	.10	.07
						54	16.6												
60	1400	1064	12.1	1064	12.1			0	2.87	.10	0	.440	1.94	.000	1.000	38	1.00?	.00	.00
						1069	12.1												
80	700	1092	12.1	1092	12.1			3	2.13	.10	0	.300	1.94	.000	1.000	23	1.00?	.00	.00
						1120	12.1												
110	500	1533	12.2	1533	12.2			3	2.33	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						---	---												
120	500	1533	12.2	1533	12.2			3	2.33	.10	0	.300	1.94	.000	1.000	14	1.00?	.00	.00
						1748	12.2												
												.300							

+130	1000	365	13.6	365	13.6			3	2.21#	.10	0		1.94	.000	1.000	55	1.00?	.00	.00
+						375	13.5												
+140	2500	300	16.5	299	16.7			3	2.04#	.10	1	.210	1.48	.004	.998	763	.38	.20	.21
+						595	12.0												
+150	300	695	12.0	695	12.0			3	2.17#	.10	0	.210	1.48	.000	1.000	70	1.00?	.00	.00
+						700	12.0												
+180	1700	712	12.0	645	12.2			3	2.12#	.10	1	.210	1.48	.005	.906	392	.63	.20	.11
+						678	12.2												

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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 STRUCTURE 60	2.77	
ALTERNATE 92		299.80
0 STRUCTURE 50	2.72	
ALTERNATE 92		365.02
0 STRUCTURE 40	.43	
ALTERNATE 92		49.78
0 STRUCTURE 30	.37	
ALTERNATE 92		48.05
0 STRUCTURE 20	1.04	
ALTERNATE 92		95.07
0 STRUCTURE 10	.84	
ALTERNATE 92		96.09
0 XSECTION 10	1.04	
ALTERNATE 92		214.47
0 XSECTION 20	1.32	
ALTERNATE 92		150.11
0 XSECTION 40	.43	
ALTERNATE 92		49.80
0 XSECTION 49	.11	
ALTERNATE 92		13.76
0 XSECTION 50	.90	
ALTERNATE 92		1079.95
0 XSECTION 60	.95	
ALTERNATE 92		1086.21
0 XSECTION 70	2.27	
ALTERNATE 92		1116.29
0 XSECTION 80	2.29	
ALTERNATE 92		1137.16

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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1
0 XSECTION 90	.24	
+		
ALTERNATE 92		458.49
0 XSECTION 100	2.53	
+		
ALTERNATE 92		1546.52
0 XSECTION 110	2.53	
+		
ALTERNATE 92		1546.52
0 XSECTION 120	2.72	
+		
ALTERNATE 92		1751.46
0 XSECTION 130	2.77	
+		
ALTERNATE 92		374.66
0 XSECTION 140	2.97	
+		
ALTERNATE 92		599.16
0 XSECTION 149	.08	
+		
ALTERNATE 92		142.32
0 XSECTION 150	3.06	
+		
ALTERNATE 92		713.69
0 XSECTION 180	3.28	
+		
ALTERNATE 92		680.21

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