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PRICE

SANTAN

SOUTH MOUNTAIN

Concept Drainage Report

Final Report
Volume II

Appendices I, II, III and IV

Contract 88-24
Price Expressway
General Consultant
TRACS No. H-2222-01D

Prepared for :

Arizona Department of Transportation

Prepared by:

HDR Engineering, Inc.

Phoenix, Arizona

HDR

July, 1990

CONCEPT DRAINAGE REPORT

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REGISTERED PROFESSIONAL ENG. CERTIFICATE 22910 FERRIS E. HEASTON Date Signed 6/27/90 ARIZONA, U.S.A.

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Carriage Lane Outfall/East Valley (Price) Tunnel Data

A. Intergovernmental Agreement-Price Drain

B. Carriage Lane Outfall Hydraulics

C. Price (East Valley) Tunnel Hydraulics

APPENDIX I.A

Intergovernmental Agreement-Price Drain

Chandler
City Clerk
Official File Copy

#10 Need to get capacity of drainage to be proper for design

When Recorded Return to:
Flood Control District
3335 West Durango
Phoenix, Arizona 85009

A.G. Contract KR87-3501
ECS File No. IGA-87-31
Project RAM-600-1-507
Price Road Drain Tunnel

INTERGOVERNMENTAL AGREEMENT
PRICE DRAIN
IGA FCD-87004

This Agreement is between the Flood Control District of Maricopa County, a municipal corporation and political subdivision of the State of Arizona (hereinafter called DISTRICT), the State of Arizona, acting by and through the Arizona Department of Transportation (hereinafter called STATE), the City of Chandler, a municipal corporation of the State of Arizona (hereinafter called CHANDLER), and the City of Mesa, a municipal corporation of the State of Arizona (hereinafter called MESA).

This Agreement shall become effective as of the date it is filed with the Secretary of State pursuant to Arizona Revised Statutes 11-952, as amended. DATE FILED WITH THE SECRETARY OF STATE 1-25-88.

STATUTORY AUTHORIZATION

1. The STATE is empowered by Arizona Revised Statutes 28-108 to enter into this Agreement.

2. The DISTRICT is empowered by Arizona Revised Statutes 48-3603 to enter into this Agreement.

3. CHANDLER and MESA are each empowered by Arizona Revised Statutes 11-952, as amended, to enter into this Agreement.

BACKGROUND

4. The DISTRICT has been working with the municipalities of CHANDLER and MESA to find an outlet for stormwaters along the path of the historic Gila Drain, and this investigation ultimately evolved into the Gila Drain Western Canal Alternatives Conceptual Design Study. The STATE is building the Price/Pima Expressway in eastern Maricopa County and must provide drainage facilities in connection with that Expressway.

5. It is proposed that a joint use drainage facility, known as the Price Drain, be constructed from Carriage Lane Basin in MESA to the Salt River along the Price Expressway and Pima Freeway alignment including a connection to the Broadway Road Storm Drain. This Price Drain will provide drainage for the Pima Freeway and the Price Expressway north of Carriage Lane and provide stormwater discharge capacity for the municipalities of CHANDLER and MESA; however, this agreement provides for the Price Drain to accept additional sources of flows from the STATE and the municipalities of CHANDLER and MESA as allocated in Paragraph 16. The DISTRICT proposes to share in the construction costs of the Price Drain. The joint use drainage facility will be cost shared on the basis of the relative costs of the STATE and the DISTRICT, with the cities of CHANDLER and MESA, each building a system alone. The costs of this Price Drain will be shared by the STATE, the DISTRICT, CHANDLER, and MESA.

PURPOSE

6. The purpose of this Agreement is to define the responsibilities of the STATE, the DISTRICT, CHANDLER, and MESA for establishing the Price Drain project, cost sharing in its design, construction, and construction management, and conducting operation and maintenance.

TERMS OF AGREEMENT

7. The STATE agrees to design and construct a joint use drainage facility utilizing consulting services and contractors called the Price Drain consisting of a bored tunnel with ancillary channels, outlets, collector pipelines, drop shafts and connecting pipelines from the vicinity of the Superstition Freeway at Price Road to an outlet into the Salt River, including headworks and a storm drain from the existing Carriage Lane detention basin, connection to MESA's existing Broadway Road Storm Drain and connection to the Superstition Freeway Channel for drainage from MESA. The Price Drain shall have a peak capacity of 2136 cfs at its outlet. The municipalities are allowed to discharge a total flow of 230 cfs at peak time from the Carriage Lane Basin with CHANDLER allotted 100 cfs, MESA 30 cfs, and 100 cfs unallotted. In addition, MESA may discharge 130 cfs into the Price Drain in the vicinity of Broadway Road and uncontrolled flows from the Superstition Freeway Channel. The DISTRICT will not discharge any flows into the Price Drain.

8. The STATE, the DISTRICT, CHANDLER, and MESA agree to share in the costs of the Price Drain. The costs to be shared include the design, right-of-way acquisition for the Drain outlet, construction, construction management, construction claim costs, and judgments resulting from construction claims unless the claim is chargeable to and paid by consultants or contractors. The Price Drain joint use drainage facility, originally estimated to cost $37.4 million, may increase in cost in excess of 20 percent to an estimated $47.4 million (maximum anticipated increase of 27 percent).

9. The costs of the Price Drain joint use drainage facility will be cost shared as follows:

9.1. The STATE will pay 68.5%, estimated to be $32.48 million.

9.2. The DISTRICT will pay 31.5%, estimated to be $14.92 million.

9.3. The City of CHANDLER will reimburse the DISTRICT 6.19% of the overall project cost, not to exceed $2.78 million (the original estimated amount of $2.32 million plus 20 percent increase for unknown channel discharge conditions).

9.4. The City of MESA will reimburse the DISTRICT 8.26% of the overall project cost, not to exceed $3.71 million (the original estimated amount of $3.09 million plus 20 percent increase for unknown channel discharge conditions).

10. The STATE agrees to the following:

10.1. Bill the DISTRICT quarterly for the DISTRICT's and the municipalities' proportional share of costs for the Price Drain.

10.2. During design, hold briefings for the DISTRICT and the municipalities at 30%, 60%, and 90% completion points.

10.3. To submit six sets of the construction plans and specifications to the DISTRICT for transmittal to the municipalities.

10.4. To obtain adequate rights-of-way necessary for construction and maintenance. Title to any such rights-of-way shall be retained by the STATE.

10.5. To act as contracting agency and perform all services necessary to administer the construction including but not limited to the following:

10.5.1. Issue invitations for bids, receive, protect and open bids; determine the lowest responsible and qualified bidder; award the contracts; and issue the notice to proceed.

10.5.2. Provide for the services of construction surveying, inspection, quality control and testing.

10.5.3. Provide for facilities and personnel to carry out the necessary work of contract administration.

10.5.4. Pay the contractors as provided in the contracts.

10.5.5. To coordinate the final inspections with the DISTRICT, CHANDLER, and MESA to determine whether all work has been performed in accordance with contractual requirements.

10.5.6. To take reasonable and necessary action to dispose of all contractual and administrative issues arising out of any contracts awarded under this Agreement. This includes, but is not limited to, disputes, claims, protests of award, source evaluation and lawsuits. The STATE will advise and consult with the DISTRICT, CHANDLER, and MESA for any of these matters in which the DISTRICT and the municipalities could have financial interest.

10.6. Operate and maintain the Price Drain, at its sole expense, consisting of a bored tunnel with ancillary channels, outlets, collector pipelines, drop shafts and connecting pipelines from the vicinity of the Superstition Freeway at Price Road to an outlet into the Salt River, including headworks and a storm drain from the existing Carriage Lane detention basin, connection to MESA's existing Broadway Road Storm Drain and connection to the Superstition Freeway Channel for drainage from MESA.

10.7. Following construction, the STATE will establish an operating and scheduling agreement, the terms and conditions of which shall be subordinate to this Agreement, with CHANDLER, and MESA to ensure mutual notification of controlled releases into the Price Drain and scheduled maintenance services.

11. To the extent permitted by law, the STATE, the DISTRICT, CHANDLER, and MESA agree to defend, indemnify, and hold harmless each other and their agents, officials, employees and subsidiaries, from and against any and all claims,

actions, demands, liability, damage, cost and expense of whatsoever character whether direct or indirect, or consequential, including loss damage to property of either party hereto or of their persons and for the injury or death to any or all persons caused by or attributable to the negligence or fault of the STATE, the DISTRICT, CHANDLER, or MESA their employees or agents. As to any liability claims where the parties hereto may be jointly at fault, whether or not a named defendant to an action, the parties agree that they will share in any settlement or judgement in the amount that is proportionate to the degree of negligence or fault of the respective parties as agreed to between them or adjudicated by the courts.

12. The DISTRICT agrees to pay accepted invoices for the DISTRICT's and the municipalities' proportional shares within forty-five days of receipt. For a period of one year following the date final payment has been received by the STATE, the records of the STATE relating to the costs billed pursuant to this Agreement shall be open for inspection and audit by authorized representatives of the DISTRICT during normal business hours.

13. The DISTRICT will, in turn, bill the CHANDLER and MESA quarterly for each municipality's proportional share of the costs, as defined in Paragraph 9 above.

14. CHANDLER and MESA each agree to pay the invoices from the DISTRICT within forty-five days of receipt.

15. Any party or parties desiring to use any of the 100 cfs of unallotted peak capacity of the Price Drain must purchase that capacity from the STATE and the DISTRICT based upon the actual construction costs including administration, design, construction, and construction management, and such purchase must be approved by the STATE and the DISTRICT. The 100 cfs of unallotted peak capacity shall be divided equally between the STATE and the DISTRICT until such time as it may be sold.

16. Excess and/or off peak capacity of the Price Drain is allocated to the STATE, the DISTRICT, CHANDLER, and MESA as follows:

STATE - 70.7%
DISTRICT - 5.2%
CHANDLER - 10.3%
MESA - 13.8%

The STATE, the DISTRICT, CHANDLER, and MESA reserve the right to review and shall jointly review, negotiate and approve unanimously additions to uses of the joint system beyond the capacities listed in Paragraph 7 of this Agreement.

17. Prior to the engineering design of the conveyance from the Carriage Lane Basin to the drainage tunnel, all parties to the Agreement must concur in the capacity required. If the total design capacity is not required, the STATE and the DISTRICT will negotiate their cost sharing percentage on the basis of a reduced capacity.

18. CHANDLER and MESA each agree to construct and to operate and maintain, at each municipality's own cost, all facilities built to convey their stormwater to the Price Drain Inlet at the Carriage Lane Basin or to pipelines constructed downstream by the STATE.

19. All parties hereto acknowledge that this agreement is subject to cancellation by the Governor pursuant to the provisions of Section 38-511 of Arizona Revised Statutes.

20. This agreement shall remain in full force and effect as long as the Price/Pima Expressway is a part of the State Highway System and the STATE is using the facility for drainage purposes. This Agreement may be amended or terminated only upon written agreement of all parties.

21. In the event of any controversy which may arise out of this agreement, the parties hereto agree to abide by required arbitration as is set forth for public works contracts in Section 12-1518 (B) and (C) of Arizona Revised Statutes, as amended.

22. Pursuant to Arizona Revised Statutes 11-952, as amended, attached to this agreement are copies of appropriate action by ordinance, resolution or otherwise authorizing the respective parties to enter into this agreement.

STATE OF ARIZONA
DEPARTMENT OF TRANSPORTATION

By: _____ 12-16-87
Date

Title: STATE ENGINEER

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Recommended by:

D. E. Sagramoso 10-6-87

D. E. Sagramoso, P. E. Date
Chief Engineer and General Manager

Approved and Accepted:

By: Thomas S. Freestone
~~Chairman~~, Board of Directors
ACTING CHAIRMAN

Attest:

OCT 19 1987

By: Cheri Pennington
Clerk of the Board Date

This Intergovernmental Agreement has been reviewed pursuant to Arizona Revised Statutes 11-952, as amended, by the undersigned General Counsel, who has determined that it is in proper form and within the powers and authority granted to the Flood Control District of Maricopa County under the laws of the State of Arizona.

10-5-87

General Counsel Date

County of Maricopa

State of Arizona

Office of the Clerk

State of Arizona
County of Maricopa } ss.

I, Cherie Pennington, Clerk of the Board of Supervisors do hereby Certify That the attached is a true and correct extract from the minutes of the Board of Directors' meeting held October 19, 1987:

CHAIRMAN AUTHORIZED TO SIGN IGA FCD 87004:

Motion was made by Mr. Pastor and unanimously carried to approve and authorize the Chairman to sign IGA FCD-87004 between the State, Chandler, Mesa, and the District for sharing the construction costs of Price Drain. The Price Drain is expected to cost between $37.4 and $47.4 million, and the District's share will be approximately $8.43 million.

In Witness Whereof, I have hereunto set my hand and affixed the Official Seal of the Board of Supervisors. Done at Phoenix, the County Seat this 12th day of November, 1987 A.D.

Cherie Pennington

Clerk of the Board of Supervisors

Flood Control ✓
File

1300-003 86-86

CITY OF CHANDLER

By: _____
Mayor

Attest

By: Carolyn Deans 10/26/87
City Clerk Date
cc/10/23/87

The foregoing agreement has been reviewed by the undersigned attorney who has determined that it is in proper form and within the power and authority granted to the City of Chandler under the laws of the State of Arizona.

Maureen R Garge 10-12-87
Chandler City Attorney Date

CITY OF CHANDLER
Office of the City Clerk

C E R T I F I C A T I O N

I, Carolyn Dunn, the duly appointed and acting Deputy City Clerk of the City of Chandler, Arizona, do hereby certify that the attached document entitled "Regular Meeting, October 22, 1987, page 11, is a true and correct copy of the Regular Minutes of the City Council meeting, City of Chandler, Chandler, Arizona, in which the Intergovernmental Agreement between the City of Chandler, the State of Arizona (ADOT), Maricopa County Flood Control District, and the City of Mesa, for the construction of the Price Road Drain was approved. The attachment is a copy of the documents of record which are on file in the office of the City Clerk.

Signed and sealed this 28th day of October, 1987.

JUBILEE
1912-1987

Carolyn Dunn
Deputy City Clerk

S E A L

200 East Commonwealth Avenue • Chandler, Arizona 85225 • Phone: (602) 899-9761

ABG059

25. FLOOD CONTROL: PRICE DRAIN (88-132)

Staff recommended Council approve the revised Intergovernmental Agreement with the City of Chandler, Arizona Department of Transportation (ADOT), Maricopa County Flood Control District, and the City of Mesa for the construction of the Price Drain.

This deals with a joint-use drainage facility to be constructed from the Carriage Lane Retention Basin in Mesa to the Salt River along the Pima/Price Freeway alignment. Due to insufficient funds, the Town of Gilbert has now decided they do not wish to participate in the Price Drain. ADOT and the Flood Control District have agreed to pay what would have been Gilbert's share of the Price Drain between the Salt River and the Superstition Freeway because the construction of the drain in this reach critically impacts ADOT's construction schedule for the Pima/Price Freeway. The cost to the City of Chandler remains the same at $2,780,000.

COUNCILMAN WALLACE asked if Chandler could purchase Gilbert's portion of the drain and how much more would that allow Chandler to grow; and MR. PFAHL said if Gilbert should default Chandler would have a chance to purchase Gilbert's portion. The additional drainage would double Chandler's drain capacity and add a number of square miles.

COUNCILMAN WALLACE asked what area was targeted next for drainage planning, and MR. PFAHL said west Chandler. In addition, he noted Gilbert must determine in 9 to 12 months whether they will use the drain.

MOVED BY COUNCILMAN HUPPENTHAL, seconded by COUNCILMAN WALLACE, to approve the revised Intergovernmental Agreement for the Price Drain with the City of Chandler, ADOT, Maricopa County Flood Control District, and the City of Mesa as recommended by Staff and authorize the Mayor to sign the document. MOTION CARRIED UNANIMOUSLY (7 to 0).

34. COMMUNITY DEVELOPMENT BLOCK GRANT: MARICOPA COUNTY COOPERATION AGREEMENT (CC 87-339)

This Maricopa County Cooperation Agreement is a request to authorize the option to exclude the City of Chandler from participation in the Maricopa County Community Development Block Grant program.

The City of Chandler has the option to be included or excluded from the Maricopa County Community Development Block Grant (CDBG) program. Inclusion within the Maricopa County CDBG program entails execution of a cooperation agreement which would be effective for the three-year period from September 12, 1988, through August 31, 1990. Exclusion from the County's program will enable the City of Chandler to obtain entitlement status and receive CDBG funds directly from the United States Department of Housing and Urban Development (HUD).

The U.S. Department of Housing and Urban Development expects that the City of Chandler will be formally designated as an entitlement community to receive CDBG funds directly from the Federal Government by September, 1988. This

CITY OF MESA

By: _____
City Manager

Attest

By: Grace M. Cobeley, 9-9-87
acting City Clerk Date

The foregoing agreement has been reviewed by the undersigned attorney who has determined that it is in proper form and within the power and authority granted to the City of Mesa under the laws of the State of Arizona.

Neal Joseph Beets 9/9/87
Mesa City Attorney Date

RESOLUTION NO. 5899

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MESA, MARICOPA COUNTY, ARIZONA, AUTHORIZING THE CITY MANAGER TO EXECUTE AN INTERGOVERMENTAL AGREEMENT ON BEHALF OF THE CITY OF MESA WITH THE ARIZONA DEPARTMENT OF TRANSPORTATION, THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY, THE CITY OF CHANDLER, AND THE TOWN OF GILBERT.

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF MESA, MARICOPA COUNTY, ARIZONA, AS FOLLOWS:

Section 1: That the Agreement for constructing a joint storm water facility, known as the PRICE DRAIN, between the City of Mesa, and the State of Arizona, acting through its Department of Transportation, the Flood Control District of Maricopa County, the City of Chandler and the Town of Gilbert, is hereby approved.

Section 2: That the City Manager is authorized and directed, on behalf of the City of Mesa, to execute the agreement, and the City Clerk is authorized and directed to attest to the signature of the City Manager thereon.

PASSED AND ADOPTED by the City Council of the City of Mesa, Maricopa County, Arizona, this 8TH day of SEPTEMBER, 1987.

APPROVED:

Al Brooks
Mayor

ATTEST:

Grace M. Cobeley
Acting City Clerk

PROJECT: RAM-600-1-507
SECTION: Price Drain

RESOLUTION

BE IT RESOLVED on this 17th day of June, 1987, that I, CHARLES L. MILLER, as Director, ARIZONA DEPARTMENT OF TRANSPORTATION, have determined that it is in the best interests of the State of Arizona, that the DEPARTMENT OF TRANSPORTATION, acting by and through the Highways Division, enter into an Intergovernmental Agreement with the Flood Control District of Maricopa County for the purpose of establishing the cost sharing of the design, construction, construction management and of conducting the operation and maintenance of the Price Drain project.

THEREFORE, authorization is hereby given to draft said Agreement which, upon completion, shall be submitted for approval and execution by the State Engineer.

Charles L. Miller, Director
Arizona Department of
Transportation

WH:ks

0063e/

Attorney General
1275 WEST WASHINGTON
Phoenix, Arizona 85007
Robert K. Corbin

INTERGOVERNMENTAL AGREEMENT

DETERMINATION

A. G. Contract No. KR87-3501, is an agreement between public agencies, has been reviewed pursuant to A.R.S. § 11-952, as amended, by the undersigned Assistant Attorney General who has determined that it is in the proper form and is within the powers and authority granted to the State of Arizona.

No opinion is expressed as to the authority of the remaining parties, other than the State or its agencies, to enter into said agreement.

DATED this 28th day of December, 1987.

ROBERT K. CORBIN
Attorney General

Albert Morgan
Assistant Attorney General
Transportation Division

3658G

APPENDIX I.B

Carriage Lane Outfall Hydraulics

To ADOT-UHS/G. Wallace, S. Martin, R. Jordan

From HDR/J. Zovne

Date Carriage Lane Outfall Hydraulics/ Off-Peak Capacity

Subject February 22, 1990

HDR

Memorandum

The purpose of this memo is to establish the maximum capacity of the Carriage Lane Outfall (CLO) under off-peak conditions, and to propose an allocation of off-peak flows to the entities discharging to the CLO (ADOT, MCFCD, Chandler, Mesa).

To determine the maximum off-peak capacity, DCCO developed a hydraulic profile analysis for the CLO from the East Valley (Price) Tunnel outfall at the Salt River to the CLO Head Structure. The analysis was done in Lotus 123 spreadsheet format, and HDR's review copy of the DCCO print-out is attached.

The key assumptions in the DCCO analysis are as follows:

1. The water level of the Salt River is at or below elevation 1160 ft.msl.

2. The weir at the Salt River outfall is at elevation 1158 ft. msl.

3. The pipe friction formula is Manning's equation with n's of 0.013 or 0.015.

4. The top of the CLO Head Structure is at elevation 1189 ft. msl.

With these assumptions the maximum off-peak capacity was determined by DCCO to be 532 cfs. HDR concurs with this analysis with the only exception being the application of Manning's equation to an essentially pressure (surged) pipe flow situation. Although Manning's equation, which is an open-channel flow equation, is often applied to a "submerged" storm sewer, its application is less desirable when the flow is clearly pressurized flow, as it is in this case. Therefore, we would alternatively recommend the use of the Hazen-Williams (H-W) equation for pipe flow, with a C=130 for concrete pipe.

HDR modified the DCCO analysis by applying the H-W equation to the CLO pipe. For simplicity, only the CLO pipe equation was modified in DCCO spreadsheet as this pipe accounts for 94% of total straight pipe friction loss in the system. The

application of H-W reduced losses in this section by several feet and thus resulted in a higher off-peak capacity of 573 cfs. A marked-up copy of HDR's run is attached.

Using 573 cfs as the maximum off-peak capacity, the following off-peak allocations would result according to the Intergovernmental Agreement (1-25-88).

Entity	Percent of Flow	Allocation, cfs
State (ADOT)	70.7	405
County (MCFCD)	5.2	30
Chandler	10.3	59
Mesa	13.8	79
Totals	100.0	573

HDR therefore proposes that the CLO off-peak capacity be established at 573 cfs and furthermore recommends that the parties to the IGA be updated and advised on the status of the off-peak allocations.

While the question of off-peak allocations is being resolved, HDR will continue to proceed with preliminary design of the Price/Santan drainage system assuming that the combined ADOT and Chandler off-peak allocation will exceed the maximum planned discharge of 450 cfs into the CLO Head Structure.

JJZ/jm/aay

cc: DCCO/S. Polasik

19-Feb-90

PRICE ROAD DRAIN
CARRIAGE LANE OUTFALL
STAGE DISCHARGE CURVES

DCCO
by:POLASIK
19-feb-90
MODIFIED BY HDR: ZOVNE 20-FEB-90 (Substituted Hazen-Williams C=130 for n=0.013 for Carriage Lane Outfall only)

PURPOSE IS TO DEVELOP A RATING CURVE TOP SELECT
OPTIMUM AND ALLOWABLE PUMPING FROM THE PRICE EXPRESSWAY

PRESS 'ALT P' FOR PRINT OUT
SET UP FOR WIDE PRINTER IN
COMPRESSED PRINT

ASSUMED FLOW FROM DROP SHAFT A	0
ASSUMED FLOW FROM TUNNEL DS @ DS A	0
ASSUMED FLOW FROM PRICE EXPY	573
ASSUMED OUTLET WS ELEVATION	1160
FLOW FROM BASIN	0
MISC FLOW IN CARRIAGE LANE PIPE	0

RESULTANT HGL ELEVATION	ELEVATION
@ DROP STRUCTURE B	1169.24
@ CARRIAGE LANE JUNCT	1188.89
IN CARRIAGE LANE BASIN	1188.89

SYSTEM CONFIGURATION

LOCATION	STATION	US INVERT ELEVATION	SIZE	LENGTH	DESCRIPTION	H	W	N	DIA
CARRIAGE LANE BASIN	200000.00	1164.040		4.00	GRATED CATCH BASIN				
PIPE	200004.00	1164.040	3.5	70.00					
JUNCTION STRUCT	200074.00	1163.800		28.00					
OUTFALL	200102.00	1163.700	9	10694.71					
DROP INLET TRANS	210796.71	1158.087		10.00					
DROP INLET	210806.71	1158.050	8x10	48.81		10	8		
DROP SHAFT	210855.52	1125.380		37.62					11
AIR RELEASE CHAMBER	210893.14	1125.380	11x10.08+	50.50		11	10.8	1	11
TRANS	210943.64	1125.380		12.00					
PIPE	210955.64	1125.380	7	12.00					
TUNNEL	210967.64	1119.880	18	15413.71					
OUTFALL TRANS	226381.35	1103.000		60.00					
OUTFALL RISER	226441.35	1108.400	2x14x13	1417.00		13	14	2	
OPEN CHANNEL	227858.35	1157.000	TRAP	0.00			40		

19-Feb-90

LOCATION		EG LINE	FLOW RATE	SECTION AREA	WP	VEL	VEL HEAD	HEAD LOSS COOEF	HEAD LOSS	FRICT SLOPE	LENGTH	FRICTION LOSS	DELTA COEF	VEL DELTA VEL LOSS							
RIVER		1160	573																		
	OUTLET	1160.78100	573	364	108	1.574175	0.03847871	Used 0.781 1 ~~0.038478~~		0.000049	1417	0.070802			0 CRITICAL DEPTH	WIDTH 40	UNIT Q 14.325	DEPTH 1.854005	VEL 7.726512	Hv 0.927002	GRADELINE 1160.781 1160.038
OUTFALL RISER		1160.85181	573	364	108	1.574175	0.03847871			0.000052	60	0.003133	1	0.040253							
TRANSITION		1160.89519	573	254.4690	56.5486677	2.251747	0.07873241			0.000052	15413.71	0.805092	0.5	0							
TUNNEL		1161.70029	573	254.4690	56.5486677	2.251747	0.07873241			0.000030	12	0.000370	1	3.363589							
DROP B CONN PIPE		1165.06425	573	38.48451	21.9911485	14.88910	3.44232169			0.010711	12	0.128532	0.28	0.912242							
DROP B TRANS		1166.10502	573	166.3165	49.8787595	3.445236	0.18431141			0.000431	50.5	0.021796	0.5	0							
DROP B AIR RELEASE		1166.12682	573	166.3165	49.8787595	3.445236	0.18431141			0.002888	37.62	0.108670	1	2.073734	Dc CRITICAL DEPTH	WIDTH 8	UNIT Q 71.625	DEPTH 5.421146	VEL 13.21215	Hv 2.710573	ENERGY GRADELINE HGL 1166.181 1168.309
DROP SHAFT		1168.30922	573	47.51658	17.2787595	12.05894	2.25804641			0.004001	48.8125	0.195307	0.5	0.730720							
DROP INLET		1169.23525	573	11 80	160	7.1625	0.79660568			0.013171	10	0.131718	1	0.463113							
TRANS		1169.83008	573	63.61725	28.2743338	9.006990	1.25971869	Hazen Williams C = 130		0.001664	10694.71	17.80119	0.5	0							
OUTFALL		1188.89100	573	63.61725	28.2743338	9.006990	1.25971869	1 1.259718													
JUNCTION STRUCT		1188.89100	573							0	70	0	0.5	0							
CARRIAGE PIPE		1188.89100	0	9.621127	10.9955742	0	0														
CATCH BASIN	INLET	1188.89100	0	9.621127	10.9955742	0	0	1	0												

$$H_L = \frac{(9.007)^{1.85}(10694.71)}{[1.318(130)]^{1.85}(9/4)^{1.17}} = 17.80'$$

19-Feb-90

PRICE ROAD DRAIN
CARRIAGE LANE OUTFALL
STAGE DISCHARGE CURVES

DCCO
by:POLASIK
19-Feb-90

(HDR Check copy 2/21/90 MTy)

PURPOSE IS TO DEVELOP A RATING CURVE TOP SELECT
OPTIMUM AND ALLOWABLE PUMPING FROM THE PRICE EXPRESSWAY

PRESS "ALT P" FOR PRINT OUT
SET UP FOR WIDE PRINTER IN
COMPRESSED PRINT

ASSUMED FLOW FROM DROP SHAFT A	0
ASSUMED FLOW FROM TUNNEL DS @ DS A	0
ASSUMED FLOW FROM PRICE EXPY	532
ASSUMED 10YR RIVER ELEVATION	1160 Weir Elev. @ Outlet = 1158
FLOW FROM BASIN	0
MISC FLOW IN CARRIAGE LANE PIPE	0

RESULTANT HGL ELEVATION	ELEVATION
@ DROP STRUCTURE B	1167.93
@ CARRIAGE LANE JUNCT	1188.95
IN CARRIAGE LANE BASIN	1188.95 TOP OF CARRIAGE LANE HEAD STRUCTURE = 1189

SYSTEM CONFIGURATION

LOCATION	STATION	US INVERT ELEVATION	SIZE	LENGTH	DESCRIPTION	H	W	N	DIA
CARRIAGE LANE BASIN	200000.00	1164.040		4.00	GRATED CATCH BASIN				
PIPE	200004.00	1164.040	3.5	70.00					
JUNCTION STRUCT	200074.00	1163.800		28.00					
OUTFALL	200102.00	1163.700	9	10694.71					
DROP INLET TRANS	210796.71	1158.087		10.00					
DROP INLET	210806.71	1158.050	8x10	48.81		10	8		
DROP SHAFT	210855.52	1125.380		37.62					11
AIR RELEASE CHAMBER	210893.14	1125.380	11x10.08x	50.50		11	10.8	1	11
TRANS	210943.64	1125.380		12.00					
PIPE	210955.64	1125.380	7	12.00					
TUNNEL	210967.64	1119.880	18	15413.71					
OUTFALL TRANS	226381.35	1103.000		60.00					
OUTFALL RISER	226441.35	1108.400	2x14x13	1417.00		13	14	2	
OPEN CHANNEL	227858.35	1157.000	TRAP	0.00			40		

19-Feb-90

LOCATION	EG LINE	FLOW RATE	SECTION AREA	WP	VEL	VEL HEAD	HEAD LOSS COEFF	HEAD LOSS	FRICT SLOPE	LENGTH	FRICTION LOSS	DELTA COEF	VEL LOSS								
RIVER	1160	532																			
OUTLET	1160.64671	532	364	108	1.461538	0.03316917	1	0.033169	0.000043	1417	0.061033			CRITICAL DEPTH	WIDTH 40	UNIT Q 13.3	DEPTH 1.764476	VEL 7.537647	Hv 0.882238	GRADELINE 1160.646	1160.033
OUTFALL RISER	1160.70774	532	364	108	1.461538	0.03316917			0.000045	60	0.002701	1	0.034699								
TRANSITION	1160.74514	532	254.4690	56.5486677	2.090627	0.06786840			0.000045	15413.71	0.694000	0.5	0								
TUNNEL	1161.43914	532	254.4690	56.5486677	2.090627	0.06786840			0.000026	12	0.000319	1	2.899459								
DROP B CONN PIPE	1164.33892	532	38.48451	21.9911485	13.82374	2.96732745			0.009233	12	0.110796	0.28	0.786365								
DROP B TRANS	1165.23608	532	166.3165	49.8787595	3.198718	0.15887891			0.000372	50.5	0.018789	0.5	0								
DROP B AIR RELEASE	1165.25487	532	166.3165	49.8787595	3.198718	0.15887891			0.002490	37.62	0.093675	1	1.787587	CRITICAL DEPTH	WIDTH 8	UNIT Q 66.5	DEPTH 5.159359	VEL 12.88919	Hv 2.579679	Dc ENERGY GRADELINE 1165.789	HGL 1167.136
DROP SHAFT	1167.13614	532	47.51658	17.2787595	11.19608	1.94646628			0.003449	48.8125	0.168357	0.5	0.629890								
DROP INLET	1167.93438	532	11 80	160	6.65	0.68668478			0.011354	10	0.113543	1	0.399209								
TRANS	1168.44714	532	63.61725	28.2743338	8.362511	1.08589440			0.001815	10694.71	19.41399	0.5	0								
OUTFALL	1188.94702	532	63.61725	28.2743338	8.362511	1.08589440	1	1.085894													
JUNCTION STRUCT	1188.94702	532																			
CARRIAGE PIPE	1188.94702	0	9.621127	10.9955742	0	0			0	70	0	0.5	0								
CATCH BASIN	1188.94702	0	9.621127	10.9955742	0	0	1	0													
INLET																					

$S_f = \left[\frac{nV}{1.49}\left(\frac{WP}{A}\right)^{2/3}\right]^2$

Used 0.046

$n = 0.015$

$n = 0.013$

Neglected

$n = 0.013$

$n = 0.015$

Neglected

$n = 0.013$

$y_c = \left(\frac{Q^2}{g}\right)^{1/3}$

$C\left(\frac{V_1^2}{2g} - \frac{V_2^2}{2g}\right) = 1.0(0.034699)$

$0.5(0.067 - 0.067)$

$1.0(2.967 - 0.067)$

$0.28(0.1589 - 2.96732) + 0.1108$

← CLO

$Q = CLH^{3/2}$

Assume $L = 40'$

$532 = 3.6(40)H^{3/2}$

$H = 2.39$

$1158 + 2.39$

$1158 + 1.76 + 0.88 = 1160.64$

1160 + vel head

$= 1160.39$ ok

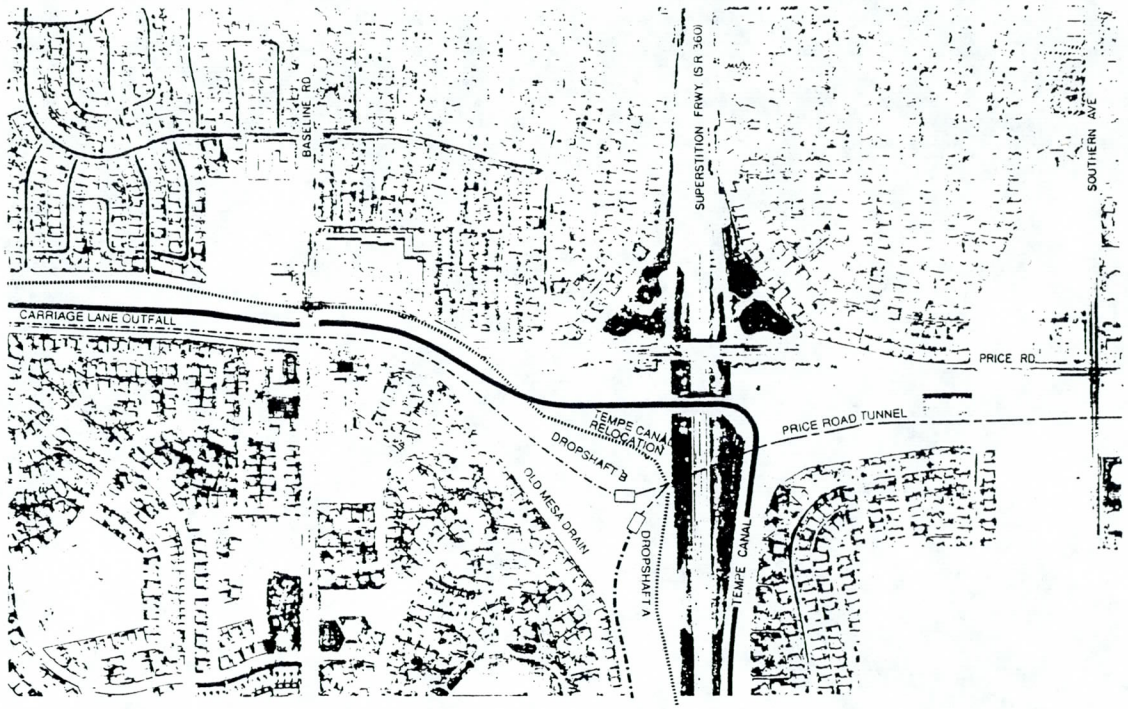
ok

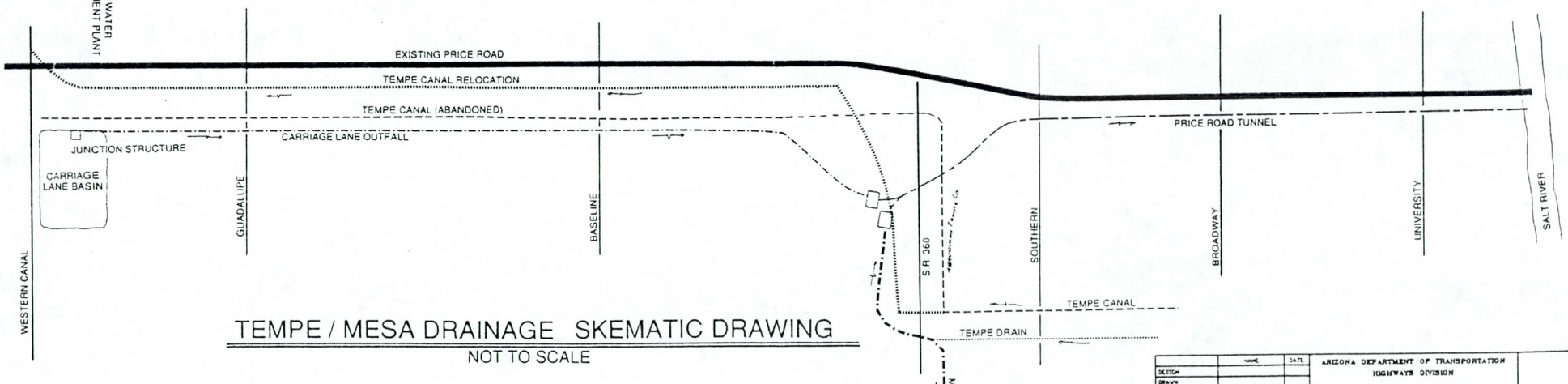
$\Sigma HL = 28.947'$ $\Sigma 1.732'$ $\Sigma 20.677'$ $\Sigma 6.536'$ Total $= 28.946'$

Notes

1. The Outfall accounts for 94% of straight pipe losses $19.41399/20.677 = 93.9\%$
2. The cont. & exp. loss of "Drop B Connector pipe" accounts for 45% of "other" losses $2.899/6.536 = 44.4\%$

FHWA REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	RAM-600-0-311			





TEMPE / MESA DRAINAGE SKEMATIC DRAWING

NOT TO SCALE

	NAME	DATE
DESIGN		
DRAWN		
CHECKED		

DeLEUW CATHER — DeLeuw, Cather & Company

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROUTE | MILEPOST | LOCATION

SHEET ___ OF ___

APPENDIX I.C.

Price (East Valley) Tunnel Hydraulics
(Excerpts from **Final Hydraulic Report for Price Tunnel System**,
Volume I, HNTB, August, 1989)

Table 1

Critical Hydraulic Elements
in The Tunnel System

Node No.	Structure Description	Invert	Top Elevation *
Sta. 1	Drop Structure A	1,120.00 ft	1,195.00 ft
Sta. 4	Carriage Lane Basin Head Structure	1,170.00 ft	1,189.00 ft
Sta. 37	Drop Structure B	1,164.36 ft	1,195.55 ft
Sta. 45	Dropshaft No. 5	1,118.00 ft	1,191.50 ft
Sta. 53	Dropshaft No. 4	1,115.37 ft	1,190.80 ft
Sta. 63	Dropshaft No. 3	1,112.07 ft	1,196.35 ft
Sta. 69	Dropshaft No. 2	1,110.09 ft	1,198.90 ft
Sta. 83	Dropshaft No. 1	1,105.47 ft	1,187.75 ft
Sta. 90	Tunnel Low Point	1,103.00 ft	1,182.00 ft

* Top elevation is obtained from HNTB's intermediate dropshafts site plan except at the Carriage Lane Basin head structure

ii. Design and Simulation Conditions

Prior to the series of simulation runs, it was decided that the tunnel system flow capacities would be designed for the 100-year tunnel inflow with a 10-year river flood. The river flood elevations used throughout Dr. Song's studies have been based upon preliminary results from Simons, Li and Associates' (SLA) modeling. Prior to 1989, extra elevation was added to the SLA elevation to account for the preliminary nature of their results, and an elevation of 1170.5 feet was used for the 10-year flood at Price Road. In February 1989, the 10-year flood elevation was raised to 1,172.12 feet by SLA. The study results of the effects due to the higher river flood elevation are included in Section III - C.iii.c.

HNTB provided Dr. Song with the tunnel inflow hydrographs at 11 locations. The origin of time in the mathematical model was set by Dr. Song at hour 11.75 of the hydrographs obtained from HNTB's HEC-1 results. Since Dr. Song's model only directly simulated the system upstream of the tunnel low point at Sta. 90, the head losses from the riser to the river are built into Dr. Song's computer program by internal, non-output documented calculations. The hydraulic control for the system was determined to be at the high point in the riser, therefore, Dr. Song used this location as the downstream control in his model. A head loss at the high point in the riser is calculated and added to the downstream end boundary condition, when there is outflow from the tunnel system. Dr. Song assumed a 21-foot wide weir and used the Francis submerged weir equation to calculate the flow rate.

Maximum outflows of 2,240 cfs and 1,150 cfs for the system resulted for the 100-year and 10-year design events versus 10-year and 100-year river floods, respectively, from Dr. Song's models. For the design condition of the 100-year tunnel inflows verse no flow in the river, a maximum outflow of 2,279 cfs was recorded from his model.

During the course of this transient flow modeling, the following simulation conditions were performed and documented in Dr. Song's reports:

Condition A — 10-year tunnel inflow hydrographs with 100-year Salt River flood level at 1,173.00 feet at Hayden Road outfall (see Dr. Song's December, 1987 report).

Condition B — 100-year tunnel inflow hydrographs with no flow in Salt River, with outfall at Price road (see Dr. Song's January and June, 1988 reports).

Condition C— 100-year tunnel inflow hydrographs with 10-year Salt River flood level at 1,172.12 feet at Price road outfall (see Dr. Song's June and July, 1989 reports).

iii. Results of Simulations

The results of the simulations are organized into three parts based on the design conditions (Conditions A, B and C). Since Dr. Song has developed a total of nine (9) reports associated with the modeling of the tunnel system from May, 1987 to July, 1989, only the valid results are addressed herein.

a. Condition A — 10-year tunnel inflow hydrographs with a 100-year Salt River flood level at 1,173.00 feet at Hayden Road.

This 1987 simulation run assumed the tunnel outfall was at Hayden Road and the system length was approximately 3,000 feet longer than for the current tunnel outfall at Price Road.

The modeling results indicated that no hydraulic transient problem exists, due to the tunnel being full of water at the start of the simulation. This will be true even with the current 100-year river flood level at 1,181.94 feet and the outfall at Price Road is used.

HNTB estimates the peak hydraulic grade line (HGL) at the Carriage Lane Basin head structure (at Sta. 4) may be high enough to cause overflow into the basin. This condition will be much closer to being the hydraulic control for the tunnel system due to the fact that the outfall location was moved upstream to Price Road, and a much greater differential exists between the 10-year and 100-year flood elevations there than at Hayden Road.

HNTB also calculates the HGL to be 1,179.80 feet at Sta. 4 for the condition of the 10-year tunnel inflows with a 10-year river flood elevation of 1,172.12 feet. This HGL could create backwater into some of lateral pipes connecting to the Carriage Lane Basin outfall pipe but would not endanger the neighborhood houses with flooding (minimum floor elevation at 1,192.00 feet).

b. Condition B — 100-year tunnel inflow hydrographs with no flow in Salt River.

The most severe surges were found to occur under this design condition. The Carriage Lane Basin with the head structure configuration described in the previous section was found to be an effective surge relief device. There is no overflow into the basin for this design condition. Dr. Song's simulation shows no tunnel outflow for the first 78 minutes from the start of the simulation, due to the tunnel storage. This storage volume is estimated to be 4,460,000 cubic feet (102 acre-feet). There also is no outflow from the Carriage Lane Basin to the Carriage Lane Basin outfall pipe for approximately 56 minutes during the simulation period, from minute 92 to minute 148, when the HGL in the head structure is higher than the water surface elevation in the basin. A maximum water surface elevation of 1181.50 feet is reached for this condition.

The maximum pressure head in the tunnel is estimated to be 100 feet, which consists of static pressure head, surge pressure head, and waterhammer pressure head. A maximum pressure head of 50 feet is estimated for the Carriage Lane Basin Outfall Pipe.

Three locations were established to be designed to allow air in the tunnel system to escape during the filling period. Drop Structure A, Drop Structure B, and the Carriage Lane Basin head structure should be designed to allow air outflow rates of 1,800 cfs, 600 cfs, and 600 cfs, respectively.

c. Condition C — 100-year tunnel inflow hydrographs with 10-year Salt River flood level at 1,172.12 feet.

These results present not only the hydraulic performance in the proposed tunnel system under the design condition but also show the effects of the increased 10-year river flood elevation from 1,170.50 feet to 1,172.12 feet. Maximum HGL at locations for the tunnel system are plotted in Exhibit 7.

The 1.6 feet increase in the 10-year river flood elevation appears to have the following effects (The comparison is made to Dr. Song's June, 1988 report):

1. There is no hydraulic transient problem in the tunnel system for this design condition for either river flood elevation, because the tunnel starts the design event full of water due to the river flood. Even with the original, lower 10-year river flood elevation, this condition produced the highest HGL at the upstream end, and resulted in a minor amount of overflow into the Carriage Lane Basin. The most significant effect of the higher flood elevation is to increase the overflow into the Carriage Lane Basin by overtopping the weir at the head structure. The overflow occurs because of the backwater effect, not by a backsurge resulting from transient conditions. The amount of the overflow increased from 0.53 acre-feet (as previously recorded) to 1.94 acre-feet. This overflow will last approximately 52 minutes with a maximum flow rate of 44.4 cfs.

2. Dr. Song assumed a submerged sharp-crested weir at the system high point in the riser and used the Francis submerged weir equation to calculate the outflow. HNTB felt that the weir in the riser is not a submerged sharp-crested weir and would not generate approximately two feet of additional head loss as Dr. Song predicted. However, Dr. Song's model did not consider the head losses taking place in the Drop Structure B, and his model showed adequate simulation results for the Carriage Lane Basin outfall pipe system. For the drainage tunnel, Dr. Song's results considered to be very conservative.

3. No flow will discharge into the Carriage Lane Basin outfall pipe from the Carriage Lane Basin for approximately 2.8 hours. The maximum pool elevation is at elevation 1,183.10 feet. This is 1.6 feet higher than the maximum pool elevation resulting for the 100-year event with no flow in the river. The rating curves for the Carriage Lane outfall pipe system is listed in Table 2.

Table 2

Rating Curve

for

The Carriage Lane Basin Outfall Pipe System

Time (min.)	HGL at Sta. 4 (ft)	Qt1 at Sta. 4 (cfs)	WSEL in Basin (ft)	Qout from Basin (cfs)	Qover to Basin (cfs)	HGL at Sta. 37 (ft)	Qt2 at Sta. 37 (cfs)
75.83	1,187.51	185	1,177.76	0	0	1,182.24	308
80.73	1,187.35	200	1,178.20	0	0	1,182.74	325
88.09	1,188.85	199	1,178.84	0	0	1,184.47	305
90.54	1,189.06	197	1,179.04	0	-2.4	1,184.81	299
95.45	1,189.14	191	1,179.43	0	-9.0	1,185.23	286
100.35	1,189.24	180	1,179.80	0	-19.9	1,185.72	269
105.26	1,189.34	167	1,180.15	0	-32.4	1,186.23	250
112.62	1,189.38	161	1,180.63	0	-38.9	1,186.23	242
119.97	1,189.41	156	1,181.04	0	-44.4	1,186.43	233
127.33	1,189.38	162	1,181.39	0	-38.5	1,186.06	238
139.59	1,189.17	189	1,181.83	0	-11.7	1,185.20	254
142.05	1,189.07	198	1,181.90	0	-2.9	1,184.95	258
144.50	1,188.55	204	1,181.96	0	0	1,184.61	260
186.19	1,182.85	201	1,182.82	0	0	1,179.21	239
188.64	1,182.85	203	1,182.85	3.4	0	1,179.03	241
196.00	1,182.81	216	1,182.94	15.6	0	1,178.58	255
210.72	1,182.48	233	1,183.04	32.5	0	1,177.69	274
235.24	1,181.88	248	1,183.09	47.7	0	1,176.52	291
250.00	1,181.60	253	1,183.08	52.7	0	1,176.02	298

NOTES:

Qt1: Total Flow at Sta. 4
Qout: Outflow from the Basin
Qover: Overflow to the Basin
Qt2: Total Flow at Sta. 37

iv. Conclusions and Recommendations

The conclusions for the hydraulic transient flow modeling are as follows:

a. There is no hydraulic transient problem in the tunnel system. The Carriage Lane Basin with head structure was found to be an effective surge relief device.

b. The most significant effect of the higher flood elevation is to cause overflow into the Carriage Lane Basin by overtopping the weir at the head structure. The overflow occurs by the backwater effect not by transient surge. The amount of the backflow is 1.94 acre-feet and will last approximately 52 minutes with a maximum flow rate of 44.4 cfs.

c. No flow will discharge into the Carriage Lane Basin outfall pipe from the Carriage Lane Basin for approximately 2.8 hours. The maximum pool elevation is at elevation 1,183.10 feet.

d. Since the maximum HGL in the Carriage Lane Basin outfall pipe is at 1,189.41 feet, it should not endanger the neighborhood houses (minimum floor elevation near 1,192.00 feet). Some of the pipes from adjacent detention pond should be carefully examined for backwater effects due to this high HGL.

e. There is no overflow from any of intermediate dropshafts according to Dr. Song's simulations.

Recommended design hydraulic parameters for the Price Road Drain Tunnel are described as follows:

a. The Carriage Lane Basin head structure should have at least 300 square feet of cross-sectional area with a 20-foot long weir at elevation of 1189.00 feet.

b. The drainage tunnel was hydraulically modeled based on the 10-year river flood elevation at 1172.12 feet. The river stream bed elevation must be kept below the elevation of 1,153.00 feet for the potential aggradation due to the future river work activities. Restudy or re-evaluation must be conducted if any of the above parameters has been changed.

c. We estimated that a river water surface elevation of 1,168.26 feet would not create any overflow into the Carriage Lane Basin, if any overflow into the basin is not acceptable to City of Mesa.

d. The maximum pressure head in the tunnel is estimated to be 100 feet, which consists of static pressure head, surge pressure head, and waterhammer pressure head. A maximum pressure head of 50 feet is estimated for the Carriage Lane Basin outfall pipe.

e. Three locations in the system were established to be designed for air relief. Drop Structure A, Drop Structure B, and the Carriage Lane Basin head structure should allow air outflow rates of 1,800 cfs, 600 cfs, and 600 cfs, respectively.

DIIGS/sc/3

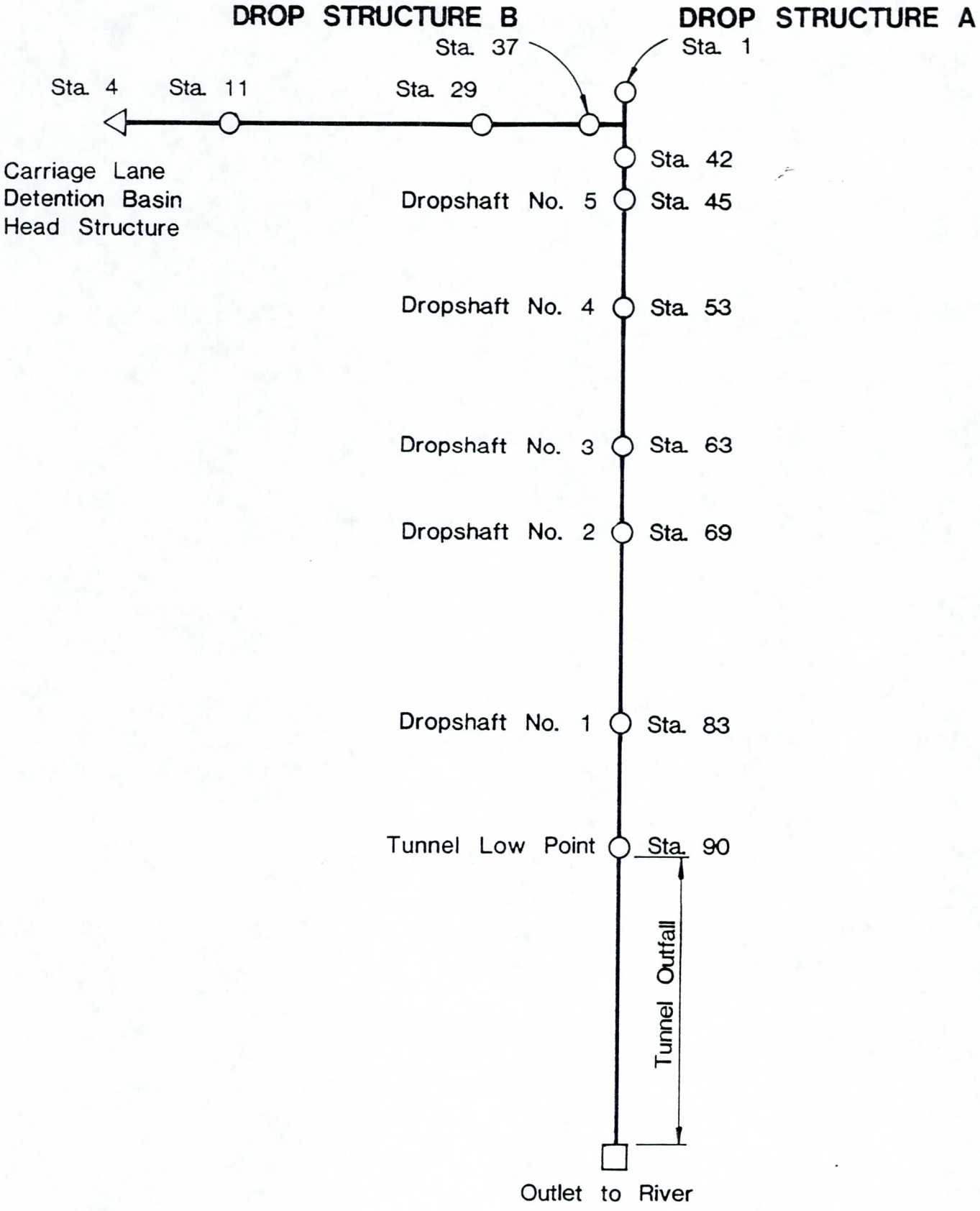
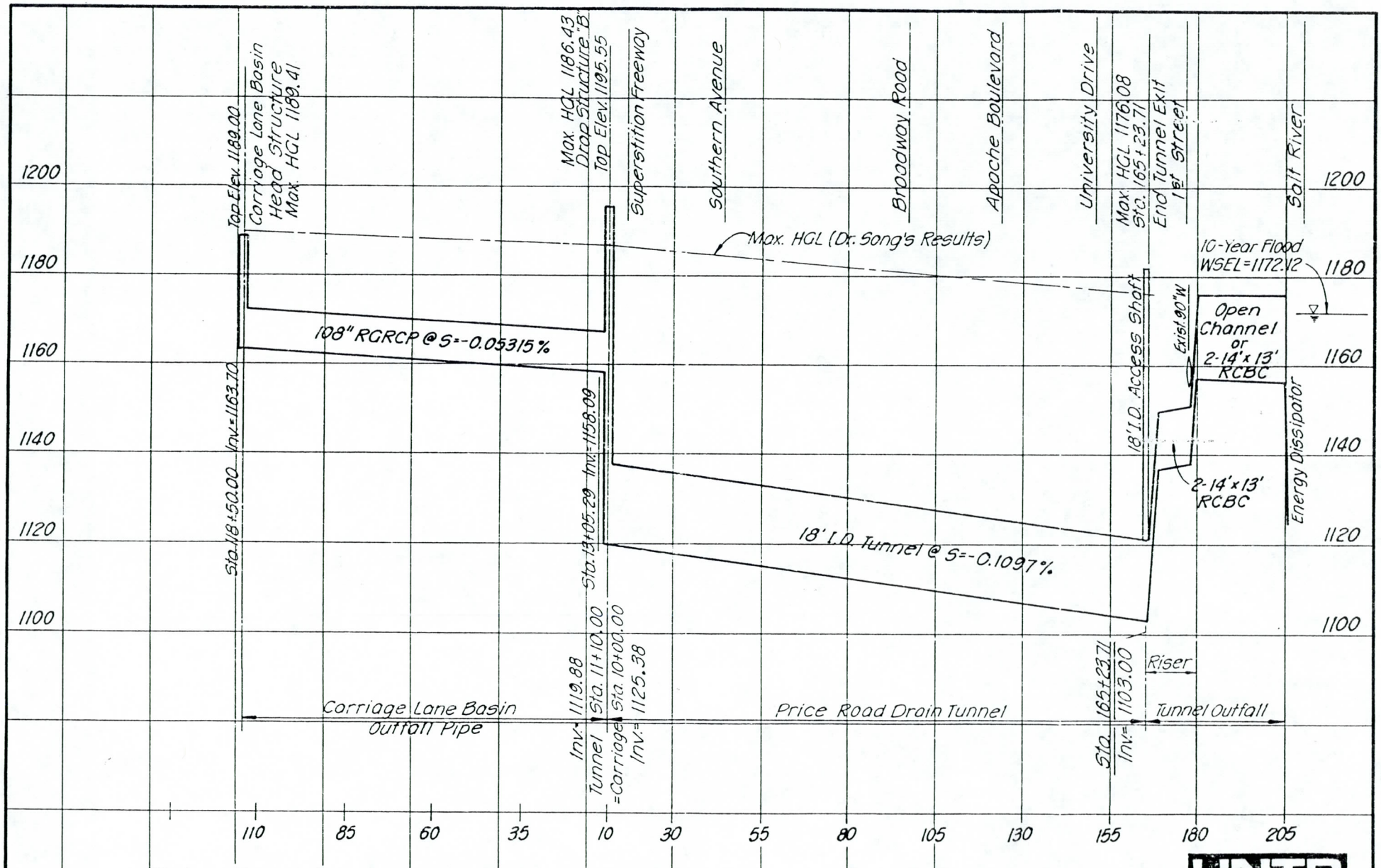


EXHIBIT 5

DR. SONG'S MODEL CONFIGURATION

HNTB



Price Road Drain Tunnel System Profile

EXHIBIT 7

HNTB

APPENDIX II

PUMP STATION DATA

A. On-Site Pump Stations

- A.1 ADOT Criteria/Outer Loop Pump Station Criteria
- A.2 Cost of On-Site Stations without Underground Storage
- A.3 Cost of On-Site Stations with Underground Storage

B. Off-Site Pump Stations

- B.1 Off-Site Basin-to-Basin System Cost Data
- B.2 Off-Site Pressure System Cost Data

APPENDIX II.A.1

ADOT On-Site Pump Station Criteria

Outer Loop (Pima) On-Site Pump Station Criteria

ARIZONA DEPARTMENT OF TRANSPORTATION

O F F I C E M E M O

December 15, 1989

TO: Gary Robinson
Chief Deputy State Engineer

FROM: Dan R. Powell
District Engineer

Re: Pumphouse Design Changes

As a follow-up to our meeting of November 30, 1989 the District has compiled a basic listing of criteria to be used in the design of future pumphouses. In order to insure reliability and performance during critical events new pumphouses should be designed with the following features:

a. Engines shall be diesel fueled
b. Pumps shall be direct or right angle drive
c. Fuel tanks shall be above ground and have 12-18 hour capacity
d. Control systems shall be centered around industrial grade computers
e. Pumphouse sites shall have a walled perimeter
f. Pumphouses shall be designed using an industrial architect

The District feels that these criteria can be incorporated into a design similar to the 43rd Avenue, Grand Avenue, or Van Buren pumphouses. The District will meet with any group that wishes to clarify any of these issues in order to insure that the final product is functional and reliable.

Dan

Dan R. Powell

cc: L. Langer

RECEIVED
DEC 19 1989
Urban Highway
Section

ARIZONA DEPARTMENT OF TRANSPORTATION
OFFICE MEMO

January 9, 1990

TO: REX LEATHERS
Project Director
DeLeuw Cather and Company

ATTN: WILEY SMITH
Deputy Engineering Manager
DeLeuw Cather and Company

FROM: RAYMOND C. JORDAN, P.E.
Drainage Engineer
Urban Highway Section

RE: PUMPHOUSE DESIGN CHANGES

The attached memo from Dan R. Powell lists several pumphouse design modifications requested by District I. ADOT management has approved the implementation of these changes.

Please take the following actions with respect to this topic:

1. On projects where the design is 30% complete or less implement these changes. Projects beyond 30% design (including those currently under construction) should be changed to diesel fueled engines where feasible.

2. Prepare a written summary outlining any economic and operational impacts of the proposed changes that you feel should be discussed with District I.

3. Set up a meeting with District I to discuss the topics in items 1 and 2 above. The meeting should be held prior to the end of January. Please invite representatives of DMJM, Baker, and HDR to attend and also furnish detailed meeting minutes.

4. In consultation with District I, prepare a draft pump station design "white paper" (for distribution by UHS to our management consultants) outlining general pump station design requirements. The draft should be completed by February 16, 1990.

Please contact us if you have any questions concerning this directive.

Raymond C. Jordan

RCJ/RAD/km

Attachment

cc: D. R. Powell, Distr. I
L. L. Langer, UHS
C. K. Eaton, UHS
T. M. Monchak, DMJM
W. B. McMullen, Baker
F. E. Heaston, HDR

ARIZONA DEPARTMENT OF TRANSPORTATION

URBAN HIGHWAY SECTION

SPEED MEMO

RE: [ ]YOUR [ ]MY [X]BELOW [X]ATTACHED
[ ]LETTER [ ]PHONE CALL [ ]ORDER
[ ]INQUIRY [ ]MEMO [ ]TELEGRAM
DATED: NO.:

TO: HDR
ATTN: STEVEN MILLER

FROM: RAY JORDAN

SUBJECT: PUMP STATION DESIGN

DATE: 01/26/90

ATTACHED, FOR YOUR INFORMATION, ARE MINUTES FROM A MEETING BETWEEN DCCO AND DISTRICT 1 CONCERNING THE DESIGN OF ON-SITE PUMP STATIONS. IN THE FUTURE, THE TOPICS DISCUSSED IN THIS MEETING WILL BE FORMALIZED IN A PUMP STATION DESIGN "WHITE PAPER;" HOWEVER, FOR IMMEDIATE DESIGN PROJECTS, YOU MAY WISH TO REFER TO THE INFORMATION PRESENTED IN THESE MINUTES.

ALSO ATTACHED ARE THE OTHER 2 MEMO'S AS WE DISCUSSED ON WEDNESDAY! (1-9-90 & 12-15-89)

SIGNATURE/TITLE/LOCATION/PHONE:

REPLY [ ] NO REPLY NECESSARY [X] ACKNOWLEDGE RECEIPT ONLY [

SIGNATURE/TITLE/LOCATION/PHONE:

cc: GEORGE WALLACE

INTEROFFICE CORRESPONDENCE

DATE: January 22, 1990

TO: DCCO File / Attendees
LOCATION:

FROM: W. D. Boyd
LOCATION: DCCO
PHONE:

SUBJECT: Pumphouse / Pump Revisions Meeting Minutes

FILE: CO-DP-129-25

On January 17, 1990 a meeting was held in DCCO office to discuss District 1's request to consider changes in the current pump station design. Those in attendance are shown in the attached roster.

It was agreed that the memo from Dan Powell, District Engineer, to Gary Robinson, Chief Deputy State Engineer, dated December 15, 1989, "Pumphouse Design Changes" would serve as an unofficial agenda. It was further agreed that additional comments from District personnel, which was presented by Don Lehman, would also be discussed.

It was established the items developed by District 1 would be discussed and unless the discussion brought out points that caused the district to withdraw their request all the items would be considered. It was also agreed that DCCO would prepare a report on each of the items, listing both the pros and cons of the requested revisions. This would be provided to ADOT for their review and upon their direction the revisions would be incorporated into future plans. The revisions would also be included in designs now underway where changes could be made without a major impact on the project.

The record of this meeting reflects only the items discussed and their deposition while the "white paper" being prepared by DCCO will address the issues in more detail.

Items Discussed:

1. Engines shall be diesel fueled: This request will be reviewed by DCCO. Consideration will be given to the need for a "Fuel Management Program", the possibility/probability of future EPA restrictions on the use of diesel fueled engines, and the cost (initial and maintenance). The District also stated that if natural gas was available they had no objection to it being used as the fuel source.

2. Pumps shall be direct or right angle drive: DCCO asked if the intent was to provide separate engines for each pump. The District acknowledged this was their request. Their experience has been that with the electric submersible pump that debris in the wet well would generally put the pump

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out of service to the extent that it required major repair. It was also their position that a large mixed-flow pump will normally pass this type of obstruction. DCCO discussed some of the problems that are associated with the maintenance of mixed-flow pump. The question was asked if the design for the right angle pump should include a secondary source of power (electric) if there was failure in the diesel powered system. The District's response was that it should not be included. The District indicated they preferred the right angle drive pump over other types.

3. Fuel tanks shall be above ground and have 12-18 hour capacity: The District made the point they were requesting the tanks be of a size to provide for 12-18 hours of operation. This request then triggered a discussion about the possibility that the fuel tanks at each the site would require a design which would accommodate the number of pumps and the fuel consummation of each pump.

4. Control systems should be centered around industrial grade computers: The District considered the computer system at 91st Avenue at the low end of manufactured industrial computers. They requested the computers installed be more standardized. Further discussion indicated their desire was to go to a sole source for the computers. This was to facilitate replacement parts and simplify maintenance needs. DCCO will review a number of commercial grade computers and make a recommendation as to the one most desirable. DCCO will then prepare a letter to justify the need for a sole source specification.

   Discussion was directed toward the heat problems within the pumphouse and its effect on the computer equipment. One solution proposed was to place the equipment in a separate air conditioned enclosure. DCCO said they would review this and propose a method to alleviate this concern.

5. Pumphouse sites shall have a walled perimeter: District requested that the site perimeter be walled on all sides. Wall height should take into consideration: aesthetics, site location, security and noise mitigation. It was agreed these factors should be weighted on a site specific condition, but in general walls should be a minimum of 8 feet high.

   Exterior design of the pumphouse was briefly discussed and it was the general consensus it should be standardized and except for some minor revisions, remain as now designed.

6. Pumphouses shall be designed using an Industrial Architect: The District felt that many of the features in the pumphouses demonstrated the design was probably done by Civil Engineer's rather than industrial orientated Architects. Examples sited were layout of the various components were not user compatible such as switches and gauge readings were separated to where the gauge was not visible to the switch, electrical outlets mis-located, gas detectors mis-located.

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In general the District believes a better layout of the features would be realized if the design was done by industrial Architects.

There were 21 additional items presented by Don Lehman. Many of these were duplicates or similar to the items in Dan Powell's memo, or had already been incorporated into the current design.

1. Terraced slump block provides easy access to roof - This concern has been corrected in the revised plans.

2. Flap valve entering discharge chamber did not work properly due to clearance problem with roof - Design to be revised to provide better clearance.

3. Security gate for pump service switch enclosure does not provide method to secure gate to steel frame - Plan to be revised accordingly.

4. Wet well pump service enclosure too small - Wet well height to be increased from 4 feet to 6 feet.

5. Revise the hoist from manual to electrical - Plans are being changed to reflect this request.

6. Revise the liquid propane piping system to reduce vapor locks during pump operation - This request should be moot if engines are diesel fueled.

7. Revise roofing requirements to provide for "Koppers Specification No. 17 WI" or approved equal - Special Provisions to be modified accordingly.

8. Propane tanks to far from engine - See number 6.

9. Propane converter needs to be engine mounted - See number 6.

10. Propane liner to be 3/4 of 1" pipe - See number 6.

11. Lights in wet well - DCCO to review current design.

12. Ladder in wet well needs to be extended above entrance to provide for hand hold - Plans to be revised accordingly.

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13. Wet well needs trash guard - DCCO to review current design.

14. Engine and generator need to be 120 KW - DCCO to revise plans and specifications.

15. Control panel and motor controls should be in different rooms other than engine room - DCCO to evaluate.

16. Standard pump discharge connection should be uniform on all systems - DCCO to evaluate.

17. 900 RPM pump (maximum) - DCCO will research pump manufacturers to ascertain if there is two or more pumps meeting this specification.

18. Electrical/electronic parts to be standardized - See action under Number 4 of Mr. Powell's memo.

19. Add cross bracing around exhaust and vent holes in roof - DCCO to review current design and make necessary adjustments.

20. Add remote shut down capabilities to the generator control system - DCCO to review design of computer and modify design.

21. Revise 3" PVC (C-900) to 3" DIP (CI-50) for waterline - DCCO to revise design.

CO-DP-139-25

WDB:pae

Attachment

cc: Attendees w/attachment

DCCO File/Attendees
Pumphouse/Pump Revisions
CO-DP-129-25
January 22, 1990

ATTENDANCE ROSTER

MEETING - PUMP STATIONS 1/17/90

NAME	COMPANY
Bill Boyd	DCCO (Phoenix)
Bob Prochaska	DCCO (Chicago)
Jerry Stanisz	DCCO (Chicago)
Amber Kasbeer	ADOT (EIT)
Rich DeBoer	ADOT - UHS
Rex Leathers	DCCO (Phoenix)
Walter Voellmy	PBQD
Dave Eberhart	Hendrich, Eberhart & Associates
John Lewis	Hendrich, Eberhart & Associates
Bill Wang	ADOT - Hwy. Plans
Don Lehman	ADOT - District 1
Paul Lorenzen	ADOT
Joe DiVito	ADOT
Tom Warne	ADOT - District 1
Rolly Simeon	ADOT
Lloyd Fussman	ADOT
Dan Lance	ADOT - District 1

LF Review under [illegible]

OUTER LOOP MANAGEMENT CONSULTANT
for the Arizona Department of Transportation

DeLEUW CATHER

De Leuw, Cather & Company • One Gateway Center 426 N. 44th Street Suite 252 Phoenix, Arizona 85008 (602) 244-9096

February 21, 1990

Ref: Contract No. 85-14
Outer Loop Project Management
Project Nos. AZM 600-0-204 and
AZM 600-1-204
TRACS Nos. 101 LMC H 0795 01D and
101 LMC H 0817 01D

Arizona Department of Transportation
Urban Highway Section
205 South 17th Avenue, Room 216E
Phoenix, Arizona 85007

Attention: Rolly Simeon
Corridor Engineer

Subject: Pump Station Design

Dear Mr. Simeon:

As requested in the meeting of January 17, 1990, we have completed our analysis of the request for changes in the Pump Station design as listed in Mr. Powell's letter to Mr. Robinson dated December 15, 1989.

For the major revisions, this letter will address what we consider to be the advantages/disadvantages of the changes. For the other items we will report only on the status of the change.

Requested Change:

I. Engines shall be diesel fueled.

Advantages

a. Diesel engines normally have a lower initial cost than gas powered engines. The difference in cost becomes more significant as the engine size increases. As an example, in 1986 a 320 KW generator system powered by LPG was 225% more than the same system powered by a diesel engine. This difference was reduced to 25% when the comparison was made for a 75 KW system.

b. Diesel fuel has two additional advantages over gas, in particular LPG, it is a cheaper fuel source and also is less of a potential fire hazard.

Disadvantages

a. Diesel is dirtier burning than gas and therefore is more of a smog producing fuel.

b. Diesel fuel in storage will deteriorate with age and develops corrosive compounds. This deterioration of fuel can be destructive to tanks, lines and especially injection system components. Because of the venting required in diesel storage tanks the elimination of moisture in the system would be extremely difficult. This condition is magnified in the Phoenix area where large temperature changes each day cause the tank to breathe.

The following additional information is presented for your review and consideration.

We have contacted Dr. Robert Russel, (Research Associate) of Union Oil Company of California, and he provided us with the following information.

1. Storage conditions affect aging. Underground storage or a tank location subject to minimum temperature changes will delay the aging process.

2. Oil companies continually run temperature/time test on their fuel and consider one year storage at 70°F to be the maximum period diesel should be stored.

3. Catalystically cracked fuels will have a poorer aging stability than straight fuels.

4. Stabilizing additives should be specified when ordering fuel.

5. Fresh fuel should never be added to a partial tank of old fuel. the old fuel has the catalystic ability to induce more rapid aging of the fresh fuel.

6. Gas (LPG/Natural) does not deteriorate appreciably.

Per the American Society of Heating, Refrigeration, Air Conditioning Engineers (ASHRAE), Phoenix has more than 18 days with a Dry Bulb (DB) temperature at or greater than 105°F. Metal temperatures will be much higher. A sun shade would definitely be required for the diesel storage facility. (These should also be added to all existing LPG tanks to reduce high pressure blowoff.) Sun shades however will not retard the temperature change that occurs daily and while underground storage would help alleviate this concern, these tanks (UST) now fall under Federal EPA and State controls. UST's must be double wall, and all metal underground must be cathodically protected. Monitoring systems must be installed and complete records regarding inventory control maintained. The whole process becomes very complicated.

We have also contacted Mr. Colin Morris of Caleb Brett (213-427-5481), his firm can do tank testing and recommend what chemicals should be added. The Nalco Company can add the chemicals. As of this date we have been unable to locate a firm to pump and filter the fuel if it is required. Mr. Morris is checking this and will attempt to set up a package operation for the Department's review and consideration if contract maintenance is selected..

II. Pumps shall be direct or right angle drive. (Vertical Long Shaft Mixed Flow Pump with Right Angle Drive versus Submersible Pump)

Advantages

a. Pumps and parts available from many sources.

b. Efficiencies slightly higher than submersible sewerage pumps but comparable to mixed flow submersible pumps.

c. Impeller can be adjusted without removing pump.

d. Diesel engine that drives pump can be worked on without pulling pump.

e. Vertical shaft mixed flow pumps are less expensive.

Disadvantages

a. Loss of flexibility - Pump drive and motor are married together, failure of any component and the system is down.

b. Mixed flow pumps generally pass smaller size spheres than submersible sewerage pumps. (See "Pumps - Sphere Size" attached.)

c. Wet well is normally under engines. This can create a hazard. A spill of a combustible product on the roadway which enters the wet well could cause all pumping to stop because of the engines being directly above.

d. Replacing a pump is a major project. The right angle drive must be disconnected and the complete fabricated metal system removed. Changing a mixed flow vertical shaft pump could required a day or more versus changing a submersible pump which could be completed within hours.

PUMPS - SPHERE SIZE

Pump Cap	Mixed Flow		Submersible		
Gal./Min.	Peerless	Patterson	Flygt	Hydra	KSB
5,400	3"	2 5/8"	4"	6"	4 1/4"
7,200	4"	4"	6 5/8"	- -	4 3/4"
10,800	4 3/8"	4 5/8"	6 5/8"	- -	5 1/2"
21,600	- -	5 3/8"	7 3/8"	- -	5 3/4"

Note: Sphere size is a function of pump size. The larger the pump, the larger the sphere the pump will pass.

III. Fuel tanks shall be above ground and provide 12 to 18 hours operational capacity.

This request can be accommodated. At each site when the number of pumps and their pumping capacity is determined, fuel storage capacity can be calculated and the tanks sized accordingly. Your attention is directly to our earlier comments on diesel storage.

IV. Controls systems shall be centered around industrial grade computers.

This request has already been implemented. We have recommended and the District Maintenance Engineer has concurred in this recommendation that all future control systems shall be sole-source manufactured by the Square D Company. The exception to this will be the computer equipment required for the two tunnel ramps at the Superstition T.I. This equipment shall be manufactured by the Allen Bradley Co.

We have also researched the concept of air conditioning the computer equipment enclosure in future contracts. This requirement appears feasible at a nominal cost. We can include a design to provide for this feature.

IV. Pumphouse sites shall have a walled perimeter.

In general, walls have only been provided at sites adjacent to or opening onto residential areas to mitigate noise and to enhance neighborhood aesthetics. Sites adjacent to the freeway or frontage road were enclosed using 72" C.L.F. The use of block walls to completely enclose the site will increase the site cost by approximately $60.00 per lineal foot of wall where used in lieu of chain link fence.

VI. Pumphouses shall be designed using an Industrial Architect.

This comment was understood to be of a general nature and not specifically directed toward the Grand Avenue pump station.

An example cited was a switch and its accompanying gauge were separated to the extent that the gauge could not be seen when the switch was being operated. We acknowledge the District's concern and will make user compatibility a major criteria in future designs.

In addition to the six concerns in Mr. Powell's letter the District also had a number of comments gathered from the Construction field staff. Generally these were addressed in the meeting minutes of January 22, 1990, but in order to have all the comments in one document we will address them again.

1. Easy access to roof because of terraced slump block.

   This concern was discussed with the District earlier and the drawings were revised to correct the problem.

2. Flap valve entering discharge chamber did not work properly due to clearance problem with roof.

   Drawings have been revised to reduce the invert elevation of the pump discharge pipe into the discharge chamber.

3. Security gate for pump service switch enclosure does not provide method to secure gate to steel frame.

   We have reviewed the contract drawings and believe the detail is covered.

4. Wet well pump service enclosure too small.

   This concern was addressed some time ago and the drawings revised to increase the wet well height from 4 feet to 6 feet.

5. Change the hoist from manual to electrical.

   Plans were revised earlier to specify an electric hoist.

6. Revise the liquid propane piping system to reduce vapor locks during pump operation.

   The plans have been revised for contracts now under construction to alleviate this concern.

7. Revise roofing requirements to provide for Kooper's Specification No. 17 WI or equal.

   This specification was revised for projects now underway.

8. Propane tanks too far from engine.

   In general the 50' limit criteria is being adhered to if at all possible. At the Broadway pump station this criteria was exceeded due to the site layout, it was not possible to maintain the 50' limit.

9. Propane converter needs to be engine mounted.

   It is our interpretation of the NFPA that if the engine is in a building then the converter must be outside. If the engine is not in an enclosure then it can be engine mounted and we will develop the drawings to reflect this.

10. Propane feed lines need to be 3/4" or 1" diameter pipe.

    The drawings have been revised to show 1" pipe.

11. Lights needed in wet well.

    The drawings will be revised to provide for lights.

12. Ladder into wet well needs to be extended above the entrance to provide for a hand hold.

    The drawings will be revised accordingly.

13. Wet well needs trash guard.

    The wet wells are designed following the recommendations of the Submersible Wastewater Pump Association. The openings in the bottom of the wet well are specifically sized to match the pump capacity. A bar screen wall be added at the entrance to the wet well.

14. Engine and generator need to be 120 KW.

    We have again checked the calculated maximum load imposed on each generator and the testing specified was 17% higher than this maximum load. It is our opinion that because of the infrequent use of the equipment there will be no appreciable drop in the engine's efficiency.

15. Control panel and motor controls should be in different rooms.

    See our comments to No. 4 of Mr. Powell's letter.

16. Pump discharge connection should be uniform on all systems.

    We had revised the drawings earlier to accommodate this request.

17. 900 RPM pump (Maximum).

    Although we consider the specified 900 RPM pump provides for a greater number of pump manufacturers and therefore the cost should be more competitive, however we have found two manufacturers that produce a pump with a maximum RPM of 700. We can revise the specifications to reduce the maximum RPM.

18. Electric/Electronic parts to be standardized.

    Please refer to our comments to No. 4 of Mr. Powell's letter.

19. Add cross bracing around exhaust and vent holes in roof.

    We will revise the drawings to provide additional bracing.

20. Add remote shutdown capabilities to control system.

    The drawings had been revised earlier to provide this capability.

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21. Change 3" PVC (C-900) to 3" D.I.P.

Neither PVC (C900) or Ductile iron pipe is available in 3" size. The smallest size is 4". For the pump stations in the 12c contract we have revised the PVC line to 4". The "generic" pump station now being developed has this line as "Type K" copper which is available in 3" diameter.

The preceeding narrative addresses the concerns of previous designs. Each of the points put forth can be accommodated by design revisions. We have however in certain instances presented both the advantages and disadvantages of the requested changes. After your review, unless directed otherwise, we will proceed with revising the plans and specifications to implement District 1's requests.

Cordially,

DE LEUW, CATHER & COMPANY

Rex C. Leathers
Project Director

RCL/WDB:pae

cc: Dan Powell, District 1
Tom Warne, District 1
Dan Lance, District 1
Roy Jordan

PM-AD-2768-25

APPENDIX II.A.2

Cost of On-Site Pump Stations without Underground Storage

Elliot Road Pump Station

50 Year Discharge	287	cfs
50 Year Discharge	129,000	gpm
Total Dynamic Head	40	ft
Total Horsepower	1533	
Req'd Wet Well Volume	86,161	cu. ft. @20 Minutes Cycle Time

OPERATIONAL FLEXIBILITY:	Number of Pumps		Preferred Size		
	8	7	6	5	4
Flow per Pump, gpm	16,130	18,430	21,500	25,800	32,250
BHP per Pump	200	250	300	350	400
Discharge Pipe Diameter, in	24	30	30	30	36
Velocity, fps	11.4	8.4	9.8	11.7	10.2
Wet Well Volume, cu. ft.	125,125	111,375	97,625	83,875	70,125
Needed WW Increase, %	0.00%	0.00%	0.00%	2.73%	22.87%
Flow with 8 pumps running	129,040				
" " 7 " "	112,910	129,010			
" " 6 " "	96,780	110,580	129,000		
" " 5 " "	80,650	92,150	107,500	129,000	
" " 4 " "	64,520	73,720	86,000	103,200	129,000
" " 3 " "	48,390	55,290	64,500	77,400	96,750
" " 2 " "	32,260	36,860	43,000	51,600	64,500
" " 1 " "	16,130	18,430	21,500	25,800	32,250

PUMP STATION COST:	Number of Pumps				
	8	7	6	5	4
Building/Wet Well	1,575,000	1,486,000	1,398,000	1,324,000	1,338,000
Fuel Storage Tank	81,000	90,000	94,500	94,500	90,000
Engines	311,000	313,000	322,000	276,000	345,000
Pumps	693,000	616,000	539,000	462,000	385,000
Subtotal	1,085,000	1,019,000	955,500	832,500	820,000
PUMP STATION TOTAL	2,660,000	2,505,000	2,354,000	2,157,000	2,158,000

Warner Road Pump Station

50 Year Discharge	247	cfs
50 Year Discharge	111,000	gpm
Total Dynamic Head	40	ft
Total Horsepower	1319	
Req'd Wet Well Volume	74,138	cu. ft. @20 Minutes Cycle Time

OPERATIONAL FLEXIBILITY:	Number of Pumps			Preferred Size	
	8	7	6	5	4
Flow per Pump, gpm	13,880	15,860	18,500	22,200	27,750
BHP per Pump	200	200	250	300	350
Discharge Pipe Diameter, in	24	30	30	30	36
Velocity, fps	9.8	7.2	8.4	10.1	8.7
Wet Well Volume, cu. ft.	125,125	111,375	97,625	83,875	70,125
Needed WW Increase, %	0.00%	0.00%	0.00%	2.73%	22.87%
Flow with 8 pumps running	111,040				
" " 7 " "	97,160	111,020			
" " 6 " "	83,280	95,160	111,000		
" " 5 " "	69,400	79,300	92,500	111,000	
" " 4 " "	55,520	63,440	74,000	88,800	111,000
" " 3 " "	41,640	47,580	55,500	66,600	83,250
" " 2 " "	27,760	31,720	37,000	44,400	55,500
" " 1 " "	13,880	15,860	18,500	22,200	27,750

PUMP STATION COST:	Number of Pumps				
	8	7	6	5	4
Building/Wet Well	1,575,000	1,486,000	1,398,000	1,324,000	1,338,000
Fuel Storage Tank	81,000	72,000	78,800	81,000	78,800
Engines	311,000	276,000	274,000	276,000	230,000
Pumps	693,000	616,000	539,000	462,000	385,000
Subtotal	1,085,000	964,000	891,800	819,000	693,800
PUMP STATION TOTAL	2,660,000	2,450,000	2,290,000	2,143,000	2,032,000

Kyrene Road Pump Station

50 Year Discharge	212	cfs*
50 Year Discharge	95,000	gpm
Total Dynamic Head	40	ft
Total Horsepower	1129	
Req'd Wet Well Volume	63,452	cu. ft. @20 Minutes Cycle Time

OPERATIONAL FLEXIBILITY:	Number of Pumps				Preferred Size
	8	7	6	5	4
Flow per Pump, gpm	11,880	13,570	15,830	19,000	23,750
BHP per Pump	150	200	200	250	300
Discharge Pipe Diameter, in	24	30	30	30	36
Velocity, fps	8.4	6.2	7.2	8.6	7.5
Wet Well Volume, cu. ft.	125,125	111,375	97,625	83,875	70,125
Needed WW Increase, %	0.00%	0.00%	0.00%	2.73%	22.87%
Flow with 8 pumps running	95,040				
" " 7 " "	83,160	94,990			
" " 6 " "	71,280	81,420	94,980		
" " 5 " "	59,400	67,850	79,150	95,000	
" " 4 " "	47,520	54,280	63,320	76,000	95,000
" " 3 " "	35,640	40,710	47,490	57,000	71,250
" " 2 " "	23,760	27,140	31,660	38,000	47,500
" " 1 " "	11,880	13,570	15,830	19,000	23,750

PUMP STATION COST:	Number of Pumps				
	8	7	6	5	4
Building/Wet Well	1,575,000	1,486,000	1,398,000	1,324,000	1,338,000
Fuel Storage Tank	60,800	72,000	63,000	67,500	67,500
Engines	279,000	276,000	241,000	235,000	230,000
Pumps	693,000	616,000	539,000	462,000	385,000
Subtotal	1,032,800	964,000	843,000	764,500	682,500
PUMP STATION TOTAL	2,608,000	2,450,000	2,241,000	2,089,000	2,021,000

*REVISED TO 223 CFS FOLLOWING PUMP STUDY
DOES NOT APPRECIABLY AFFECT ANALYSIS AS SHOWN.

McClintock Drive Pump Station

50 Year Discharge	295	cfs
50 Year Discharge	132,000	gpm
Total Dynamic Head	40	ft
Total Horsepower	1569	
Req'd Wet Well Volume	88,165	cu. ft. @20 Minutes Cycle Time

OPERATIONAL FLEXIBILITY:	Number of Pumps		Preferred Size		
	8	7	6	5	4
Flow per Pump, gpm	16,500	18,860	22,000	26,400	33,000
BHP per Pump	200	250	300	350	400
Discharge Pipe Diameter, in	24	30	30	30	36
Velocity, fps	11.7	8.6	10.0	12.0	10.4
Wet Well Volume, cu. ft.	125,125	111,375	97,625	83,875	70,125
Needed WW Increase, %	0.00%	0.00%	0.00%	2.73%	22.87%
Flow with 8 pumps running	132,000				
" " 7 " "	115,500	132,020			
" " 6 " "	99,000	113,160	132,000		
" " 5 " "	82,500	94,300	110,000	132,000	
" " 4 " "	66,000	75,440	88,000	105,600	132,000
" " 3 " "	49,500	56,580	66,000	79,200	99,000
" " 2 " "	33,000	37,720	44,000	52,800	66,000
" " 1 " "	16,500	18,860	22,000	26,400	33,000

PUMP STATION COST:	Number of Pumps				
	8	7	6	5	4
Building/Wet Well	1,575,000	1,486,000	1,398,000	1,324,000	1,338,000
Fuel Storage Tank	81,000	90,000	94,500	94,500	90,000
Engines	311,000	313,000	322,000	276,000	345,000
Pumps	693,000	616,000	539,000	462,000	385,000
Subtotal	1,085,000	1,019,000	955,500	832,500	820,000
PUMP STATION TOTAL	2,660,000	2,505,000	2,354,000	2,157,000	2,158,000

Price/Santan TI Pump Station

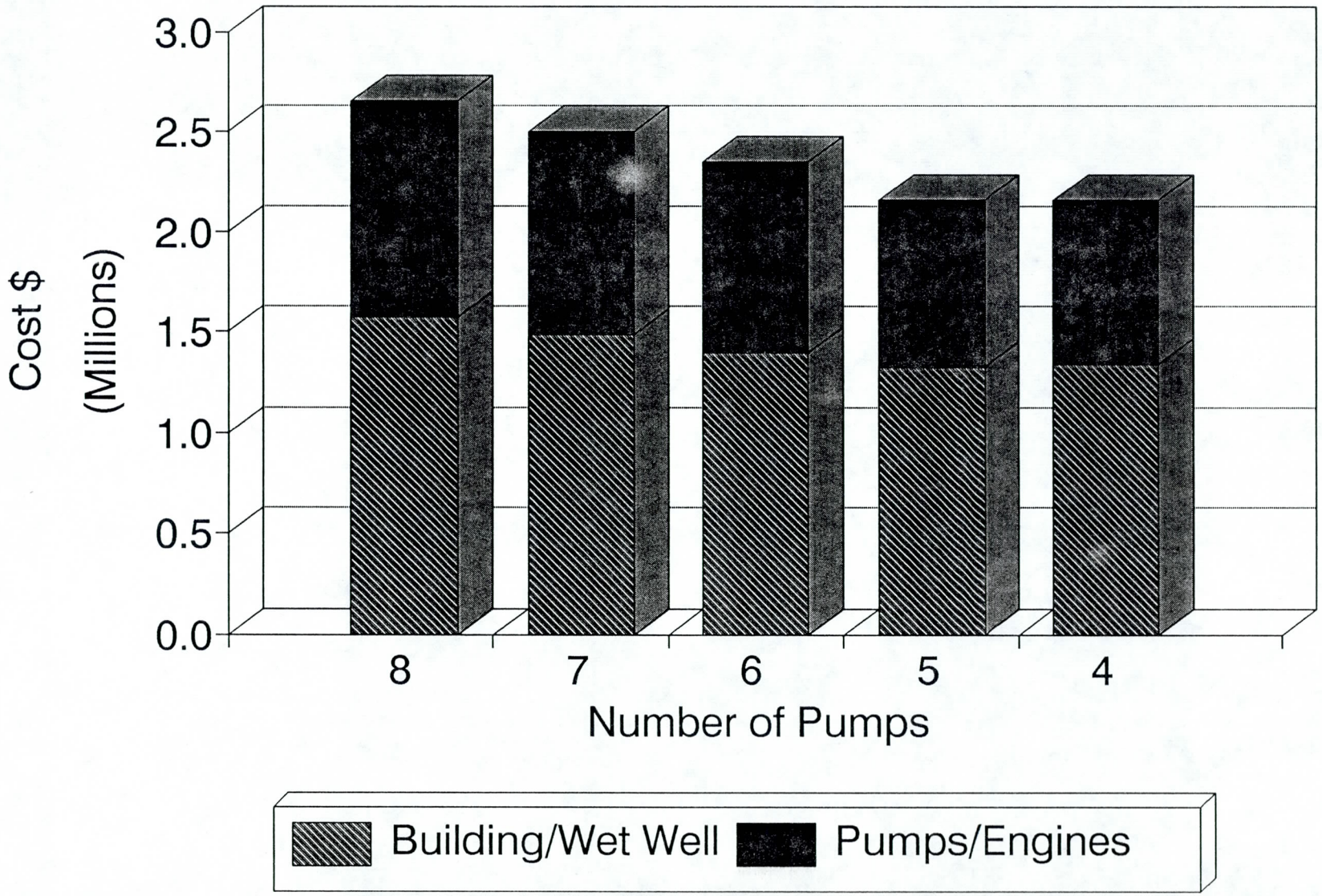
50 Year Discharge	385	cfs
50 Year Discharge	173,000	gpm
Total Dynamic Head	40	ft
Total Horsepower	2056	
Req'd Wet Well Volume	115,549	cu. ft. @20 Minutes Cycle Time

OPERATIONAL FLEXIBILITY:	Preferred Size	Number of Pumps			
	8	7	6	5	4
Flow per Pump, gpm	21,630	24,710	28,830	34,600	43,250
BHP per Pump	300	300	350	450	550
Discharge Pipe Diameter, in	24	30	30	30	36
Velocity, fps	15.3	11.2	13.1	15.7	13.6
Wet Well Volume, cu. ft.	125,125	111,375	97,625	83,875	70,125
Needed WW Increase, %	0.00%	0.00%	0.00%	2.73%	22.87%
Flow with 8 pumps running	173,040				
" " 7 " "	151,410	172,970			
" " 6 " "	129,780	148,260	172,980		
" " 5 " "	108,150	123,550	144,150	173,000	
" " 4 " "	86,520	98,840	115,320	138,400	173,000
" " 3 " "	64,890	74,130	86,490	103,800	129,750
" " 2 " "	43,260	49,420	57,660	69,200	86,500
" " 1 " "	21,630	24,710	28,830	34,600	43,250

PUMP STATION COST:	Number of Pumps				
	8	7	6	5	4
Building/Wet Well	1,575,000	1,486,000	1,398,000	1,324,000	1,338,000
Fuel Storage Tank	121,500	108,000	110,300	121,500	123,800
Engines	414,000	368,000	322,000	414,000	575,000
Pumps	693,000	616,000	539,000	462,000	385,000
Subtotal	1,228,500	1,092,000	971,300	997,500	1,083,800
PUMP STATION TOTAL	2,804,000	2,578,000	2,369,000	2,322,000	2,422,000

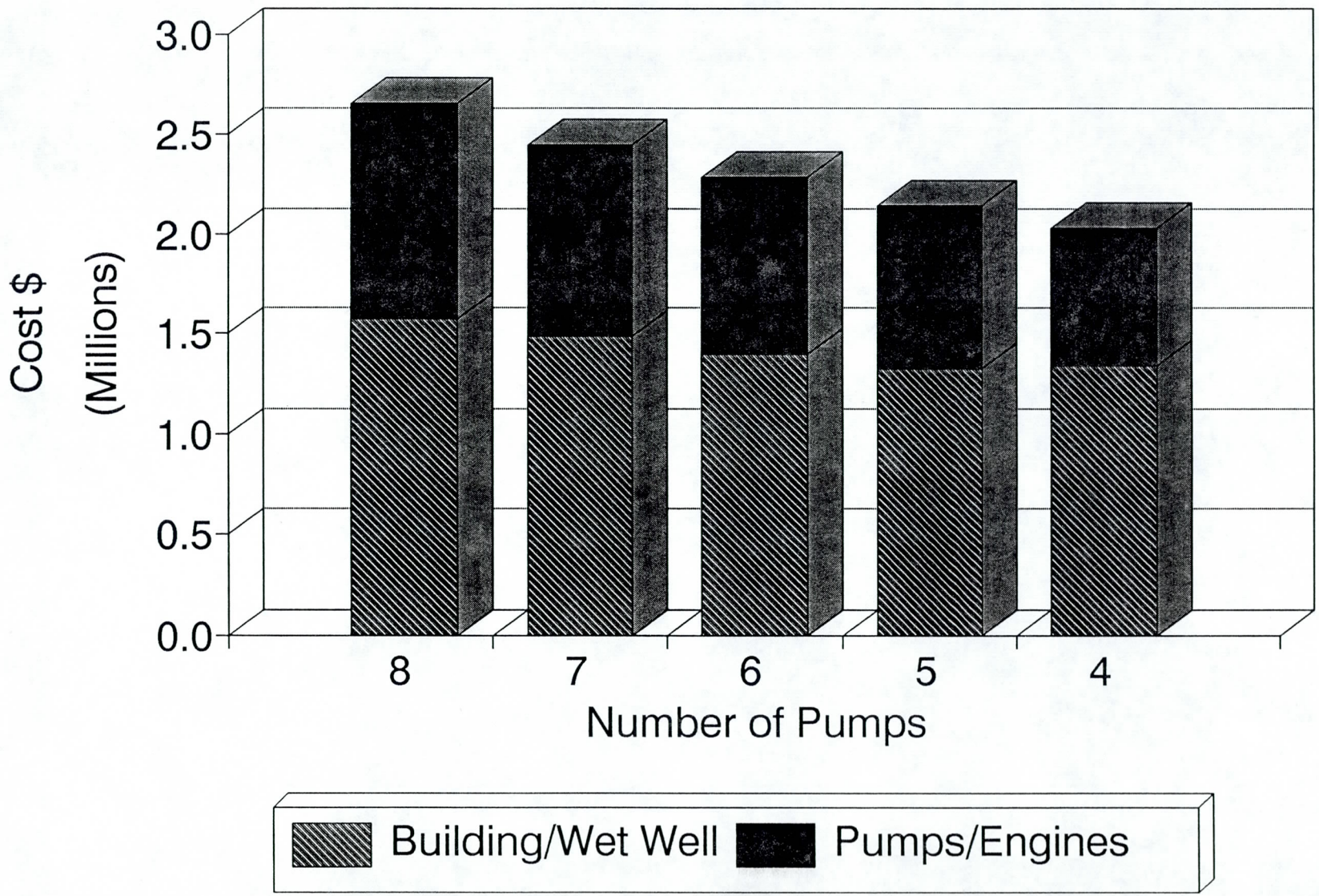
Cost vs Number of Pumps

Elliot Road Pump Station



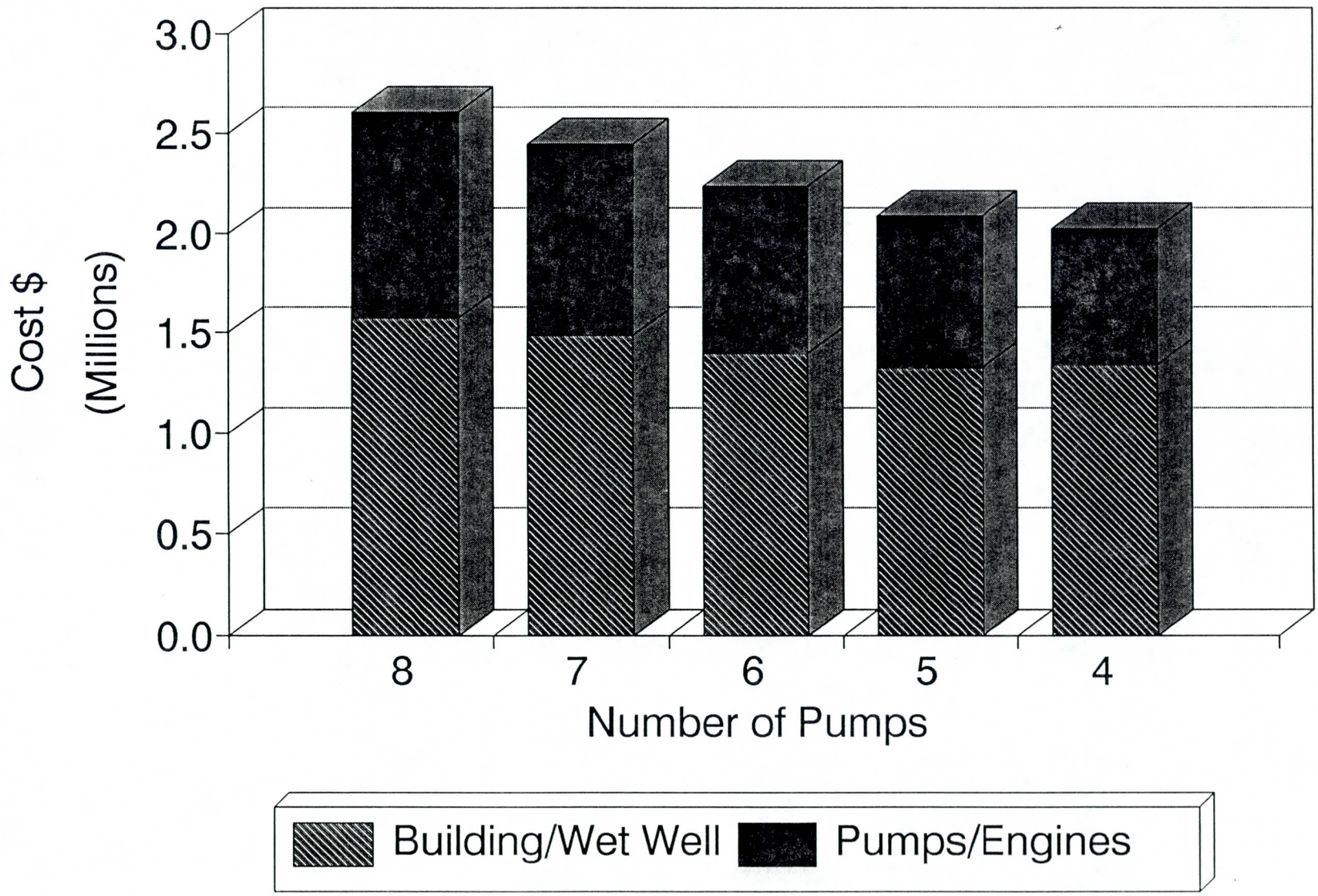
Cost vs Number of Pumps

Warner Road Pump Station



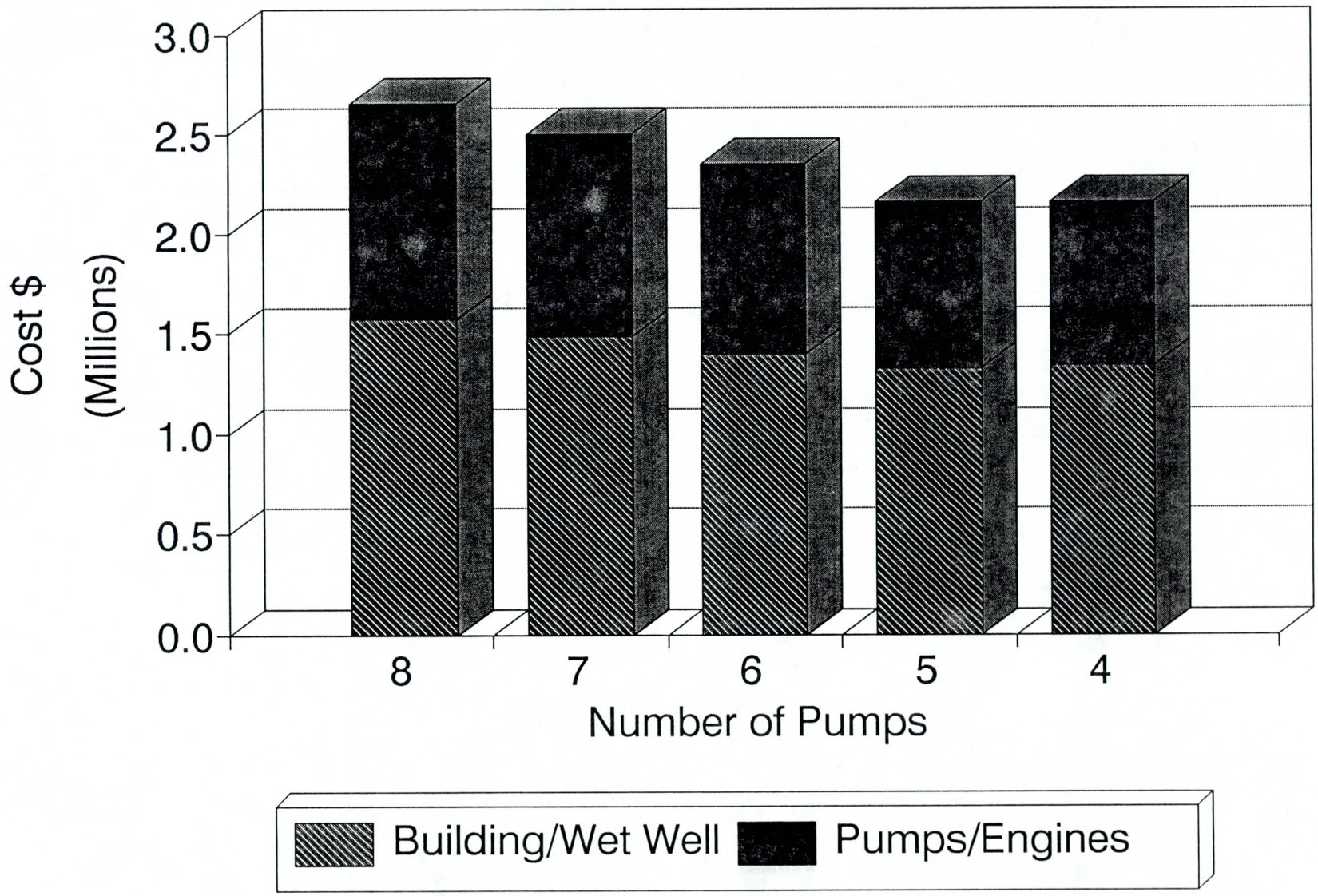
Cost vs Number of Pumps

Kyrene Road Pump Station



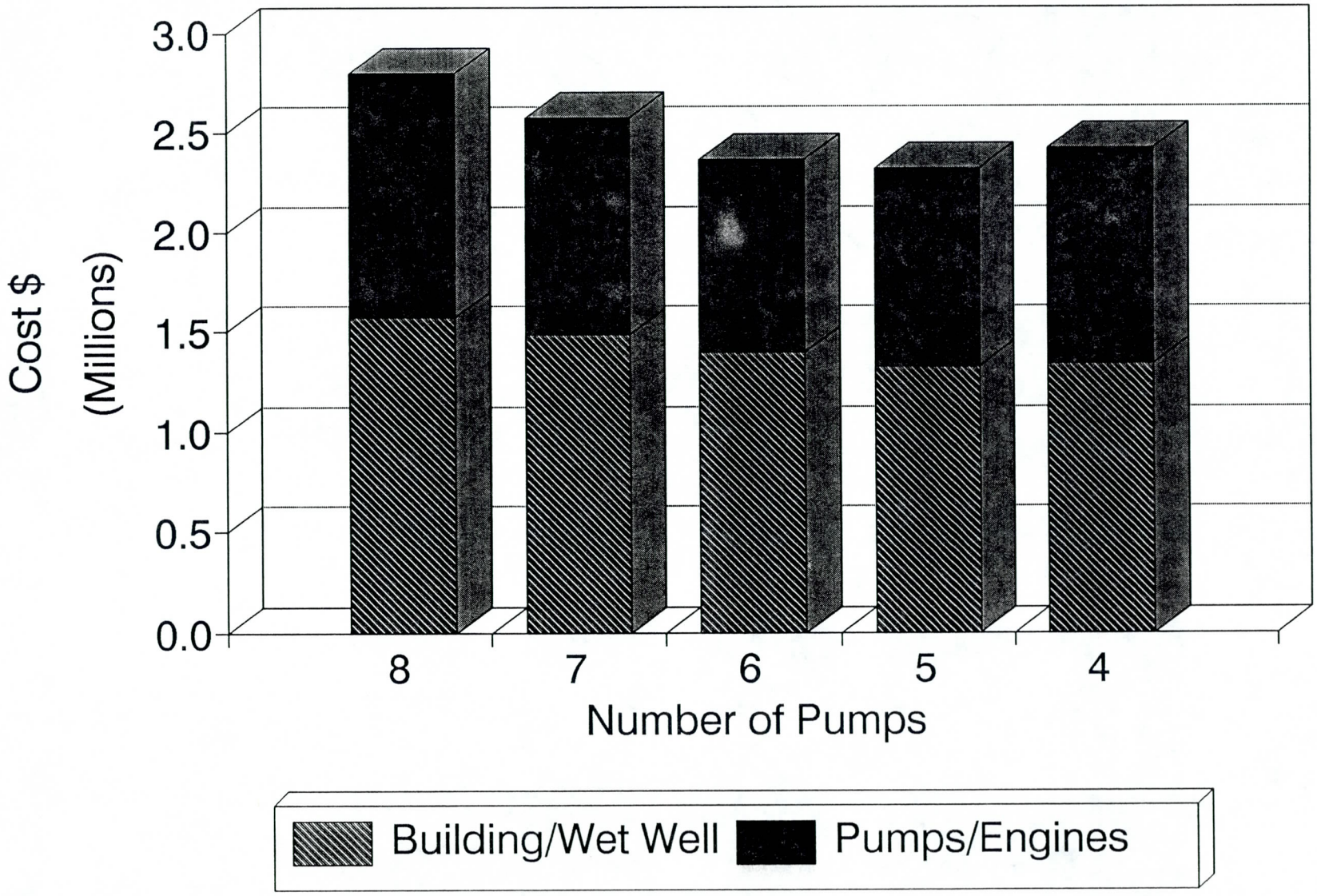
Cost vs Number of Pumps

McClintock Drive Pump Station



Cost vs Number of Pumps

Price/Pecos TI Pump Station



APPENDIX II.A.3

Cost of On-Site Pump Stations with Underground Storage

On-Site Pump Stations

OPERATIONAL FLEXIBILITY:	Flow, cfs				
	250	200	175	150	100
Total Flow, gpm	112,220	89,770	78,550	67,330	44,890
Number of Pumps	6	4	4	3	2
Flow per Pump, gpm	18,700	22,440	19,640	22,440	22,450
Total Dynamic Head	40	40	40	40	40
BHP per Pump	250	300	250	300	300
Discharge Pipe Diameter, in	30	30	30	30	30
Velocity, fps	8.5	10.2	8.9	10.2	10.2
Req'd Wet Well Vol., cu.ft.	74,953	59,959	52,465	44,971	29,983
Wet Well Vol., cu. ft.	97,625	70,125	70,125	56,375	42,625
Needed Wet Well Increase	0.00%	0.00%	0.00%	0.00%	0.00%
Flow with 5 pumps running	93,500				
" " 4 " "	74,800	89,760	78,560		
" " 3 " "	56,100	67,320	58,920	67,320	
" " 2 " "	37,400	44,880	39,280	44,880	44,900
" " 1 " "	18,700	22,440	19,640	22,440	22,450

PUMP STATION COST:	Flow, cfs				
	250	200	175	150	100
Building/Wet Well	$1,398,000	$1,132,000	$1,132,000	$1,044,000	$955,000
Fuel Storage Tank	78,800	67,500	56,300	54,000	40,500
Engines	274,000	230,000	195,000	184,000	138,000
Pumps	539,000	385,000	385,000	308,000	231,000
Subtotal	$891,800	$682,500	$636,300	$546,000	$409,500
PUMP STATION TOTAL	$2,290,000	$1,815,000	$1,768,000	$1,590,000	$1,365,000

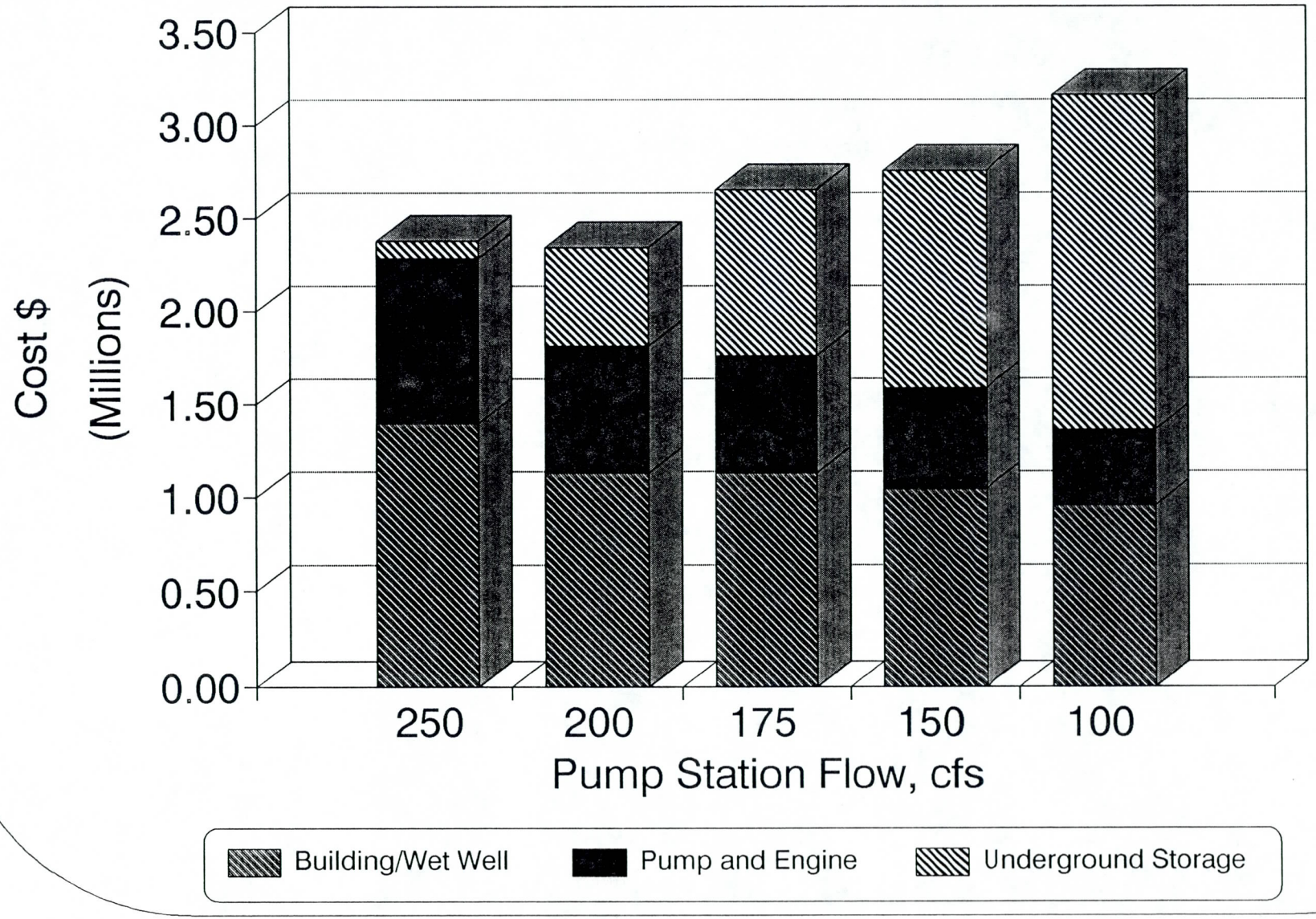
UNDERGROUND STORAGE:	Flow, cfs				
	250	200	175	150	100
Elliot Road Pump Station (287 cfs)					
Length 96" Dia. Storage	800	2400	3600	4500	6600
Cost	240,000	720,000	1,080,000	1,350,000	1,980,000
Delete 72" Trunk, ft.	800	1000	1000	1000	1000
Cost	(144,000)	(180,000)	(180,000)	(180,000)	(180,000)
Total Piping	96,000	540,000	900,000	1,170,000	1,800,000
System Total	$2,386,000	$2,355,000	$2,668,000	$2,760,000	$3,165,000
Warner Road Pump Station (247 cfs)					
Length, ft		1600	2200	3100	5600
Cost		480,000	660,000	930,000	1,680,000
Delete 72" Trunk, ft.		1000	1000	1000	1000
Cost		(180,000)	(180,000)	(180,000)	(180,000)
Total Piping		300,000	480,000	750,000	1,500,000
System Total	$2,290,000	$2,115,000	$2,248,000	$2,340,000	$2,865,000
Kyrene Road Pump Station (212 cfs)					
Length, ft		0	1000	1650	3800
Cost		0	300,000	495,000	1,140,000
Delete 54" Trunk, ft.			1000	1000	1000
Cost		0	(115,000)	(115,000)	(115,000)
Total Piping		0	185,000	380,000	1,025,000
System Total	$2,290,000	$1,815,000	$1,953,000	$1,970,000	$2,390,000

On-Site Pump Stations

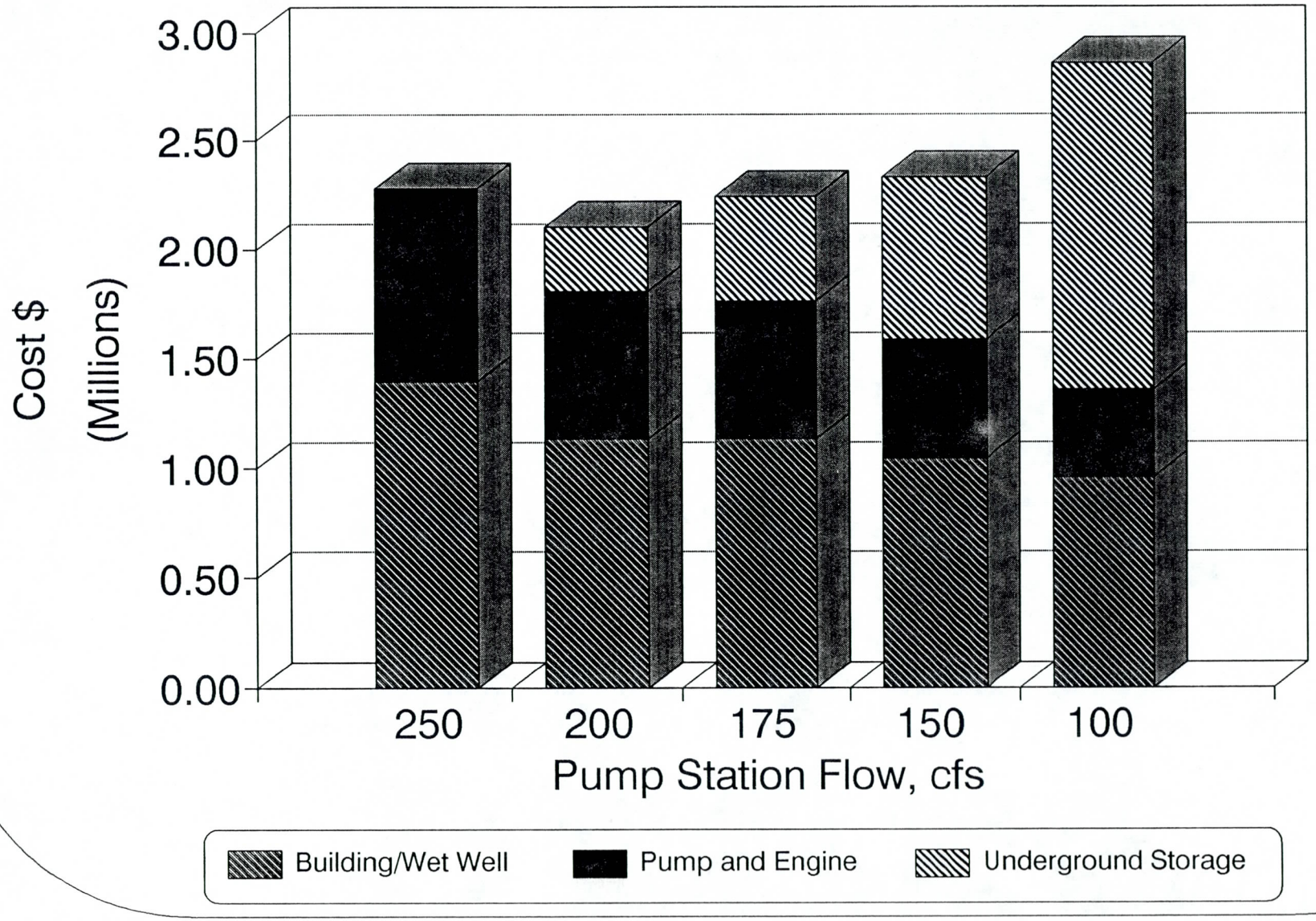
UNDERGROUND STORAGE:	Flow, cfs				
	250	200	175	150	100
McClintock Drive Pump Station (295 cfs)					
Length, ft	1000	1200	2000	2800	4600
Cost	300,000	360,000	600,000	840,000	1,380,000
Delete 54" Trunk, ft.	1000	1000	1000	1000	1000
Cost	(115,000)	(115,000)	(115,000)	(115,000)	(115,000)
Total Piping	185,000	245,000	485,000	725,000	1,265,000
System Total	$2,475,000	$2,060,000	$2,253,000	$2,315,000	$2,630,000
Price/Santan TI Pump Station (385 cfs)					
Length, ft	3000	4400	5500	6600	8400
Cost	900,000	1,320,000	1,650,000	1,980,000	2,520,000
Delete 72" Trunk, ft.	1000	1000	1000	1000	1000
Cost	(180,000)	(180,000)	(180,000)	(180,000)	(180,000)
Total Piping	720,000	1,140,000	1,470,000	1,800,000	2,340,000
System Total	$3,010,000	$2,955,000	$3,238,000	$3,390,000	$3,705,000

Building/Wet Well Total		5,660,000	5,660,000	5,220,000	4,775,000
Pump & Engine Total		3,412,500	3,181,500	2,730,000	2,047,500
Storage/Trunk Total		2,225,000	3,520,000	4,825,000	7,930,000
All Pump Station Total	N/A	$11,297,500	$12,361,500	$12,775,000	$14,752,500

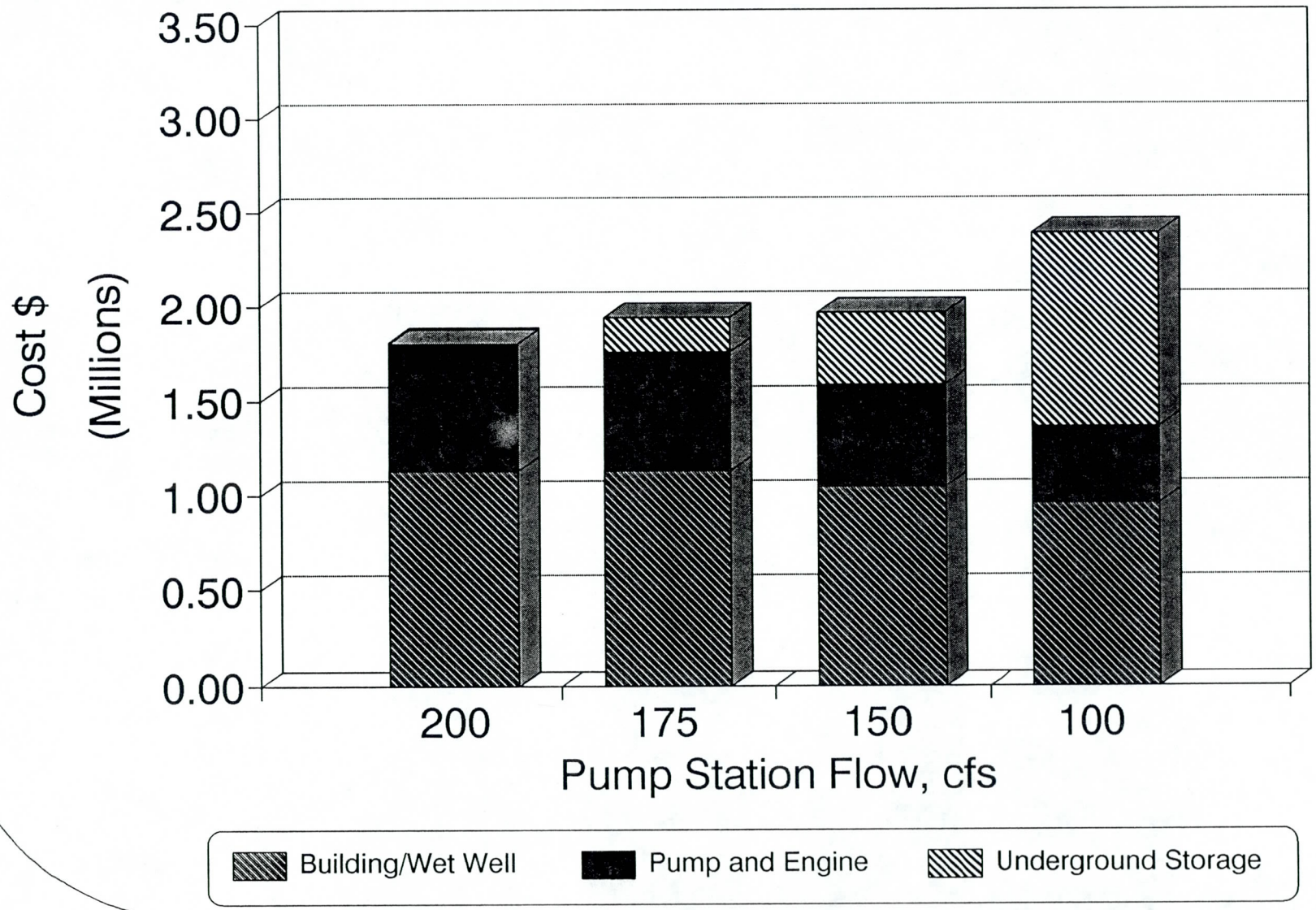
Cost vs. Discharge
Elliot Road Pump Station



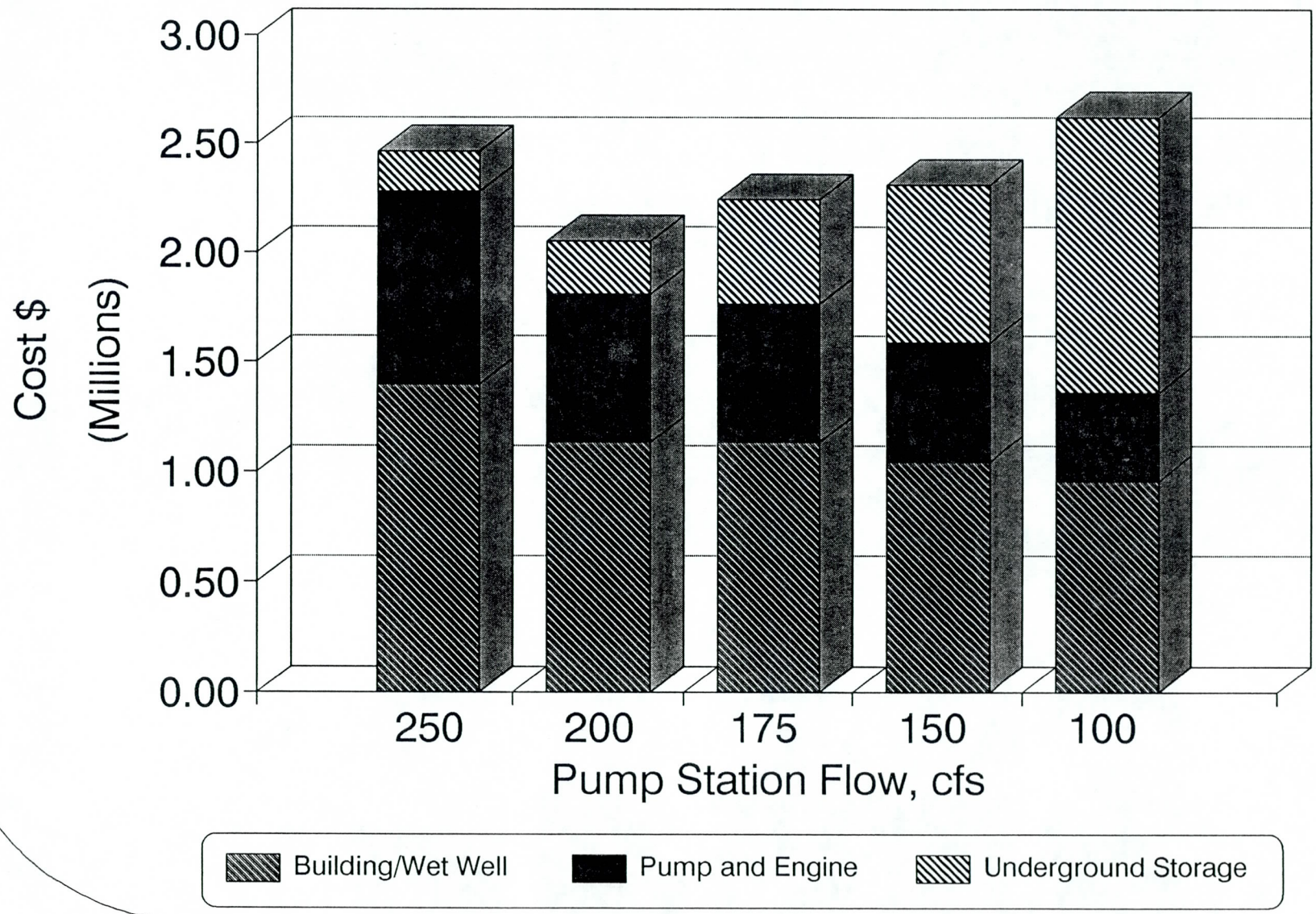
Cost vs. Discharge
Warner Road Pump Station



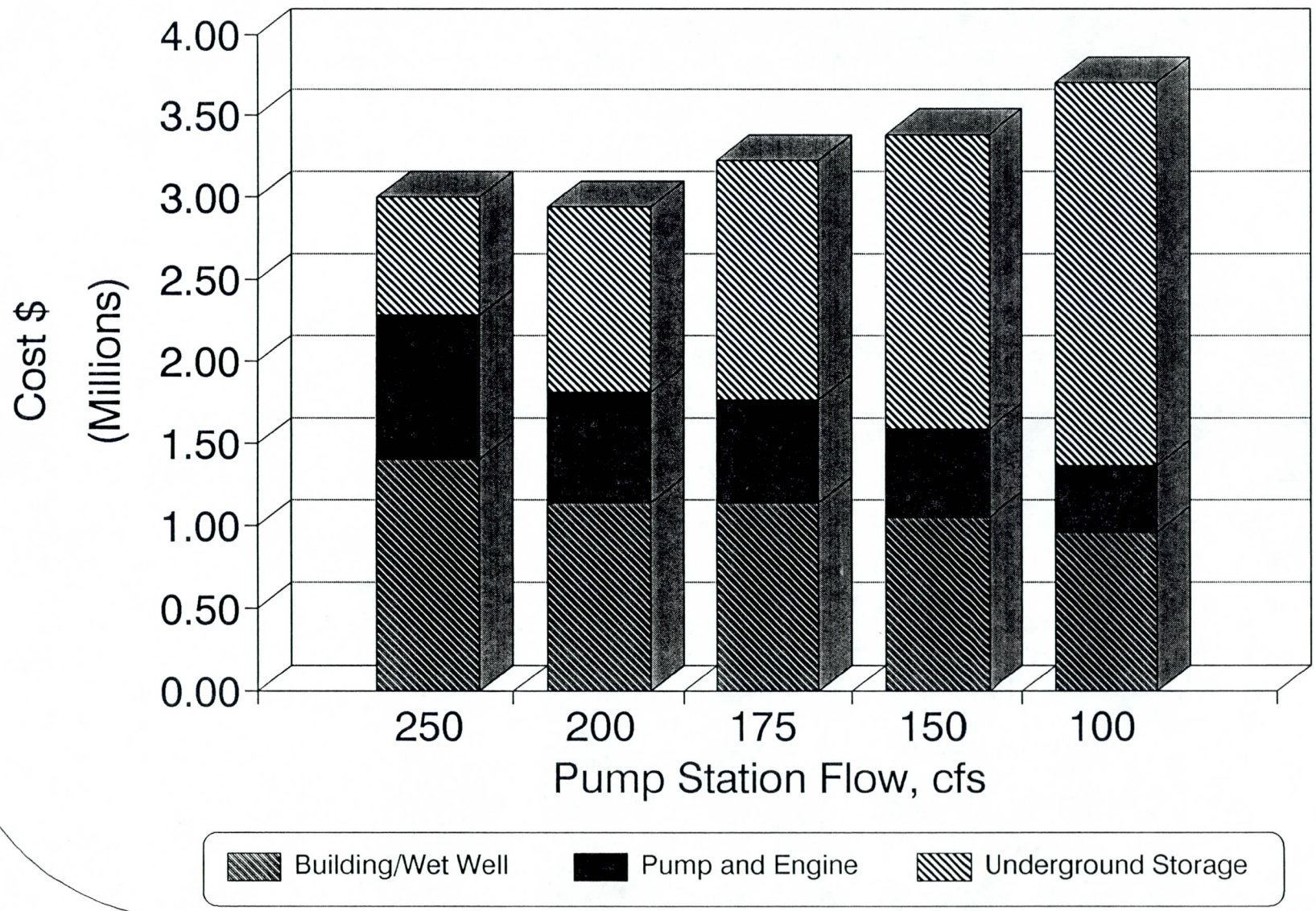
Cost vs. Discharge
Kyrene Road Pump Station



Cost vs. Discharge
McClintock Drive Pump Station



Cost vs. Discharge
Price/Santan TI Pump Station



APPENDIX II.B.1

Off-Site Basin-to-Basin System Cost Data

Basins B, H, & E Summary

	B	H	E
Total Flow, cfs	150	340	450
Total Flow, gpm	67,000	153,000	202,000
Pipe Diameter, inches	72	96	84
Outlet Pipe Length, feet	17,600	17,600	5,200
Static Head, feet	60	30	30
Head Loss, feet	20	20	20
Total Dynamic Head, feet	80	50	50
Total BHP @ 80% eff.	1,690	2,410	3,180
Outlet Pipe Velocity, fps	5	7	12
Required Wet Well Volume, cu. ft.	44,750	102,191	134,919

Number of Pumps	4	5	6
Flow per Pump, gpm	16,750	30,600	33,670
BHP per Pump (80% eff.)	420	480	530
Wet Well Volume, cu. ft.	64,500	77,400	90,300
Needed Add'l Wet Well Vol., cu.ft.	0	24,791	44,619
# Pumps Running	********** Total Flow, gpm *********		
6			202,020
5		153,000	168,350
4	67,000	122,400	134,680
3	50,250	91,800	101,010
2	33,500	61,200	67,340
1	16,750	30,600	33,670

Building/Wet Well	914,500	1,070,900	1,208,900
Fuel Storage Tank	75,600	108,000	143,100
Engines	240,000	300,000	360,000
Pumps	374,000	606,000	764,000
Subtotal	689,600	1,014,000	1,267,100
PUMP STATION TOTAL	$1,604,000	$2,085,000	$2,476,000
	$24/gpm	$14/gpm	$12/gpm

Pipe Unit Cost per foot	180	300	240
Total Pipe Cost	3,168,000	5,280,000	1,248,000
		0	0
System Total	$4,772,000	$7,365,000	$3,724,000

Basin "B" - Constant Head

Total Flow	150	cfs
Total Flow	67,000	gpm
Pipe Diameter	72	inches
Outlet Pipe Length	17,600	feet
Static Head	60	feet
Head Loss	20	feet
Total Dynamic Head	80	feet
Total BHP @ 80% eff.	1,690	
Outlet Pipe Velocity	5.31	fps
Required Wet Well Volume	44,750	cu. ft.

Recommended Station

Number of Pumps	8	7	6	5	4
Flow per Pump, gpm	8,380	9,570	11,170	13,400	16,750
BHP per Pump (80% eff.)	210	240	280	340	420
Wet Well Volume, cu. ft.	116,100	103,200	90,300	77,400	64,500
Needed Add'l WW Vol., cu.ft.	0	0	0	0	0
# Pumps Running	********** Total Flow, gpm **********				
8	67,040				
7	58,660	66,990			
6	50,280	57,420	67,020		
5	41,900	47,850	55,850	67,000	
4	33,520	38,280	44,680	53,600	67,000
3	25,140	28,710	33,510	40,200	50,250
2	16,760	19,140	22,340	26,800	33,500
1	8,380	9,570	11,170	13,400	16,750

Building/Wet Well	1,303,800	1,206,400	1,109,100	1,011,800	914,500
Fuel Storage Tank	75,600	75,600	75,600	76,500	75,600
Engines	240,000	238,000	240,000	200,000	240,000
Pumps	614,000	554,000	494,000	434,000	374,000
Subtotal	929,600	867,600	809,600	710,500	689,600
PUMP STATION TOTAL	$1,859,200	$2,074,000	$1,919,000	$1,722,000	$1,604,000

Pipe Unit Cost	$180.00	per foot			
Total Pipe Cost	3,168,000	3,168,000	3,168,000	3,168,000	3,168,000
System Total	$5,027,200	$5,242,000	$5,087,000	$4,890,000	$4,772,000

Basin "B" - Constant Head

Total Flow	120	cfs
Total Flow	54,000	gpm
Pipe Diameter	66	inches
Outlet Pipe Length	17,600	feet
Static Head	60	feet
Head Loss	20	feet
Total Dynamic Head	80	feet
Total BHP @ 80% eff.	1,360	
Outlet Pipe Velocity	5.05	fps
Required Wet Well Volume	36,067	cu. ft.

Number of Pumps	8	7	6	5	4
Flow per Pump, gpm	6,750	7,710	9,000	10,800	13,500
BHP per Pump (80% eff.)	170	190	230	270	340
Wet Well Volume, cu. ft.	116,100	103,200	90,300	77,400	64,500
Needed Add'l WW Vol., cu.ft.	0	0	0	0	0
# Pumps Running	********** Total Flow, gpm **********				
8	54,000				
7	47,250	53,970			
6	40,500	46,260	54,000		
5	33,750	38,550	45,000	54,000	
4	27,000	30,840	36,000	43,200	54,000
3	20,250	23,130	27,000	32,400	40,500
2	13,500	15,420	18,000	21,600	27,000
1	6,750	7,710	9,000	10,800	13,500

Building/Wet Well	1,303,800	1,206,400	1,109,100	1,011,800	914,500
Fuel Storage Tank	61,200	59,850	62,100	60,750	61,200
Engines	240,000	210,000	204,000	200,000	160,000
Pumps	588,000	528,000	468,000	408,000	348,000
Subtotal	889,200	797,850	734,100	668,750	569,200
PUMP STATION TOTAL	$2,193,000	$2,004,000	$1,843,000	$1,681,000	$1,484,000

Pipe Unit Cost	$160.00	per foot			
Total Pipe Cost	2,816,000	2,816,000	2,816,000	2,816,000	2,816,000
System Total	$5,009,000	$4,820,000	$4,659,000	$4,497,000	$4,300,000

Basin "B" - Constant Head

Total Flow	85	cfs
Total Flow	38,000	gpm
Pipe Diameter	54	inches
Outlet Pipe Length	17,600	feet
Static Head	60	feet
Head Loss	20	feet
Total Dynamic Head	80	feet
Total BHP @ 80% eff.	960	
Outlet Pipe Velocity	5.34	fps
Required Wet Well Volume	25,381	cu. ft.

Number of Pumps	8	7	6	5	4
Flow per Pump, gpm	4,750	5,430	6,330	7,600	9,500
BHP per Pump (80% eff.)	120	140	160	190	240
Wet Well Volume, cu. ft.	116,100	103,200	90,300	77,400	64,500
Needed Add'l WW Vol., cu.ft.	0	0	0	0	0
# Pumps Running	********** Total Flow, gpm **********				
8	38,000				
7	33,250	38,010			
6	28,500	32,580	37,980		
5	23,750	27,150	31,650	38,000	
4	19,000	21,720	25,320	30,400	38,000
3	14,250	16,290	18,990	22,800	28,500
2	9,500	10,860	12,660	15,200	19,000
1	4,750	5,430	6,330	7,600	9,500

Building/Wet Well	1,303,800	1,206,400	1,109,100	1,011,800	914,500
Fuel Storage Tank	43,200	44,100	43,200	42,750	43,200
Engines	160,000	189,000	180,000	150,000	136,000
Pumps	556,000	496,000	436,000	376,000	316,000
Subtotal	759,200	729,100	659,200	568,750	495,200
PUMP STATION TOTAL	$2,063,000	$1,936,000	$1,768,000	$1,581,000	$1,410,000

Pipe Unit Cost	$115.00	per foot			
Total Pipe Cost	2,024,000	2,024,000	2,024,000	2,024,000	2,024,000
System Total	$4,087,000	$3,960,000	$3,792,000	$3,605,000	$3,434,000

Basin "H" - Constant Head

Total Flow	340	cfs
Total Flow	153,000	gpm
Pipe Diameter	96	inches
Outlet Pipe Length	17,600	feet
Static Head	30	feet
Head Loss	20	feet
Total Dynamic Head	50	feet
Total BHP @ 80% eff.	2,410	
Outlet Pipe Velocity	6.76	fps
Required Wet Well Volume	102,191	cu. ft.

Recommended Station

Number of Pumps	8	7	6	5	4
Flow per Pump, gpm	19,130	21,860	25,500	30,600	38,250
BHP per Pump (80% eff.)	300	350	400	480	600
Wet Well Volume, cu. ft.	116,100	103,200	90,300	77,400	64,500
Needed Add'l WW Vol., cu.ft.	0	0	11,891	24,791	37,691
# Pumps Running	********** Total Flow, gpm **********				
8	153,040				
7	133,910	153,020			
6	114,780	131,160	153,000		
5	95,650	109,300	127,500	153,000	
4	76,520	87,440	102,000	122,400	153,000
3	57,390	65,580	76,500	91,800	114,750
2	38,260	43,720	51,000	61,200	76,500
1	19,130	21,860	25,500	30,600	38,250

Building/Wet Well	1,303,800	1,206,400	1,135,700	1,070,900	1,012,100
Fuel Storage Tank	108,000	110,250	108,000	108,000	108,000
Engines	320,000	280,000	360,000	300,000	400,000
Pumps	786,000	726,000	666,000	606,000	546,000
Subtotal	1,214,000	1,116,250	1,134,000	1,014,000	1,054,000
PUMP STATION TOTAL	$2,428,000	$2,323,000	$2,270,000	$2,085,000	$2,066,000

Pipe Unit Cost	$300.00	per foot			
Total Pipe Cost	5,280,000	5,280,000	5,280,000	5,280,000	5,280,000
System Total	$7,708,000	$7,603,000	$7,550,000	$7,365,000	$7,346,000

Basin "H" - Constant Head

Total Flow	260	cfs
Total Flow	117,000	gpm
Pipe Diameter	84	inches
Outlet Pipe Length	17,600	feet
Static Head	30	feet
Head Loss	20	feet
Total Dynamic Head	50	feet
Total BHP @ 80% eff.	1,840	
Outlet Pipe Velocity	6.76	fps
Required Wet Well Volume	78,146	cu. ft.

Number of Pumps	8	7	6	5	4
Flow per Pump, gpm	14,630	16,710	19,500	23,400	29,250
BHP per Pump (80% eff.)	230	260	310	370	460
Wet Well Volume, cu. ft.	116,100	103,200	90,300	77,400	64,500
Needed Add'l WW Vol., cu.ft.	0	0	0	746	13,646
# Pumps Running	********** Total Flow, gpm **********				
8	117,040				
7	102,410	116,970			
6	87,780	100,260	117,000		
5	73,150	83,550	97,500	117,000	
4	58,520	66,840	78,000	93,600	117,000
3	43,890	50,130	58,500	70,200	87,750
2	29,260	33,420	39,000	46,800	58,500
1	14,630	16,710	19,500	23,400	29,250

Building/Wet Well	1,303,800	1,206,400	1,109,100	1,013,600	949,800
Fuel Storage Tank	82,800	81,900	83,700	83,250	82,800
Engines	272,000	280,000	240,000	300,000	240,000
Pumps	714,000	654,000	594,000	534,000	474,000
Subtotal	1,068,800	1,015,900	917,700	917,250	796,800
PUMP STATION TOTAL	$2,373,000	$2,222,000	$2,027,000	$1,931,000	$1,747,000

Pipe Unit Cost	$240.00	per foot			
Total Pipe Cost	4,224,000	4,224,000	4,224,000	4,224,000	4,224,000
System Total	$6,597,000	$6,446,000	$6,251,000	$6,155,000	$5,971,000

Basin "H" - Constant Head

Total Flow	190	cfs
Total Flow	85,000	gpm
Pipe Diameter	78	inches
Outlet Pipe Length	17,600	feet
Static Head	30	feet
Head Loss	20	feet
Total Dynamic Head	50	feet
Total BHP @ 80% eff.	1,340	
Outlet Pipe Velocity	5.73	fps
Required Wet Well Volume	56,773	cu. ft.

Number of Pumps	8	7	6	5	4
Flow per Pump, gpm	10,630	12,140	14,170	17,000	21,250
BHP per Pump (80% eff.)	170	190	220	270	340
Wet Well Volume, cu. ft.	116,100	103,200	90,300	77,400	64,500
Needed Add'l WW Vol., cu.ft.	0	0	0	0	0
# Pumps Running	********** Total Flow, gpm **********				
8	85,040				
7	74,410	84,980			
6	63,780	72,840	85,020		
5	53,150	60,700	70,850	85,000	
4	42,520	48,560	56,680	68,000	85,000
3	31,890	36,420	42,510	51,000	63,750
2	21,260	24,280	28,340	34,000	42,500
1	10,630	12,140	14,170	17,000	21,250

Building/Wet Well	1,303,800	1,206,400	1,109,100	1,011,800	914,500
Fuel Storage Tank	61,200	59,850	59,400	60,750	61,200
Engines	240,000	210,000	180,000	200,000	160,000
Pumps	650,000	590,000	530,000	470,000	410,000
Subtotal	951,200	859,850	769,400	730,750	631,200
PUMP STATION TOTAL	$2,255,000	$2,066,000	$1,879,000	$1,743,000	$1,546,000

Pipe Unit Cost	$210.00	per foot			
Total Pipe Cost	3,696,000	3,696,000	3,696,000	3,696,000	3,696,000
System Total	$5,951,000	$5,762,000	$5,575,000	$5,439,000	$5,242,000

Basin "E" - Constant Head

Total Flow	450	cfs
Total Flow	202,000	gpm
Pipe Diameter	84	inches
Outlet Pipe Length	5,200	feet
Static Head	30	feet
Head Loss	20	feet
Total Dynamic Head	50	feet
Total BHP @ 80% eff.	3,180	
Outlet Pipe Velocity	11.69	fps
Required Wet Well Volume	134,919	cu. ft.

Recommended Station

Number of Pumps	8	7	6	5	4
Flow per Pump, gpm	25,250	28,860	33,670	40,400	50,500
BHP per Pump (80% eff.)	400	460	530	640	800
Wet Well Volume, cu. ft.	116,100	103,200	90,300	77,400	64,500
Needed Add'l WW Vol., cu.ft.	18,819	31,719	44,619	57,519	70,419
# Pumps Running	********** Total Flow, gpm **********				
8	202,000				
7	176,750	202,020			
6	151,500	173,160	202,020		
5	126,250	144,300	168,350	202,000	
4	101,000	115,440	134,680	161,600	202,000
3	75,750	86,580	101,010	121,200	151,500
2	50,500	57,720	67,340	80,800	101,000
1	25,250	28,860	33,670	40,400	50,500

Building/Wet Well	1,342,100	1,273,800	1,208,900	1,148,900	1,096,900
Fuel Storage Tank	144,000	144,900	143,100	144,000	144,000
Engines	480,000	420,000	360,000	500,000	400,000
Pumps	884,000	824,000	764,000	704,000	644,000
Subtotal	1,508,000	1,388,900	1,267,100	1,348,000	1,188,000
PUMP STATION TOTAL	$3,016,000	$2,663,000	$2,476,000	$2,497,000	$2,285,000

Pipe Unit Cost	$240.00	per foot			
Total Pipe Cost	1,248,000	1,248,000	1,248,000	1,248,000	1,248,000
System Total	$4,264,000	$3,911,000	$3,724,000	$3,745,000	$3,533,000

Basin "E" - Constant Head

Total Flow	350	cfs
Total Flow	157,000	gpm
Pipe Diameter	72	inches
Outlet Pipe Length	5,200	feet
Static Head	30	feet
Head Loss	20	feet
Total Dynamic Head	50	feet
Total BHP @ 80% eff.	2,470	
Outlet Pipe Velocity	12.38	fps
Required Wet Well Volume	104,862	cu. ft.

Number of Pumps	8	7	6	5	4
Flow per Pump, gpm	19,630	22,430	26,170	31,400	39,250
BHP per Pump (80% eff.)	310	350	410	500	620
Wet Well Volume, cu. ft.	116,100	103,200	90,300	77,400	64,500
Needed Add'l WW Vol., cu.ft.	0	1,662	14,562	27,462	40,362
# Pumps Running	********** Total Flow, gpm **********				
8	157,040				
7	137,410	157,010			
6	117,780	134,580	157,020		
5	98,150	112,150	130,850	157,000	
4	78,520	89,720	104,680	125,600	157,000
3	58,890	67,290	78,510	94,200	117,750
2	39,260	44,860	52,340	62,800	78,500
1	19,630	22,430	26,170	31,400	39,250

Building/Wet Well	1,303,800	1,210,000	1,141,700	1,077,300	1,019,000
Fuel Storage Tank	111,600	110,250	110,700	112,500	111,600
Engines	320,000	280,000	360,000	300,000	400,000
Pumps	794,000	734,000	674,000	614,000	554,000
Subtotal	1,225,600	1,124,250	1,144,700	1,026,500	1,065,600
PUMP STATION TOTAL	$2,529,000	$2,334,000	$2,286,000	$2,104,000	$2,085,000

Pipe Unit Cost	$180.00	per foot			
Total Pipe Cost	936,000	936,000	936,000	936,000	936,000
System Total	$3,465,000	$3,270,000	$3,222,000	$3,040,000	$3,021,000

Basin "E" - Constant Head

Total Flow	250	cfs
Total Flow	112,000	gpm
Pipe Diameter	66	inches
Outlet Pipe Length	5,200	feet
Static Head	30	feet
Head Loss	20	feet
Total Dynamic Head	50	feet
Total BHP @ 80% eff.	1,760	
Outlet Pipe Velocity	10.52	fps
Required Wet Well Volume	74,806	cu. ft.

Number of Pumps	8	7	6	5	4
Flow per Pump, gpm	14,000	16,000	18,670	22,400	28,000
BHP per Pump (80% eff.)	220	250	290	350	440
Wet Well Volume, cu. ft.	116,100	103,200	90,300	77,400	64,500
Needed Add'l WW Vol., cu.ft.	0	0	0	0	10,306
# Pumps Running	********** Total Flow, gpm **********				
8	112,000				
7	98,000	112,000			
6	84,000	96,000	112,020		
5	70,000	80,000	93,350	112,000	
4	56,000	64,000	74,680	89,600	112,000
3	42,000	48,000	56,010	67,200	84,000
2	28,000	32,000	37,340	44,800	56,000
1	14,000	16,000	18,670	22,400	28,000

Building/Wet Well	1,303,800	1,206,400	1,109,100	1,011,800	941,200
Fuel Storage Tank	79,200	78,750	78,300	78,750	79,200
Engines	240,000	238,000	240,000	200,000	240,000
Pumps	704,000	644,000	584,000	524,000	464,000
Subtotal	1,023,200	960,750	902,300	802,750	783,200
PUMP STATION TOTAL	$2,327,000	$2,167,000	$2,011,000	$1,815,000	$1,724,000

Pipe Unit Cost	$160.00	per foot			
Total Pipe Cost	832,000	832,000	832,000	832,000	832,000
System Total	$3,159,000	$2,999,000	$2,843,000	$2,647,000	$2,556,000

OFF-SITE PUMP STATION COSTS

BASIN TO BASIN - CONSTANT HEAD

(Head Loss = 20')

Flow @ Carriage (cfs)	*** Basin B - 4 Pumps ***			*** Basin H - 5 Pumps ***			*** Basin E - 6 Pumps ***		
	Pump Station	Pipe Line	Total	Pump Station	Pipe Line	Total	Pump Station	Pipe Line	Total
450	1.60	3.17	4.77	2.09	5.28	7.37	2.48	3.17	5.64
350	1.48	2.82	4.30	1.93	4.22	6.16	2.29	2.82	5.10
250	1.41	2.02	3.43	1.74	3.70	5.44	2.01	2.02	4.04

Flow @ Carriage (cfs)	********* Total **********			Basin Costs*	Total Basin/PS Cost
	Pump Station	Pipe Line	Total		
450	6.17	11.62	17.78	22.0	39.8
350	5.70	9.86	15.56	23.5	39.1
250	5.16	7.74	12.91	25.1	38.0

* Basin Unit Costs: $3.00 /cu. yd. excavation and disposal
$5.00 /sq. ft. ROW acquisition

Total Costs in Millions of Dollars

APPENDIX II.B.2

Off-Site Pressure System Cost Data

Basin "B" - Pressure Line - Constant Head

Basin	B	H	E		
Basin Flow, cfs	150	225	75		
Basin Flow, gpm	67,000	101,000	34,000		
Accumulative Flow, gpm	67,000	168,000	202,000		
Outlet Pipe Length	17,600	17,600	5,200		
Static Head	60	30	30		
Sum Head Loss	200	90	20		
Total Dynamic Head	260	120	50		
Calculated Diameter, ft	3.61	6.03	6.86		
Standard Pipe Dia., Inches	48	78	84		
Velocity, fps	11.88	11.28	11.69		
Number of Pumps	7	6	5	4	3
Flow per Pump, gpm	9,570	11,170	13,400	16,750	22,330
BHP per Pump	750	900	1,050	1,300	1,750

# Pumps Running	********** Total Flow, gpm **********				
7	66,990				
6	57,420	67,020			
5	47,850	55,850	67,000		
4	38,280	44,680	53,600	67,000	
3	28,710	33,510	40,200	50,250	66,990
2	19,140	22,340	26,800	33,500	44,660
1	9,570	11,170	13,400	16,750	22,330

Building	$52,260	$48,480	$44,700	$40,920	$37,140
Wet Well	390,000	360,000	330,000	300,000	270,000
Excavation	60,696	56,560	52,424	48,288	44,152
Backfill	81,214	77,726	74,238	70,750	67,262
Grating	12,800	11,200	9,600	8,000	6,400
Louvers	19,200	16,800	14,400	12,000	9,600
Roof Hatch	20,000	17,500	15,000	12,500	10,000
Controls	250,000	250,000	250,000	250,000	250,000
Discharge Piping	36,000	31,500	27,000	22,500	18,000
Check Valves	240,000	210,000	180,000	150,000	120,000
Butterfly Valves	120,000	105,000	90,000	75,000	60,000
Perimeter Wall	19,520	18,880	18,240	17,600	16,960
Subtotal	$1,301,690	$1,203,646	$1,105,602	$1,007,558	$909,514
Fuel Storage Tank	236,250	243,000	236,250	234,000	236,250
Engines	448,000	665,000	780,000	650,000	660,000
Pumps	1,200,000	1,050,000	900,000	750,000	600,000
Subtotal	$1,884,250	$1,958,000	$1,916,250	$1,634,000	$1,496,250
PUMP STATION SUBTOTAL	$3,186,000	$3,162,000	$3,022,000	$2,642,000	$2,406,000
Pipe Cost B	2,957,000				
Pipe Cost H	4,805,000				
Pipe Cost E	1,529,000				
Total Pipe Cost	$9,291,000				
SYSTEM TOTAL	$6,143,000	$6,119,000	$5,979,000	$5,599,000	$5,363,000

Basin "B" - Pressure Line - Constant Head

Basin	B	H	E		
Basin Flow, cfs	120	170	60		
Basin Flow, gpm	54,000	76,000	27,000		
Accumulative Flow, gpm	54,000	130,000	157,000		
Outlet Pipe Length	17,600	17,600	5,200		
Static Head	60	30	30		
Sum Head Loss	200	90	20		
Total Dynamic Head	260	120	70		
Calculated Diameter, ft	3.33	5.47	6.23		
Standard Pipe Dia., Inches	42	66	78		
Velocity, fps	12.50	12.19	10.54		
Number of Pumps	7	6	5	4	3
Flow per Pump, gpm	7,710	9,000	10,800	13,500	18,000
BHP per Pump	600	700	850	1,050	1,400

# Pumps Running	********** Total Flow, gpm **********				
7	53,970				
6	46,260	54,000			
5	38,550	45,000	54,000		
4	30,840	36,000	43,200	54,000	
3	23,130	27,000	32,400	40,500	54,000
2	15,420	18,000	21,600	27,000	36,000
1	7,710	9,000	10,800	13,500	18,000

Building	$52,260	$48,480	$44,700	$40,920	$37,140
Wet Well	390,000	360,000	330,000	300,000	270,000
Excavation	60,696	56,560	52,424	48,288	44,152
Backfill	81,214	77,726	74,238	70,750	67,262
Grating	12,800	11,200	9,600	8,000	6,400
Louvers	19,200	16,800	14,400	12,000	9,600
Roof Hatch	20,000	17,500	15,000	12,500	10,000
Controls	250,000	250,000	250,000	250,000	250,000
Discharge Piping	36,000	31,500	27,000	22,500	18,000
Check Valves	240,000	210,000	180,000	150,000	120,000
Butterfly Valves	120,000	105,000	90,000	75,000	60,000
Perimeter Wall	19,520	18,880	18,240	17,600	16,960
Subtotal	$1,301,690	$1,203,646	$1,105,602	$1,007,558	$909,514
Fuel Storage Tank	189,000	189,000	191,250	189,000	189,000
Engines	448,000	392,000	570,000	650,000	520,000
Pumps	1,200,000	1,050,000	900,000	750,000	600,000
Subtotal	$1,837,000	$1,631,000	$1,661,250	$1,589,000	$1,309,000
PUMP STATION SUBTOTAL	$3,139,000	$2,835,000	$2,767,000	$2,597,000	$2,219,000
Pipe Cost B	2,587,000				
Pipe Cost H	4,066,000				
Pipe Cost E	1,420,000				
Total Pipe Cost	$8,073,000				
SYSTEM TOTAL	$5,726,000	$5,422,000	$5,354,000	$5,184,000	$4,806,000

Basin "B" - Pressure Line - Constant Head

Basin	B	H	E		
Basin Flow, cfs	85	140	25		
Basin Flow, gpm	38,000	63,000	11,000		
Accumulative Flow, gpm	38,000	101,000	112,000		
Outlet Pipe Length	17,600	17,600	5,200		
Static Head	60	30	30		
Sum Head Loss	200	90	20		
Total Dynamic Head	260	120	70		
Calculated Diameter, ft	2.91	4.97	5.48		
Standard Pipe Dia., Inches	36	60	66		
Velocity, fps	11.98	11.46	10.50		
Number of Pumps	7	6	5	4	3
Flow per Pump, gpm	5,430	6,330	7,600	9,500	12,670
BHP per Pump	450	500	600	750	1,000

# Pumps Running	********** Total Flow, gpm **********				
7	38,010				
6	32,580	37,980			
5	27,150	31,650	38,000		
4	21,720	25,320	30,400	38,000	
3	16,290	18,990	22,800	28,500	38,010
2	10,860	12,660	15,200	19,000	25,340
1	5,430	6,330	7,600	9,500	12,670

Building	$52,260	$48,480	$44,700	$40,920	$37,140
Wet Well	390,000	360,000	330,000	300,000	270,000
Excavation	60,696	56,560	52,424	48,288	44,152
Backfill	81,214	77,726	74,238	70,750	67,262
Grating	12,800	11,200	9,600	8,000	6,400
Louvers	19,200	16,800	14,400	12,000	9,600
Roof Hatch	20,000	17,500	15,000	12,500	10,000
Controls	250,000	250,000	250,000	250,000	250,000
Discharge Piping	36,000	31,500	27,000	22,500	18,000
Check Valves	240,000	210,000	180,000	150,000	120,000
Butterfly Valves	120,000	105,000	90,000	75,000	60,000
Perimeter Wall	19,520	18,880	18,240	17,600	16,960
Subtotal	$1,301,690	$1,203,646	$1,105,602	$1,007,558	$909,514
Fuel Storage Tank	141,750	135,000	135,000	135,000	135,000
Engines	320,000	280,000	336,000	280,000	380,000
Pumps	1,200,000	1,050,000	900,000	750,000	600,000
Subtotal	$1,661,750	$1,465,000	$1,371,000	$1,165,000	$1,115,000
PUMP STATION SUBTOTAL	$2,963,000	$2,669,000	$2,477,000	$2,173,000	$2,025,000
Pipe Cost B	2,218,000				
Pipe Cost H	3,696,000				
Pipe Cost E	1,201,000				
Total Pipe Cost	$7,115,000				
SYSTEM TOTAL	$5,181,000	$4,887,000	$4,695,000	$4,391,000	$4,243,000

Basin "H" - Pressure Line

Basin	B	H	E		
Basin Flow, cfs	150	225	75		
Basin Flow, gpm	67,000	101,000	34,000		
Accumulative Flow, gpm	67,000	168,000	202,000		
Outlet Pipe Length	17,600	17,600	5,200		
Static Head	60	30	30		
Sum Head Loss	200	90	20		
Total Dynamic Head	260	120	50		
Calculated Diameter, ft	3.61	6.03	6.86		
Standard Pipe Dia., Inches	48	78	84		
Velocity, fps	11.88	11.28	11.69		
Number of Pumps	7	6	5	4	3
Flow per Pump, gpm	14,430	16,830	20,200	25,250	33,670
BHP per Pump	900	1,050	1,250	1,550	2,050

# Pumps Running	********** Total Flow, gpm **********				
7	101,010				
6	86,580	100,980			
5	72,150	84,150	101,000		
4	57,720	67,320	80,800	101,000	
3	43,290	50,490	60,600	75,750	101,010
2	28,860	33,660	40,400	50,500	67,340
1	14,430	16,830	20,200	25,250	33,670

Building	$52,260	$48,480	$44,700	$40,920	$37,140
Wet Well	390,000	360,000	330,000	300,000	270,000
Excavation	60,696	56,560	52,424	48,288	44,152
Backfill	81,214	77,726	74,238	70,750	67,262
Grating	12,800	11,200	9,600	8,000	6,400
Louvers	19,200	16,800	14,400	12,000	9,600
Roof Hatch	20,000	17,500	15,000	12,500	10,000
Controls	250,000	250,000	250,000	250,000	250,000
Discharge Piping	36,000	31,500	27,000	22,500	18,000
Check Valves	240,000	210,000	180,000	150,000	120,000
Butterfly Valves	120,000	105,000	90,000	75,000	60,000
Perimeter Wall	19,520	18,880	18,240	17,600	16,960
Subtotal	$1,301,690	$1,203,646	$1,105,602	$1,007,558	$909,514
Fuel Storage Tank	283,500	283,500	281,250	279,000	276,750
Engines	760,000	910,000	780,000	825,000	660,000
Pumps	1,200,000	1,050,000	900,000	750,000	600,000
Subtotal	$2,243,500	$2,243,500	$1,961,250	$1,854,000	$1,536,750
PUMP STATION SUBTOTAL	$3,545,000	$3,447,000	$3,067,000	$2,862,000	$2,446,000
Pipe Cost B	2,957,000				
Pipe Cost H	4,805,000				
Pipe Cost E	1,529,000				
Total Pipe Cost	$9,291,000				
SYSTEM TOTAL	$8,350,000	$8,252,000	$7,872,000	$7,667,000	$7,251,000

Basin "H" - Pressure Line

Basin	B	H	E		
Basin Flow, cfs	120	170	60		
Basin Flow, gpm	54,000	81,000	27,000		
Accumulative Flow, gpm	54,000	135,000	162,000		
Outlet Pipe Length	17,600	17,600	5,200		
Static Head	60	30	30		
Sum Head Loss	200	90	20		
Total Dynamic Head	260	120	70		
Calculated Diameter, ft	3.33	5.55	6.31		
Standard Pipe Dia., Inches	42	72	78		
Velocity, fps	12.50	10.64	10.88		
Number of Pumps	7	6	5	4	3
Flow per Pump, gpm	11,570	13,500	16,200	20,250	27,000
BHP per Pump	700	850	1,000	1,250	1,650

# Pumps Running	********** Total Flow, gpm **********				
7	80,990				
6	69,420	81,000			
5	57,850	67,500	81,000		
4	46,280	54,000	64,800	81,000	
3	34,710	40,500	48,600	60,750	81,000
2	23,140	27,000	32,400	40,500	54,000
1	11,570	13,500	16,200	20,250	27,000

Building	$52,260	$48,480	$44,700	$40,920	$37,140
Wet Well	390,000	360,000	330,000	300,000	270,000
Excavation	60,696	56,560	52,424	48,288	44,152
Backfill	81,214	77,726	74,238	70,750	67,262
Grating	12,800	11,200	9,600	8,000	6,400
Louvers	19,200	16,800	14,400	12,000	9,600
Roof Hatch	20,000	17,500	15,000	12,500	10,000
Controls	250,000	250,000	250,000	250,000	250,000
Discharge Piping	36,000	31,500	27,000	22,500	18,000
Check Valves	240,000	210,000	180,000	150,000	120,000
Butterfly Valves	120,000	105,000	90,000	75,000	60,000
Perimeter Wall	19,520	18,880	18,240	17,600	16,960
Subtotal	$1,301,690	$1,203,646	$1,105,602	$1,007,558	$909,514
Fuel Storage Tank	220,500	229,500	225,000	225,000	222,750
Engines	448,000	665,000	570,000	650,000	660,000
Pumps	1,200,000	1,050,000	900,000	750,000	600,000
Subtotal	$1,868,500	$1,944,500	$1,695,000	$1,625,000	$1,482,750
PUMP STATION SUBTOTAL	$3,170,000	$3,148,000	$2,801,000	$2,633,000	$2,392,000
Pipe Cost B	2,587,000				
Pipe Cost H	4,435,000				
Pipe Cost E	1,420,000				
Total Pipe Cost	$8,442,000				
SYSTEM TOTAL	$7,605,000	$7,583,000	$7,236,000	$7,068,000	$6,827,000

Basin "H" - Pressure Line

Basin	B	H	E		
Basin Flow, cfs	85	140	25		
Basin Flow, gpm	38,000	63,000	11,000		
Accumulative Flow, gpm	38,000	101,000	112,000		
Outlet Pipe Length	17,600	17,600	5,200		
Static Head	60	30	30		
Sum Head Loss	200	90	20		
Total Dynamic Head	260	120	70		
Calculated Diameter, ft	2.91	4.97	5.48		
Standard Pipe Dia., Inches	36	60	66		
Velocity, fps	11.98	11.46	10.50		
Number of Pumps	7	6	5	4	3
Flow per Pump, gpm	9,000	10,500	12,600	15,750	21,000
BHP per Pump	550	650	750	950	1,250

# Pumps Running	********** Total Flow, gpm **********				
7	63,000				
6	54,000	63,000			
5	45,000	52,500	63,000		
4	36,000	42,000	50,400	63,000	
3	27,000	31,500	37,800	47,250	63,000
2	18,000	21,000	25,200	31,500	42,000
1	9,000	10,500	12,600	15,750	21,000

Building	$52,260	$48,480	$44,700	$40,920	$37,140
Wet Well	390,000	360,000	330,000	300,000	270,000
Excavation	60,696	56,560	52,424	48,288	44,152
Backfill	81,214	77,726	74,238	70,750	67,262
Grating	12,800	11,200	9,600	8,000	6,400
Louvers	19,200	16,800	14,400	12,000	9,600
Roof Hatch	20,000	17,500	15,000	12,500	10,000
Controls	250,000	250,000	250,000	250,000	250,000
Discharge Piping	36,000	31,500	27,000	22,500	18,000
Check Valves	240,000	210,000	180,000	150,000	120,000
Butterfly Valves	120,000	105,000	90,000	75,000	60,000
Perimeter Wall	19,520	18,880	18,240	17,600	16,960
Subtotal	$1,301,690	$1,203,646	$1,105,602	$1,007,558	$909,514
Fuel Storage Tank	173,250	175,500	168,750	171,000	168,750
Engines	448,000	392,000	336,000	475,000	520,000
Pumps	1,200,000	1,050,000	900,000	750,000	600,000
Subtotal	$1,821,250	$1,617,500	$1,404,750	$1,396,000	$1,288,750
PUMP STATION SUBTOTAL	$3,123,000	$2,821,000	$2,510,000	$2,404,000	$2,198,000
Pipe Cost B	2,218,000				
Pipe Cost H	3,696,000				
Pipe Cost E	1,201,000				
Total Pipe Cost	$7,115,000				
SYSTEM TOTAL	$6,819,000	$6,517,000	$6,206,000	$6,100,000	$5,894,000

Basin "E" - Pressure Line - Constant Head

Basin	B	H	E		
Basin Flow, cfs	150	225	75		
Basin Flow, gpm	67,000	101,000	34,000		
Accumulative Flow, gpm	67,000	168,000	202,000		
Outlet Pipe Length	17,600	17,600	5,200		
Static Head	60	30	30		
Sum Head Loss	200	90	20		
Total Dynamic Head	260	120	50		
Calculated Diameter, ft	3.61	6.03	6.86		
Standard Pipe Dia., Inches	48	78	84		
Velocity, fps	11.88	11.28	11.69		
Number of Pumps	8	7	6	5	4
Flow per Pump, gpm	4,250	4,860	5,670	6,800	8,500
BHP per Pump	300	300	350	450	550

# Pumps Running	********** Total Flow, gpm **********				
8	34,000				
7	29,750	34,020			
6	25,500	29,160	34,020		
5	21,250	24,300	28,350	34,000	
4	17,000	19,440	22,680	27,200	34,000
3	12,750	14,580	17,010	20,400	25,500
2	8,500	9,720	11,340	13,600	17,000
1	4,250	4,860	5,670	6,800	8,500

Building	$56,040	$52,260	$48,480	$44,700	$40,920
Wet Well	420,000	390,000	360,000	330,000	300,000
Excavation	64,832	60,696	56,560	52,424	48,288
Backfill	84,702	81,214	77,726	74,238	70,750
Grating	14,400	12,800	11,200	9,600	8,000
Louvers	21,600	19,200	16,800	14,400	12,000
Roof Hatch	22,500	20,000	17,500	15,000	12,500
Controls	250,000	250,000	250,000	250,000	250,000
Discharge Piping	40,500	36,000	31,500	27,000	22,500
Check Valves	270,000	240,000	210,000	180,000	150,000
Butterfly Valves	135,000	120,000	105,000	90,000	75,000
Perimeter Wall	20,160	19,520	18,880	18,240	17,600
Subtotal	$1,399,734	$1,301,690	$1,203,646	$1,105,602	$1,007,558
Fuel Storage Tank	108,000	94,500	94,500	101,250	99,000
Engines	306,000	272,000	238,000	240,000	280,000
Pumps	1,350,000	1,200,000	1,050,000	900,000	750,000
Subtotal	$1,764,000	$1,566,500	$1,382,500	$1,241,250	$1,129,000
PUMP STATION TOTAL	$3,164,000	$2,868,000	$2,586,000	$2,347,000	$2,137,000
Pipe Cost B	2,957,000				
Pipe Cost H	4,805,000				
Pipe Cost E	1,529,000				
Total Pipe Cost	$9,291,000				
SYSTEM TOTAL	$4,693,000	$4,397,000	$4,115,000	$3,876,000	$3,666,000

Basin "E" - Pressure Line - Constant Head

Basin	B	H	E		
Basin Flow, cfs	120	170	60		
Basin Flow, gpm	54,000	81,000	27,000		
Accumulative Flow, gpm	54,000	135,000	162,000		
Outlet Pipe Length	17,600	17,600	5,200		
Static Head	60	30	30		
Sum Head Loss	200	90	20		
Total Dynamic Head	260	120	70		
Calculated Diameter, ft	3.33	5.55	6.31		
Standard Pipe Dia., Inches	42	72	78		
Velocity, fps	12.50	10.64	10.88		
Number of Pumps	8	7	6	5	4
Flow per Pump, gpm	3,380	3,860	4,500	5,400	6,750
BHP per Pump	250	250	300	350	450

# Pumps Running	********** Total Flow, gpm **********				
8	27,040				
7	23,660	27,020			
6	20,280	23,160	27,000		
5	16,900	19,300	22,500	27,000	
4	13,520	15,440	18,000	21,600	27,000
3	10,140	11,580	13,500	16,200	20,250
2	6,760	7,720	9,000	10,800	13,500
1	3,380	3,860	4,500	5,400	6,750

Building	$56,040	$52,260	$48,480	$44,700	$40,920
Wet Well	420,000	390,000	360,000	330,000	300,000
Excavation	64,832	60,696	56,560	52,424	48,288
Backfill	84,702	81,214	77,726	74,238	70,750
Grating	14,400	12,800	11,200	9,600	8,000
Louvers	21,600	19,200	16,800	14,400	12,000
Roof Hatch	22,500	20,000	17,500	15,000	12,500
Controls	250,000	250,000	250,000	250,000	250,000
Discharge Piping	40,500	36,000	31,500	27,000	22,500
Check Valves	270,000	240,000	210,000	180,000	150,000
Butterfly Valves	135,000	120,000	105,000	90,000	75,000
Perimeter Wall	20,160	19,520	18,880	18,240	17,600
Subtotal	$1,399,734	$1,301,690	$1,203,646	$1,105,602	$1,007,558
Fuel Storage Tank	90,000	78,750	81,000	78,750	81,000
Engines	306,000	272,000	238,000	204,000	200,000
Pumps	1,350,000	1,200,000	1,050,000	900,000	750,000
Subtotal	$1,746,000	$1,550,750	$1,369,000	$1,182,750	$1,031,000
PUMP STATION TOTAL	$3,146,000	$2,852,000	$2,573,000	$2,288,000	$2,039,000
Pipe Cost B	2,587,000				
Pipe Cost H	4,435,000				
Pipe Cost E	1,420,000				
Total Pipe Cost	$8,442,000				
SYSTEM TOTAL	$4,566,000	$4,272,000	$3,993,000	$3,708,000	$3,459,000

Basin "E" - Pressure Line - Constant Head

Basin	B	H	E		
Basin Flow, cfs	85	140	25		
Basin Flow, gpm	38,000	63,000	11,000		
Accumulative Flow, gpm	38,000	101,000	112,000		
Outlet Pipe Length	17,600	17,600	5,200		
Static Head	60	30	30		
Sum Head Loss	200	90	20		
Total Dynamic Head	260	120	70		
Calculated Diameter, ft	2.91	4.97	5.48		
Standard Pipe Dia., Inches	36	60	66		
Velocity, fps	11.98	11.46	10.50		
Number of Pumps	8	7	6	5	4
Flow per Pump, gpm	1,380	1,570	1,830	2,200	2,750
BHP per Pump	100	100	150	150	200

# Pumps Running	********** Total Flow, gpm **********				
8	11,040				
7	9,660	10,990			
6	8,280	9,420	10,980		
5	6,900	7,850	9,150	11,000	
4	5,520	6,280	7,320	8,800	11,000
3	4,140	4,710	5,490	6,600	8,250
2	2,760	3,140	3,660	4,400	5,500
1	1,380	1,570	1,830	2,200	2,750

Building	$56,040	$52,260	$48,480	$44,700	$40,920
Wet Well	420,000	390,000	360,000	330,000	300,000
Excavation	64,832	60,696	56,560	52,424	48,288
Backfill	84,702	81,214	77,726	74,238	70,750
Grating	14,400	12,800	11,200	9,600	8,000
Louvers	21,600	19,200	16,800	14,400	12,000
Roof Hatch	22,500	20,000	17,500	15,000	12,500
Controls	250,000	250,000	250,000	250,000	250,000
Discharge Piping	40,500	36,000	31,500	27,000	22,500
Check Valves	270,000	240,000	210,000	180,000	150,000
Butterfly Valves	135,000	120,000	105,000	90,000	75,000
Perimeter Wall	20,160	19,520	18,880	18,240	17,600
Subtotal	$1,399,734	$1,301,690	$1,203,646	$1,105,602	$1,007,558
Fuel Storage Tank	36,000	31,500	40,500	33,750	36,000
Engines	306,000	272,000	238,000	204,000	170,000
Pumps	1,350,000	1,200,000	1,050,000	900,000	750,000
Subtotal	$1,692,000	$1,503,500	$1,328,500	$1,137,750	$956,000
PUMP STATION TOTAL	$3,092,000	$2,805,000	$2,532,000	$2,243,000	$1,964,000
Pipe Cost B	2,218,000				
Pipe Cost H	3,696,000				
Pipe Cost E	1,201,000				
Total Pipe Cost	$7,115,000				
SYSTEM TOTAL	$4,293,000	$4,006,000	$3,733,000	$3,444,000	$3,165,000

OFF-SITE PUMP STATION COSTS

PRESSURE SYSTEM - CONSTANT HEAD

	*** Basin B - 6 Pumps ***			*** Basin H - 6 Pumps ***			*** Basin E - 6 Pumps ***		
Flow @ Carriage	Pump Station	Pipe Line	Total	Pump Station	Pipe Line	Total	Pump Station	Pipe Line	Total
450	3.16	2.96	6.12	3.45	4.81	8.25	2.59	1.53	4.12
350	2.84	2.59	5.42	3.14	4.07	7.20	2.57	1.42	3.99
250	2.67	2.22	4.89	2.82	3.70	6.52	2.53	1.20	3.73

	********* Total **********				Total
Flow @ Carriage	Pump Station	Pipe Line	Total	Basin Costs*	Basin/PS Cost
450	9.20	9.29	18.49	22.0	40.5
350	8.54	8.07	16.62	23.5	40.1
250	8.02	7.12	15.14	25.1	40.2

Total Costs in Millions of Dollars

APPENDIX III

DESIGN DATA

A. On-site Collector System Design Data

B On-site Pump Station Design Hydrographs

C. Off-site Collector System Design Data

D. HEC-1 Regional Detention Basin Operation Model (Maximum Discharge to CLO = 450 cfs)

APPENDIX III.A

On-site Collector System Design Data

PRICE ROAD GEC
PRICE EXPRESSWAY
ON-SITE STORM SEWER DESIGN FREQUENCY=50 YEARS P6=2.70 IN. P24=3.05 IN. P1=2.1 IN.
RUNOFF CALCULATION SHEET

FN=A:RAT2.WS
4-30-90

DA NO.	STATION FROM - TO	AREA ACRES	PAV'T C	PAV'T A	PAV'T CA	3:1 DG C	3:1 DG A	3:1 DG CA	5:1 DG C	5:1 DG A	5:1 DG CA	SUM CA	Tc MIN	I IN/HR	Q CFS
ELLIOT AND WARNER OUTFALL															
TO BASIN "E"															
10A	311814-313050	10.92	0.95	8.45	8.03	0.70	2.46	1.72	0.60	-	-	9.75	10.0	5.70	56
10	313050-315115	22.97	0.95	13.65	12.97	0.70	9.30	6.51	0.60	-	-	19.48	10.0	5.70	111
11	315115-317676	18.05	0.95	11.07	10.52	0.70	6.98	4.89	0.60	-	-	15.40	10.0	5.70	88
12	317676-320406	25.33	0.95	13.88	13.19	0.70	11.45	8.02	0.60	-	-	21.20	10.0	5.70	121
13	320406-322969	21.44	0.95	13.74	13.05	0.70	7.70	5.39	0.60	-	-	18.44	11.9	5.30	98
14	322969-328050	41.46	0.95	22.62	21.49	0.70	18.84	13.19	0.60	-	-	34.68	12.6	5.20	180
15A	331400-333200	15.70	0.95	9.36	8.89	0.70	6.34	4.44	0.60	-	-	13.33	10.0	5.70	76
15B	328050-331400	28.47	0.95	12.10	11.50	0.70	16.37	11.46	0.60	-	-	22.95	10.0	5.70	131
BASELINE ROAD SYSTEM															
23	310700-311814	9.97	0.95	6.16	5.85	0.70	3.81	2.67				8.52	10.0	5.70	49
KYRENE OUTFALL TO PUMP															
STATION - ONSITE															
S-1	133550-135600	18.27	0.95	9.85	9.36	0.70	8.42	5.89				15.25	10.0	5.70	87
S-2	135600-137400	16.74	0.95	6.76	6.42	0.70	9.98	6.99				13.41	10.0	5.70	76
S-3	137400-139200	12.40	0.95	4.96	4.71	0.70	7.44	5.21				9.92	10.0	5.70	57
S-4	139200-141000	12.40	0.95	6.00	5.70	0.70	6.40	4.48				10.18	10.0	5.70	58
S-5	141000-142400	10.45	0.95	4.34	4.12	0.70	6.11	4.28				8.40	10.0	5.70	48
MCCLINTOCK OUTFALL TO															
PUMP STATION - ONSITE															
S-6	142400-144000	13.04	0.95	5.33	5.06	0.70	7.71	5.40				10.46	10.0	5.70	60
S-7	144000-145400	13.11	0.95	5.90	5.61	0.70	7.21	5.05				10.65	10.0	5.70	61
S-8	145400-146700	14.62	0.95	8.08	7.68	0.70	6.54	4.58				12.25	10.0	5.70	70
S-9	146700-148000	14.33	0.95	6.57	6.24	0.70	7.76	5.43				11.67	10.0	5.70	67
S-10	148000-149300	15.37	0.95	8.12	7.71	0.70	7.25	5.08				12.79	10.0	5.70	73
PRICE/SANTAN INTX															
OUTFALL TO TI PUMP STA.															
FR1	335690-337000	16.05	0.95	9.17	8.71	0.70	6.88	4.82				13.53	10.0	5.70	77
FR2	337000-339140	20.51	0.95	12.30	11.69	0.70	8.21	5.75				17.43	10.0	5.70	99
TI1	NO STATION	5.64	0.95	0.48	0.46	0.70	5.16	3.61				4.07	10.0	5.70	23
TI2	NO STATION	5.38	0.95	1.43	1.36	0.70	3.95	2.77				4.12	10.0	5.70	24
TI3	149300-150500	10.68	0.95	5.96	5.66	0.70	4.72	3.30				8.97	10.0	5.70	51
TI4	154400-155400	5.68	0.95	4.30	4.09	0.70	1.38	0.97				5.05	10.0	5.70	29
TI5	153400-154400	9.07	0.95	7.80	7.41	0.70	1.27	0.89				8.30	10.0	5.70	47
TI6	152400-153400	8.61	0.95	4.62	4.39	0.70	3.99	2.79				7.18	10.0	5.70	41
TI7	150500-152400	18.78	0.95	12.02	11.42	0.70	6.76	4.73				16.15	10.0	5.70	92
TI8	NO STATION	3.68	0.95	0.50	0.48	0.70	3.18	2.23				2.70	10.0	5.70	15

PRICE ROAD GEC
ON-SITE SANTAN FREEWAY
STORM SEWER DESIGN — FREQUENCY=50 YEARS — P6=2.70 IN. P24=3.05 IN. P1=2.1 IN.
RUNOFF CALCULATION SHEET

FN=A:RAT1.WS

DA NO.	STATION FROM - TO	AREA ACRES	PAV'T C	PAV'T A	PAV'T CA	3:1 DG C	3:1 DG A	3:1 DG CA	5:1 DG C	5:1 DG A	5:1 DG CA	SUM CA	Tc MIN	I IN/HR	Q CFS
(FUTURE)															
DOBSON ROAD OUTFALL															
TO BASIN "H"															
16	167617-169400	14.74	0.95	12.25	11.64	0.70	2.49	1.74	0.60	-	-	13.38	10	5.70	76
17	165100-167617	20.95	0.95	18.65	17.72	0.70	2.30	1.61	0.60	-	-	19.33	10	5.70	110
18	162337-165100	21.41	0.95	15.66	14.88	0.70	5.75	4.03	0.60	-	-	18.90	10.4	5.60	106
19	160300-162387	18.94	0.95	10.69	10.16	0.70	8.25	5.78	0.60	-	-	15.93	10	5.70	91
20	158500-160300	11.91	0.95	7.09	6.74	0.70	4.82	3.37	0.60	-	-	10.11	10	5.70	58
21	157030-158500	13.33	0.95	8.92	8.47	0.70	4.41	3.09	0.60			11.56	10	5.70	66
22	155397-157030	9.18	0.95	5.51	5.23	0.70	3.67	2.57	0.60			7.80	10	5.70	44

PRICE ROAD GEC
PRICE EXPRESSWAY
ON-SITE STORM SEWER DESIGN FREQUENCY=50 YEARS P6=2.70 IN. P24=3.05 IN. P1=2.1 IN. FN=A:STORM1.WS
SEWER CALCULATION SHEET PIPE N=.012 TW= 6-25-90

LINE NO.	STATION FROM - TO	DA NO.	INCREM CA	SUM CA	TIME INLET	TIME SEWER	TIME DESIGN	I IN/HR	Q CFS	CROWN EL INLET	CROWN EL OUTLET	LENGTH FT	SLOPE FT/FT	DIAM IN	QFULL CFS	V FPS	SF FT/FT	HL FT	ELEV INLET	ELEV OUTLET	ASSUMED LOSS FT	STR
	ELLIOT ROAD OUTFALL TO BASIN "E"																					
P1-10A	313050-313905	10A	9.7	9.7	10.0	-	10.0	5.70	56	1173.0	1168.0	855.0	0.00585	36	55	7.9	0.00600	5.13	1174.87	1169.24	0.50	
P1-10	313905-316611	10	19.5	29.2	10.0	1.8	11.8	5.20	152	1168.0	1162.3	2706.0	0.00210	66	167	6.4	0.00175	4.74	1169.24	1164.00	0.50	
P1-11	316611-318400	11	15.4	44.6	0.0	7.0	18.8	4.20	187	1162.3	1160.5	1789.0	0.00100	72	190	6.6	0.00166	2.97	1164.00	1160.53	0.50	
(1)S1-11	318400-319000	-	-	-	-	-	-	-	-	1160.5	1159.9	600.0	0.00100	96	-							
P1-12	321593-319600	13	18.5	18.5	10.0	1.9	11.9	5.30	98	1163.0	1160.6	1993.0	0.00120	60	98	5.3	0.00121	2.41	1163.51	1160.60	0.50	
S1-12	319600-319000	-	-	-	-	-	-	-	-	1160.6	1159.9	600.0	0.00117	96	-							
P1-13	319000-PUMP STA	12	21.2	84.3	0.0	6.0	24.8	3.60	(303)	1159.9	1159.4	150.0	0.00200	84	309	-	-	-	-	-	-	
	WARNER ROAD OUTFALL TO BASIN "E"																					
P1-15A	329823-331400	15A	13.3	13.3	-	-	10.0	5.70	76	1170.0	1156.9	1577.0	0.00833	42	99	10.0	0.00487	7.68	1167.59	1159.41	0.50	
P1-15B	325150-329823	15B	23.0	36.3	-	3.8	13.8	5.00	182	1156.9	1153.6	4673.0	0.00071	78	151	5.5	0.00103	4.81	1159.41	1153.60	1.00	
S1-15	324300-325100	-	-	-	-	-	-	-	-	1153.6	1153.0	800.0	0.00070	96	-							
P1-14	PUMP STA-324350	14	34.7	71.0	-	15.2	29.0	3.40	(241)	1153.0	1152.7	150.0	0.00200	84	309	-	-	-	-	-	-	
	INTERCHANGE OUTFALLS TO BASIN "H"																					
P1-30A	337000-337400	FR1	13.5	13.5	-	-	10.0	5.70	77	1171.5	1161.0	400.0	0.02625	36	117	15.0	0.01136	4.54	1169.48	1164.44	0.50	
P1-30B	337400-337658	FR1	13.5	13.5	-	-	10.0	5.70	77	1161.0	1160.0	258.0	0.00388	36	45	10.9	0.01136	2.93	1164.44	1161.01	0.50	
P1-31A	337658-339050	FR2	17.4	31.0	-	0.8	10.8	5.50	170	1160.0	1158.6	1392.0	0.00100	72	145	6.0	0.00137	1.91	1161.01	1158.60	0.50	
P1-31B	339050-JUNC BOX	FR2	17.4	31.0	-	-	10.8	5.50	170	1158.6	1148.3	928.0	0.01109	72	483	14.0	0.00137	1.27	-	1148.32	0.50	
P1-35	150500-150720	TI1/3	13.0	13.0	-	-	10.0	5.70	74	1152.0	1151.1	220.0	0.00400	42	69	7.7	0.00462	1.02	1153.02	1151.50	0.50	
S1-35	150720-151420	-	-	-	-	-	-	-	-	1149.0	1148.3	700.0	0.00229	96	-							
S1-36	151420-151644	-	-	-	-	-	-	-	-	1148.3	1147.4	224.0	0.00402	96	-							
P1-36	154400-153400	TI4	5.1	5.1	-	-	10.0	5.70	29	1170.0	1160.9	1000.0	0.00910	30	42	8.0	0.00426	4.26	-	1161.68	0.50	
P1-37	153400-152400	TI5	8.3	13.4	-	2.1	12.1	5.20	70	1160.9	1151.8	1000.0	0.00910	36	69	9.9	0.00938	9.38	1161.68	1151.80	0.50	
S1-37	152400-151644	-	-	-	-	-	-	-	-	1149.0	1147.4	756.0	0.00209	96	-							
P1-39	151644-PUMPSTA	(2)	30.1	87.5	-	5.3	17.4	4.4	(385)	1145.4	1144.9	150.0	0.00333	72	264	-	-	-	-	-	-	
	CONNECTION TO BASELINE ROAD SYSTEM																					
P1-40	309522-310700	23	8.5	8.5	-	-	10.0	5.70	49	1175.7	1169.8	1178.0	0.00502	36	51	6.9	0.00460	5.42	1174.72	1168.80	0.50	

(1) "S" ATTACHED TO PIPE NO. NOTATION INDICATES UNDERGROUND STORAGE FUNCTION
(2) INCLUDES DRAINAGE AREAS TI2, TI6, TI7 AND TI8
( ) INDICATES 50-YR RUNOFF Q WITHOUT ATTENUATION DUE TO UNDERGROUND STORAGE

PRICE ROAD GEC
ON-SITE SANTAN FREEWAY
STORM SEWER DESIGN FREQUENCY=50 YEARS P6=2.70 IN. P24=3.05 IN. P1=2.1 IN. FN=A:STORM2.WS
SEWER CALCULATION SHEET PIPE N=.012 TW=
6-25-90

LINE NO.	STATION FROM - TO	DA NO.	INCREM CA	SUM CA	TIME INLET	TIME SEWER	TIME DESIGN	I IN/HR	Q CFS	CROWN EL INLET	CROWN EL OUTLET	LENGTH FT	SLOPE FT/FT	DIAM IN	QFULL CFS	V FPS	SF FT/FT	HL FT	ELEV INLET	ELEV OUTLET	ASSUMED STR LOSS, FT
	KYRENE ROAD OUTFALL TO BASIN "B"																				
P1-19	139200-140975	S-5	8.4	8.4	-	-	10.0	5.70	48	1155.85	1148.75	1775.0	0.00400	36	46	6.8	0.00441	7.83	1160.76	1152.43	0.50
P1-18	137400-139200	S-4	10.2	18.6	-	4.4	14.4	4.80	89	1148.75	1141.55	1800.0	0.00400	48	98	6.9	0.00327	5.89	1152.43	1146.05	0.50
P1-17	135600-137400	S-3	9.9	28.5	-	4.3	18.7	4.20	120	1141.55	1134.35	1800.0	0.00400	48	98	9.3	0.00594	10.69	1146.05	1134.85	0.50
P1-16	135600-PUMP STA	S-1/2	28.6	57.1	-	3.2	21.9	3.90	223	1134.35	1133.00	360.0	0.00376	66	223	8.9	0.00376	1.35	1134.85	1133.00	0.50
	McCLINTOCK OUTFALL TO BASIN "B"																				
P1-20	144025-145400	S-6	10.5	10.5	-	-	10.0	5.70	60	1155.08	1149.58	1375.0	0.00400	36	46	8.5	0.00689	9.47	1159.55	1149.58	0.50
P1-21	145400-145540	S-7	10.7	21.2	-	2.7	12.7	5.20	110	1149.58	1145.87	140.0	0.02650	42	177	11.4	0.01020	1.43	1147.80	1145.87	0.50
(1)S1-21	145540-146140	-	-	-	-	-	-	-	-	1145.87	1145.27	600.0	0.00100	96	-						
P1-22	146700-148000	S-10	12.8	12.8	-	-	10.0	5.70	73	1149.71	1144.51	1300.0	0.00400	42	69	7.6	0.00449	5.84	1154.57	1148.23	0.50
P1-23	146140-146700	S-8/9	23.9	36.7	-	2.9	12.9	5.10	187	1144.51	1143.27	560.0	0.00221	60	133	9.5	0.00439	2.46	1148.23	1145.27	0.50
P1-24	146140-PUMP STA	-	-	57.9	-	-	-	5.10	(295)	1143.27	1141.95	330.0	0.00400	72	290	-	-	-	-	-	-

(1) "S" ATTACHED TO PIPE NO. NOTATION INDICATES UNDERGROUND STORAGE FUNCTION
( ) INDICATES 50-YR RUNOFF Q WITHOUT ATTENTUATION DUE TO UNDERGROUND STORAGE

APPENDIX III.B

On-site Pump Station Design Hydrographs

EC2 S/N: 39001226 HMVersion: 5.00 Data File: a:pump5.dat

```
****************************************
*                                      *
*   _OOD HYDROGRAPH PACKAGE  (HEC-1)   *
*          FEBRUARY 1981               *
*        REVISED 02 AUG 88             *
*                                      *
* RUN DATE  02/27/1990  TIME  08:44:00 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*                                      *
*                                      *
****************************************
```

ELLIOT PUMP STATION

PUMP Q=200 CFS

ONSITE

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

```
::::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::::
:::                                      :::
:::   FULL MICRO-COMPUTER IMPLEMENTATION  :::
:::                                      :::
::::::::::::::::::::::::::::::::::::::::::::
::::::::::::::::::::::::::::::::::::::::::::
```

```
============================
H A E S T A D   M E T H O D S
============================
```

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

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

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

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

  1           ID        PRICE ROAD ROW HYDROLOGY
  2           ID        ONSITE DRAINAGE/STORAGE ANALYSIS  50 YEAR 24 HOUR STORM
  3           ID        DRAINAGE AREA - GUADELUPE TO ELLIOT
  4           IT       5                    300
  5           IO       2
              *DIAGRAM

  6           KK   SUB10
  7           PH       1       0     .61     1.2     2.1     2.3    2.44    2.70    2.95    3.05
  8           BA   .0530
  9           LS              92
 10           UD    .230

 11           KK   RTE10  66-INCH
 12           RK    2721  .00147    .012            CIRC     5.5

 13           KK   SUB11
 14           BA   .0282
 15           LS              92
 16           UD    .230

 17           KK   ADD11
 18           HC       2

 19           KK   RTE11  72-INCH
 20           RK    2589  .00159    .012            CIRC       6

 21           KK   SUB12
 22           BA    .042
 23           LS            92.5
 24           UD    .230

 25           KK   ADD12
 26           HC       2

 27           KK   SUB13
 28           BA   .0353
 29           LS              92
 30           UD    .230

 31           KK   RTE13
 32           RK    2393  .00130    .012            CIRC       5

 33           KK   ADD13
 34           KO       1       2
 35           HC       2

 36           KK    PUMP    96" STORAGE RCP'S
 37           KM    L= 2400'
 38           RS       1    ELEV    1000       0
 39           SV       0    0.54    1.39    2.23    2.77
 40           SE    1000    1002    1004    1006    1008
 41           SQ     .01      .1      .2      .3      .4
 42           WP                            PUMP
 43           WP    1001      40  1000.0    PUMP
```

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

  44          WP  1001.5      40  1001.0    PUMP
  45          WP  1001.5      40  1001.0    PUMP
  46          WP  1002.5      40  1002.0    PUMP
  47          WP  1002.5      40    1002    PUMP
  48          KO       1       2
  49          ZZ
```

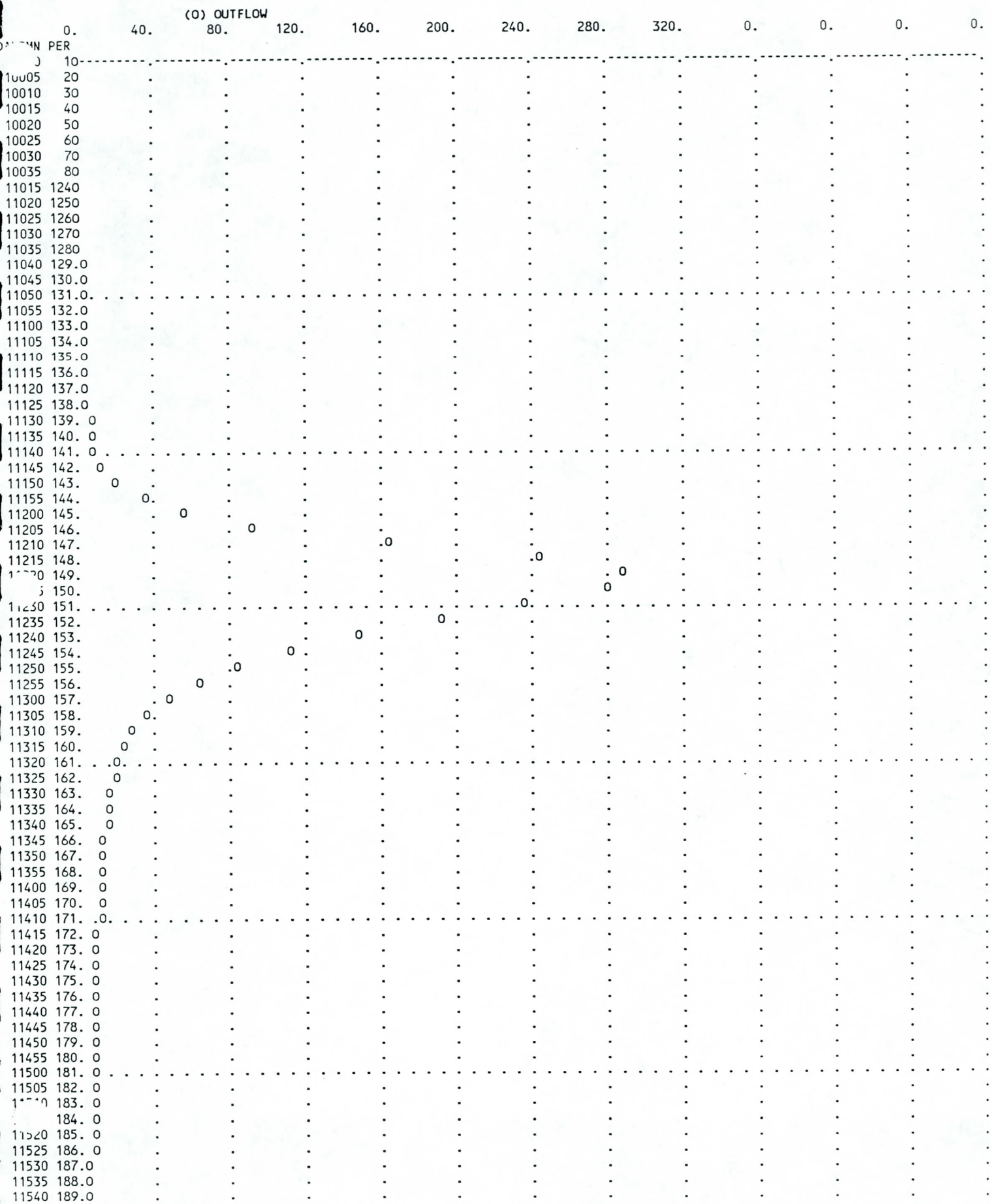
```
                 SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
LINE       (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

           (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  6         SUB10
                V
                V
 11         RTE10
                .
                .
 13             .        SUB11
                .           .
                .           .
 17         ADD11............
                V
                V
 19         RTE11
                .
                .
 21             .        SUB12
                .           .
                .           .
 25         ADD12............
                .
                .
 27             .        SUB13
                .           V
                .           V
 31             .        RTE13
                .           .
                .           .
 33         ADD13............
                V
                V
 36          PUMP
                .-------->    PUMP
             PUMP
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

6400 ERRORS IN STREAM SYSTEM

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

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                   6-HR        24-HR        72-HR      24.92-HR
 (CFS)       (HR)
                         (CFS)
  67.      12.33                    8.           2.           2.           2.
                        (INCHES)   2.093        2.207        2.207        2.207
                         (AC-FT)     4.           4.           4.           4.

                        CUMULATIVE AREA =     .04 SQ MI


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


            **************
            *            *
 33 KK      *    ADD13   *
            *            *
            **************

 34 KO          OUTPUT CONTROL VARIABLES
                      IPRNT          1  PRINT CONTROL
                      IPLOT          2  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE

 35 HC          HYDROGRAPH COMBINATION
                      ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

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

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                   6-HR        24-HR        72-HR      24.92-HR
 (CFS)       (HR)
                         (CFS)
 288.      12.33                   36.           9.           9.           9.
                        (INCHES)   2.101        2.217        2.217        2.217
                         (AC-FT)    18.          19.          19.          19.

                        CUMULATIVE AREA =     .16 SQ MI
```

STATION ADD13



```
11545 190.0     .     .     .     .     .     .     .     .     .     .     .
11550 191.0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
11555 192.0     .     .     .     .     .     .     .     .     .     .     .
11600 193.0     .     .     .     .     .     .     .     .     .     .     .
11605 194.0     .     .     .     .     .     .     .     .     .     .     .
[illegible]0 195.0     .     .     .     .     .     .     .     .     .     .     .
[illegible]5 196.0     .     .     .     .     .     .     .     .     .     .     .
11[illegible]20 197.0     .     .     .     .     .     .     .     .     .     .     .
11625 198.0     .     .     .     .     .     .     .     .     .     .     .
11630 199.0     .     .     .     .     .     .     .     .     .     .     .
11635 200.0     .     .     .     .     .     .     .     .     .     .     .
11640 201.0. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
11645 202.0     .     .     .     .     .     .     .     .     .     .     .
11650 203.0     .     .     .     .     .     .     .     .     .     .     .
*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
```

```
            **************
            *            *
36 KK       *    PUMP    *        96" STORAGE RCP'S
            *            *
            **************
                       L= 2400'

48 KO           OUTPUT CONTROL VARIABLES
                     IPRNT            1  PRINT CONTROL
                     IPLOT            2  PLOT CONTROL
                     QSCAL           0.  HYDROGRAPH PLOT SCALE

              HYDROGRAPH ROUTING DATA

38 RS           STORAGE ROUTING
                     NSTPS            1  NUMBER OF SUBREACHES
                      ITYP         ELEV  TYPE OF INITIAL CONDITION
                    RSVRIC      1000.00  INITIAL CONDITION
                         X          .00 WORKING R AND D COEFFICIENT

39 SV              STORAGE          .0         .5        1.4        2.2        2.8

[illegible] SE          ELEVATION     1000.00    1002.00    1004.00    1006.00    1008.00

41 SQ           DISCHARGE           0.         0.         0.         0.         0.

43 WP           PUMPING DATA

                    PUMP ON     PUMPING     PUMP OFF
                   ELEVATION     RATE      ELEVATION

                     1001.0       40.        1000.0
                     1001.5       40.        1001.0
                     1001.5       40.        1001.0
                     1002.5       40.        1002.0
                     1002.5       40.        1002.0

                      ISTAD         PUMP   PUMP FLOW HYDROGRAPH IDENTIFICATION
```

***

****

HYDROGRAPH AT STATION PUMP

****

DA MON	HRMN	ORD	PUMP Q	OUTFLOW	STORAGE	STAGE	*	DA MON	HRMN	ORD	PUMP Q	OUTFLOW	STORAGE	STAGE
1	0000	1	0.	0.	.0	1000.0	*	1	1230	151	200.	0.	2.6	1007.2
1	0005	2	0.	0.	.0	1000.0	*	1	1235	152	200.	0.	2.7	1007.6
1	0010	3	0.	0.	.0	1000.0	*	1	1240	153	200.	0.	2.4	1006.8
1	0015	4	0.	0.	.0	1000.0	*	1	1245	154	200.	0.	2.0	1005.4
1	0020	5	0.	0.	.0	1000.0	*	1	1250	155	200.	0.	1.3	1003.7
1	0025	6	0.	0.	.0	1000.0	*	1	1255	156	200.	0.	.4	1001.5
1	0030	7	0.	0.	.0	1000.0	*	1	1300	157	120.	0.	.0	1000.0
1	0035	8	0.	0.	.0	1000.0	*	1	1305	158	0.	0.	.0	1000.0
1	0040	9	0.	0.	.0	1000.0	*	1	1310	159	0.	0.	.2	1000.8
1	0045	10	0.	0.	.0	1000.0	*	1	1315	160	0.	0.	.4	1001.5
1	0050	11	0.	0.	.0	1000.0	*	1	1320	161	120.	0.	.0	1000.0
1	0055	12	0.	0.	.0	1000.0	*	1	1325	162	0.	0.	.0	1000.0
1	0100	13	0.	0.	.0	1000.0	*	1	1330	163	0.	0.	.1	1000.4
1	0105	14	0.	0.	.0	1000.0	*	1	1335	164	0.	0.	.2	1000.8

1	0110	15	0.	0.	.0	1000.0	*	1	1340	165	0.	0.	.3	1001.2
1	0115	16	0.	0.	.0	1000.0	*	1	1345	166	40.	0.	.1	1000.5
1	0120	17	0.	0.	.0	1000.0	*	1	1350	167	40.	0.	.0	1000.0
1	0125	18	0.	0.	.0	1000.0	*	1	1355	168	0.	0.	.0	1000.0
1	0130	19	0.	0.	.0	1000.0	*	1	1400	169	0.	0.	.1	1000.3
1	0135	20	0.	0.	.0	1000.0	*	1	1405	170	0.	0.	.2	1000.6
1	0140	21	0.	0.	.0	1000.0	*	1	1410	171	0.	0.	.2	1000.8
1	0145	22	0.	0.	.0	1000.0	*	1	1415	172	0.	0.	.3	1001.1
1	0150	23	0.	0.	.0	1000.0	*	1	1420	173	40.	0.	.1	1000.3
1	0155	24	0.	0.	.0	1000.0	*	1	1425	174	40.	0.	.0	1000.0
1	0200	25	0.	0.	.0	1000.0	*	1	1430	175	0.	0.	.0	1000.0
1	0205	26	0.	0.	.0	1000.0	*	1	1435	176	0.	0.	.1	1000.2
1	0210	27	0.	0.	.0	1000.0	*	1	1440	177	0.	0.	.1	1000.4
1	0215	28	0.	0.	.0	1000.0	*	1	1445	178	0.	0.	.2	1000.6
1	0220	29	0.	0.	.0	1000.0	*	1	1450	179	0.	0.	.2	1000.8
1	0225	30	0.	0.	.0	1000.0	*	1	1455	180	0.	0.	.3	1001.0
1	0230	31	0.	0.	.0	1000.0	*	1	1500	181	40.	0.	.1	1000.2
1	0235	32	0.	0.	.0	1000.0	*	1	1505	182	0.	0.	.0	1000.0
1	0240	33	0.	0.	.0	1000.0	*	1	1510	183	0.	0.	.0	1000.2
1	0245	34	0.	0.	.0	1000.0	*	1	1515	184	0.	0.	.1	1000.4
1	0250	35	0.	0.	.0	1000.0	*	1	1520	185	0.	0.	.1	1000.5
1	0255	36	0.	0.	.0	1000.0	*	1	1525	186	0.	0.	.2	1000.7
1	0300	37	0.	0.	.0	1000.0	*	1	1530	187	0.	0.	.2	1000.8
1	0305	38	0.	0.	.0	1000.0	*	1	1535	188	0.	0.	.3	1001.0
1	0310	39	0.	0.	.0	1000.0	*	1	1540	189	0.	0.	.3	1001.1
1	0315	40	0.	0.	.0	1000.0	*	1	1545	190	40.	0.	.1	1000.2
1	0320	41	0.	0.	.0	1000.0	*	1	1550	191	0.	0.	.0	1000.0
1	0325	42	0.	0.	.0	1000.0	*	1	1555	192	0.	0.	.0	1000.1
1	0330	43	0.	0.	.0	1000.0	*	1	1600	193	0.	0.	.1	1000.3
1	0335	44	0.	0.	.0	1000.0	*	1	1605	194	0.	0.	.1	1000.4
1	0340	45	0.	0.	.0	1000.0	*	1	1610	195	0.	0.	.1	1000.5
1	0345	46	0.	0.	.0	1000.0	*	1	1615	196	0.	0.	.2	1000.6
1	0350	47	0.	0.	.0	1000.0	*	1	1620	197	0.	0.	.2	1000.7
1	0355	48	0.	0.	.0	1000.0	*	1	1625	198	0.	0.	.2	1000.8
1	0400	49	0.	0.	.0	1000.0	*	1	1630	199	0.	0.	.3	1000.9
1	0405	50	0.	0.	.0	1000.0	*	1	1635	200	0.	0.	.3	1001.1
1	0410	51	0.	0.	.0	1000.0	*	1	1640	201	40.	0.	.0	1000.1
1	0415	52	0.	0.	.0	1000.0	*	1	1645	202	0.	0.	.0	1000.0
1	0420	53	0.	0.	.0	1000.0	*	1	1650	203	0.	0.	.0	1000.1
1	0425	54	0.	0.	.0	1000.0	*	1	1655	204	0.	0.	.1	1000.2
1	0430	55	0.	0.	.0	1000.0	*	1	1700	205	0.	0.	.1	1000.3
1	0435	56	0.	0.	.0	1000.0	*	1	1705	206	0.	0.	.1	1000.4
1	0440	57	0.	0.	.0	1000.0	*	1	1710	207	0.	0.	.1	1000.5
1	0445	58	0.	0.	.0	1000.0	*	1	1715	208	0.	0.	.2	1000.6
1	0450	59	0.	0.	.0	1000.0	*	1	1720	209	0.	0.	.2	1000.7
1	0455	60	0.	0.	.0	1000.0	*	1	1725	210	0.	0.	.2	1000.8
1	0500	61	0.	0.	.0	1000.0	*	1	1730	211	0.	0.	.2	1000.9
1	0505	62	0.	0.	.0	1000.0	*	1	1735	212	0.	0.	.3	1001.0
1	0510	63	0.	0.	.0	1000.0	*	1	1740	213	0.	0.	.3	1001.0
1	0515	64	0.	0.	.0	1000.0	*	1	1745	214	40.	0.	.0	1000.1
1	0520	65	0.	0.	.0	1000.0	*	1	1750	215	0.	0.	.0	1000.0
1	0525	66	0.	0.	.0	1000.0	*	1	1755	216	0.	0.	.0	1000.1
1	0530	67	0.	0.	.0	1000.0	*	1	1800	217	0.	0.	.0	1000.2
1	0535	68	0.	0.	.0	1000.0	*	1	1805	218	0.	0.	.1	1000.3
1	0540	69	0.	0.	.0	1000.0	*	1	1810	219	0.	0.	.1	1000.3
1	0545	70	0.	0.	.0	1000.0	*	1	1815	220	0.	0.	.1	1000.4
1	0550	71	0.	0.	.0	1000.0	*	1	1820	221	0.	0.	.1	1000.5
1	0555	72	0.	0.	.0	1000.0	*	1	1825	222	0.	0.	.1	1000.5
1	0600	73	0.	0.	.0	1000.0	*	1	1830	223	0.	0.	.2	1000.6
1	0605	74	0.	0.	.0	1000.0	*	1	1835	224	0.	0.	.2	1000.6
1	0610	75	0.	0.	.0	1000.0	*	1	1840	225	0.	0.	.2	1000.7
1	0615	76	0.	0.	.0	1000.0	*	1	1845	226	0.	0.	.2	1000.7
1	0620	77	0.	0.	.0	1000.0	*	1	1850	227	0.	0.	.2	1000.7
1	0625	78	0.	0.	.0	1000.0	*	1	1855	228	0.	0.	.2	1000.8
1	0630	79	0.	0.	.0	1000.0	*	1	1900	229	0.	0.	.2	1000.8
1	0635	80	0.	0.	.0	1000.0	*	1	1905	230	0.	0.	.2	1000.8
1	0640	81	0.	0.	.0	1000.0	*	1	1910	231	0.	0.	.2	1000.9
1	0645	82	0.	0.	.0	1000.0	*	1	1915	232	0.	0.	.2	1000.9
1	0650	83	0.	0.	.0	1000.0	*	1	1920	233	0.	0.	.2	1000.9
1	0655	84	0.	0.	.0	1000.0	*	1	1925	234	0.	0.	.3	1000.9
1	0700	85	0.	0.	.0	1000.0	*	1	1930	235	0.	0.	.3	1001.0
1	0705	86	0.	0.	.0	1000.0	*	1	1935	236	0.	0.	.3	1001.0
1	0710	87	0.	0.	.0	1000.0	*	1	1940	237	0.	0.	.3	1001.0
1	0715	88	0.	0.	.0	1000.0	*	1	1945	238	40.	0.	.0	1000.0
1	0720	89	0.	0.	.0	1000.0	*	1	1950	239	0.	0.	.0	1000.0
1	0725	90	0.	0.	.0	1000.0	*	1	1955	240	0.	0.	.0	1000.0
1	0730	91	0.	0.	.0	1000.0	*	1	2000	241	0.	0.	.0	1000.0
1	0735	92	0.	0.	.0	1000.0	*	1	2005	242	0.	0.	.0	1000.1
1	0740	93	0.	0.	.0	1000.0	*	1	2010	243	0.	0.	.0	1000.1
1	0745	94	0.	0.	.0	1000.0	*	1	2015	244	0.	0.	.0	1000.1

1	0750	95	0.	0.	.0	1000.0	*	1	2020	245	0.	0.	.0	1000.1
1	0755	96	0.	0.	.0	1000.0	*	1	2025	246	0.	0.	.0	1000.2
1	0800	97	0.	0.	.0	1000.0	*	1	2030	247	0.	0.	.0	1000.2
1	0805	98	0.	0.	.0	1000.0	*	1	2035	248	0.	0.	.1	1000.2
1	0810	99	0.	0.	.0	1000.0	*	1	2040	249	0.	0.	.1	1000.2
1	0815	100	0.	0.	.0	1000.0	*	1	2045	250	0.	0.	.1	1000.2
1	0820	101	0.	0.	.0	1000.0	*	1	2050	251	0.	0.	.1	1000.3
1	0825	102	0.	0.	.0	1000.0	*	1	2055	252	0.	0.	.1	1000.3
1	0830	103	0.	0.	.0	1000.0	*	1	2100	253	0.	0.	.1	1000.3
1	0835	104	0.	0.	.0	1000.0	*	1	2105	254	0.	0.	.1	1000.3
1	0840	105	0.	0.	.0	1000.0	*	1	2110	255	0.	0.	.1	1000.4
1	0845	106	0.	0.	.0	1000.0	*	1	2115	256	0.	0.	.1	1000.4
1	0850	107	0.	0.	.0	1000.0	*	1	2120	257	0.	0.	.1	1000.4
1	0855	108	0.	0.	.0	1000.0	*	1	2125	258	0.	0.	.1	1000.4
1	0900	109	0.	0.	.0	1000.0	*	1	2130	259	0.	0.	.1	1000.4
1	0905	110	0.	0.	.0	1000.0	*	1	2135	260	0.	0.	.1	1000.4
1	0910	111	0.	0.	.0	1000.0	*	1	2140	261	0.	0.	.1	1000.5
1	0915	112	0.	0.	.0	1000.0	*	1	2145	262	0.	0.	.1	1000.5
1	0920	113	0.	0.	.0	1000.0	*	1	2150	263	0.	0.	.1	1000.5
1	0925	114	0.	0.	.0	1000.0	*	1	2155	264	0.	0.	.1	1000.5
1	0930	115	0.	0.	.0	1000.0	*	1	2200	265	0.	0.	.1	1000.5
1	0935	116	0.	0.	.0	1000.0	*	1	2205	266	0.	0.	.2	1000.6
1	0940	117	0.	0.	.0	1000.0	*	1	2210	267	0.	0.	.2	1000.6
1	0945	118	0.	0.	.0	1000.0	*	1	2215	268	0.	0.	.2	1000.6
1	0950	119	0.	0.	.0	1000.0	*	1	2220	269	0.	0.	.2	1000.6
1	0955	120	0.	0.	.0	1000.0	*	1	2225	270	0.	0.	.2	1000.6
1	1000	121	0.	0.	.0	1000.0	*	1	2230	271	0.	0.	.2	1000.6
1	1005	122	0.	0.	.0	1000.1	*	1	2235	272	0.	0.	.2	1000.7
1	1010	123	0.	0.	.0	1000.1	*	1	2240	273	0.	0.	.2	1000.7
1	1015	124	0.	0.	.0	1000.1	*	1	2245	274	0.	0.	.2	1000.7
1	1020	125	0.	0.	.0	1000.1	*	1	2250	275	0.	0.	.2	1000.7
1	1025	126	0.	0.	.0	1000.2	*	1	2255	276	0.	0.	.2	1000.7
1	1030	127	0.	0.	.1	1000.2	*	1	2300	277	0.	0.	.2	1000.7
1	1035	128	0.	0.	.1	1000.3	*	1	2305	278	0.	0.	.2	1000.8
1	1040	129	0.	0.	.1	1000.3	*	1	2310	279	0.	0.	.2	1000.8
1	1045	130	0.	0.	.1	1000.4	*	1	2315	280	0.	0.	.2	1000.8
1	1050	131	0.	0.	.1	1000.4	*	1	2320	281	0.	0.	.2	1000.8
1	1055	132	0.	0.	.1	1000.5	*	1	2325	282	0.	0.	.2	1000.8
1	1100	133	0.	0.	.2	1000.6	*	1	2330	283	0.	0.	.2	1000.8
1	1105	134	0.	0.	.2	1000.6	*	1	2335	284	0.	0.	.2	1000.9
1	1110	135	0.	0.	.2	1000.7	*	1	2340	285	0.	0.	.2	1000.9
1	1115	136	0.	0.	.2	1000.9	*	1	2345	286	0.	0.	.2	1000.9
1	1120	137	0.	0.	.3	1001.0	*	1	2350	287	0.	0.	.2	1000.9
1	1125	138	0.	0.	.3	1001.1	*	1	2355	288	0.	0.	.2	1000.9
1	1130	139	40.	0.	.1	1000.2	*	2	0000	289	0.	0.	.3	1000.9
1	1135	140	0.	0.	.0	1000.0	*	2	0005	290	0.	0.	.3	1000.9
1	1140	141	0.	0.	.1	1000.2	*	2	0010	291	0.	0.	.3	1001.0
1	1145	142	0.	0.	.1	1000.5	*	2	0015	292	0.	0.	.3	1001.0
1	1150	143	0.	0.	.3	1001.0	*	2	0020	293	0.	0.	.3	1001.0
1	1155	144	0.	0.	.5	1001.7	*	2	0025	294	0.	0.	.3	1001.0
1	1200	145	120.	0.	.0	1000.0	*	2	0030	295	0.	0.	.3	1001.0
1	1205	146	0.	0.	.5	1001.9	*	2	0035	296	40.	0.	.0	1000.0
1	1210	147	120.	0.	.6	1002.1	*	2	0040	297	0.	0.	.0	1000.0
1	1215	148	120.	0.	1.1	1003.4	*	2	0045	298	0.	0.	.0	1000.0
1	1220	149	200.	0.	1.6	1004.5	*	2	0050	299	0.	0.	.0	1000.0
1	1225	150	200.	0.	2.2	1005.8	*	2	0055	300	0.	0.	.0	1000.0
							*							

****

PEAK OUTFLOW IS 0. AT TIME 12.58 HOURS

***** PUMP FLOW HYDROGRAPH *****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
		(CFS)				
200.	12.33		35.	9.	9.	9.
		(INCHES)	2.053	2.151	2.151	2.151
		(AC-FT)	17.	18.	18.	18.

***** OUTFLOW HYDROGRAPH *****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
		(CFS)				
0.	12.58		0.	0.	0.	0.

	(INCHES)	.004	.007	.007	.007
	(AC-FT)	0.	0.	0.	0.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
(AC-FT)	(HR)				
3.	12.58	0.	0.	0.	0.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
(FEET)	(HR)				
1007.59	12.58	1001.14	1000.47	1000.46	1000.46

CUMULATIVE AREA = .16 SQ MI

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	SUB10	100.	12.25	12.	3.	3.	.05		
ROUTED TO	RTE10	100.	12.33	12.	3.	3.	.05		
HYDROGRAPH AT	SUB11	53.	12.25	6.	2.	2.	.03		
2 COMBINED AT	ADD11	153.	12.33	18.	5.	5.	.08		
ROUTED TO	RTE11	149.	12.42	18.	5.	5.	.08		
HYDROGRAPH AT	SUB12	81.	12.25	10.	3.	2.	.04		
2 COMBINED AT	ADD12	221.	12.33	28.	7.	7.	.12		
HYDROGRAPH AT	SUB13	67.	12.25	8.	2.	2.	.04		
ROUTED TO	RTE13	67.	12.33	8.	2.	2.	.04		
2 COMBINED AT	ADD13	288.	12.33	36.	9.	9.	.16		
PUMP FLOW TO	PUMP	200.	12.33	35.	9.	9.	.16		
HYDROGRAPH AT	PUMP	0.	12.58	0.	0.	0.	.16	1007.59	12.58

EC2 S/N: 39001226 HMVersion: 5.00 Data File: a:warner.dat

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*****************************************
*                                       *
*    _OOD HYDROGRAPH PACKAGE  (HEC-1)   *
*          FEBRUARY 1981                *
*         REVISED 02 AUG 88             *
*                                       *
* RUN DATE  02/26/1990  TIME  15:00:08  *
*                                       *
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****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*                                      *
*                                      *
****************************************
```

WARNER PUMP STATION

PUMP Q=200 CFS

ONSITE

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

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:::::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::::
:::                                       :::
:::   FULL MICRO-COMPUTER IMPLEMENTATION  :::
:::                                       :::
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============================
H A E S T A D   M E T H O D S
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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

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

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

  1           ID        PRICE ROAD ROW HYDROLOGY
  2           ID        ONSITE DRAINAGE/STORAGE ANALYSIS  50 YEAR 24 HOUR STORM
  3           ID        DRAINAGE AREA - CHANDLER TO WARNER
  4           IT       5                    300
  5           IO       2
              *DIAGRAM

  6           KK  SUB15A
  7           PH       1       0     .61     1.2     2.1     2.3    2.44    2.70    2.95    3.05
  8           BA   .0245
  9           LS            94.0
 10           UD    .180

 11           KK  RTE15A  42-INCH
 12           RK    1577  .00602    .012            CIRC     3.5

 13           KK  SUB15B
 14           BA   .0445
 15           LS            94.0
 16           UD    .200

 17           KK  ADD15B
 18           HC       2

 19           KK  RTE15B  72-INCH
 20           RK    5473  .00137    .012            CIRC       6

 21           KK   SUB14
 22           BA   .0648
 23           LS            94.0
 24           UD    .167

 25           KK   ADD14
 26           HC       2
 27           KO       1       2

 28           KK    PUMP    96" STORAGE RCP'S
 29           KM    L=1600'
 30           RS       1    ELEV    1000       0
 31           SV       0    0.36    0.92    1.48    1.85
 32           SE    1000    1002    1004    1006    1008
 33           SQ     .01      .1      .2      .3      .4
 34           WP                            PUMP
 35           WP    1001      40    1000    PUMP
 36           WP  1001.5      40    1001    PUMP
 37           WP  1001.5      40    1001    PUMP
 38           WP  1002.5      40    1002    PUMP
 39           WP  1002.5      40    1002    PUMP
 40           ZZ
```

STATION ADD14

(O) OUTFLOW

DATE MN	PER	0.	40.	80.	120.	160.	200.	240.	280.	0.	0.	0.	0.	0.
0	10													
10005	20													
10010	30													
10015	40													
10020	50													
11000	1210													
11005	1220													
11010	1230													
11015	1240													
11020	125.0													
11025	126.0													
11030	127.0													
11035	128.0													
11040	129.0													
11045	130.0													
11050	131.0													
11055	132.0													
11100	133.0													
11105	134.0													
11110	135.0													
11115	136.0													
11120	137. 0													
11125	138. 0													
11130	139. 0													
11135	140. 0													
11140	141. 0													
11145	142. 0													
11150	143. 0													
11155	144. 0													
11200	145. 0													
11205	146. 0													
11210	147. 0													
11215	148. 0													
11220	149. 0													
[illegible]	150. 0													
11230	151. 0													
11235	152. 0													
11240	153. 0													
11245	154. 0													
11250	155. 0													
11255	156. 0													
11300	157. 0													
11305	158. 0													
11310	159. 0													
11315	160. 0													
11320	161. 0													
11325	162. 0													
11330	163. 0													
11335	164. 0													
11340	165. 0													
11345	166. 0													
11350	167. 0													
11355	168. 0													
11400	169. 0													
11405	170. 0													
11410	171. 0													
11415	172. 0													
11420	173. 0													
11425	174. 0													
11430	175. 0													
11435	176. 0													
11440	177. 0													
11445	178. 0													
11450	179. 0													
11455	180. 0													
11500	181. 0													
11505	182. 0													
[illegible]	183.0													
[illegible]	184.0													
11520	185.0													
11525	186.0													
11530	187.0													
11535	188.0													
11540	189.0													

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11545 190.0
11550 191.0
11555 192.0
11600 193.0
11605 194.0
11610 195.0
11615 196.0
11620 197.0
11625 198.0
11630 199.0
11635 200.0
11640 201.0
11645 202.0
11650 203.0
11655 204.0
*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
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                **************
                *            *
 28 KK          *    PUMP    *        96" STORAGE RCP'S
                *            *
                **************
                          L=1600'

            HYDROGRAPH ROUTING DATA

 30 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       ELEV  TYPE OF INITIAL CONDITION
                    RSVRIC    1000.00  INITIAL CONDITION
                         X        .00 WORKING R AND D COEFFICIENT

 31 SV            STORAGE        .0       .4       .9      1.5      1.9

 32 SE          ELEVATION    1000.00  1002.00  1004.00  1006.00  1008.00

 33 SQ          DISCHARGE        0.       0.       0.       0.       0.

 -- WP           PUMPING DATA

                  PUMP ON    PUMPING    PUMP OFF
                 ELEVATION    RATE     ELEVATION

                   1001.0      40.      1000.0
                   1001.5      40.      1001.0
                   1001.5      40.      1001.0
                   1002.5      40.      1002.0
                   1002.5      40.      1002.0

                    ISTAD       PUMP  PUMP FLOW HYDROGRAPH IDENTIFICATION
                                                          ***
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HYDROGRAPH AT STATION PUMP

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DA	MON	HRMN	ORD	PUMP Q	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	PUMP Q	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.	.0	1000.0	1		1230	151	200.	0.	1.7	1007.3
1		0005	2	0.	0.	.0	1000.0	1		1235	152	200.	0.	1.5	1006.3
1		0010	3	0.	0.	.0	1000.0	1		1240	153	200.	0.	1.1	1004.6
1		0015	4	0.	0.	.0	1000.0	1		1245	154	200.	0.	.4	1002.1
1		0020	5	0.	0.	.0	1000.0	1		1250	155	200.	0.	.0	1000.0
1		0025	6	0.	0.	.0	1000.0	1		1255	156	0.	0.	.0	1000.0
1		0030	7	0.	0.	.0	1000.0	1		1300	157	0.	0.	.3	1001.6
1		0035	8	0.	0.	.0	1000.0	1		1305	158	120.	0.	.0	1000.0
1		0040	9	0.	0.	.0	1000.0	1		1310	159	0.	0.	.0	1000.0
1		0045	10	0.	0.	.0	1000.0	1		1315	160	0.	0.	.1	1000.8
1		0050	11	0.	0.	.0	1000.0	1		1320	161	0.	0.	.3	1001.5
1		0055	12	0.	0.	.0	1000.0	1		1325	162	40.	0.	.1	1000.6
1		0100	13	0.	0.	.0	1000.0	1		1330	163	40.	0.	.0	1000.0
1		0105	14	0.	0.	.0	1000.0	1		1335	164	0.	0.	.0	1000.0
1		0110	15	0.	0.	.0	1000.0	1		1340	165	0.	0.	.1	1000.5
1		0115	16	0.	0.	.0	1000.0	1		1345	166	0.	0.	.2	1000.9
1		0120	17	0.	0.	.0	1000.0	1		1350	167	0.	0.	.2	1001.3
1		0125	18	0.	0.	.0	1000.0	1		1355	168	40.	0.	.0	1000.2

1	0130	19	0.	0.	.0	1000.0	*
1	0135	20	0.	0.	.0	1000.0	*
1	0140	21	0.	0.	.0	1000.0	*
1	0145	22	0.	0.	.0	1000.0	*
1	0150	23	0.	0.	.0	1000.0	*
1	0155	24	0.	0.	.0	1000.0	*
1	0200	25	0.	0.	.0	1000.0	*
1	0205	26	0.	0.	.0	1000.0	*
1	0210	27	0.	0.	.0	1000.0	*
1	0215	28	0.	0.	.0	1000.0	*
1	0220	29	0.	0.	.0	1000.0	*
1	0225	30	0.	0.	.0	1000.0	*
1	0230	31	0.	0.	.0	1000.0	*
1	0235	32	0.	0.	.0	1000.0	*
1	0240	33	0.	0.	.0	1000.0	*
1	0245	34	0.	0.	.0	1000.0	*
1	0250	35	0.	0.	.0	1000.0	*
1	0255	36	0.	0.	.0	1000.0	*
1	0300	37	0.	0.	.0	1000.0	*
1	0305	38	0.	0.	.0	1000.0	*
1	0310	39	0.	0.	.0	1000.0	*
1	0315	40	0.	0.	.0	1000.0	*
1	0320	41	0.	0.	.0	1000.0	*
1	0325	42	0.	0.	.0	1000.0	*
1	0330	43	0.	0.	.0	1000.0	*
1	0335	44	0.	0.	.0	1000.0	*
1	0340	45	0.	0.	.0	1000.0	*
1	0345	46	0.	0.	.0	1000.0	*
1	0350	47	0.	0.	.0	1000.0	*
1	0355	48	0.	0.	.0	1000.0	*
1	0400	49	0.	0.	.0	1000.0	*
1	0405	50	0.	0.	.0	1000.0	*
1	0410	51	0.	0.	.0	1000.0	*
1	0415	52	0.	0.	.0	1000.0	*
1	0420	53	0.	0.	.0	1000.0	*
1	0425	54	0.	0.	.0	1000.0	*
1	0430	55	0.	0.	.0	1000.0	*
1	0435	56	0.	0.	.0	1000.0	*
1	0440	57	0.	0.	.0	1000.0	*
1	0445	58	0.	0.	.0	1000.0	*
1	0450	59	0.	0.	.0	1000.0	*
1	0455	60	0.	0.	.0	1000.0	*
1	0500	61	0.	0.	.0	1000.0	*
1	0505	62	0.	0.	.0	1000.0	*
1	0510	63	0.	0.	.0	1000.0	*
1	0515	64	0.	0.	.0	1000.0	*
1	0520	65	0.	0.	.0	1000.0	*
1	0525	66	0.	0.	.0	1000.0	*
1	0530	67	0.	0.	.0	1000.0	*
1	0535	68	0.	0.	.0	1000.0	*
1	0540	69	0.	0.	.0	1000.0	*
1	0545	70	0.	0.	.0	1000.0	*
1	0550	71	0.	0.	.0	1000.0	*
1	0555	72	0.	0.	.0	1000.0	*
1	0600	73	0.	0.	.0	1000.0	*
1	0605	74	0.	0.	.0	1000.0	*
1	0610	75	0.	0.	.0	1000.0	*
1	0615	76	0.	0.	.0	1000.0	*
1	0620	77	0.	0.	.0	1000.0	*
1	0625	78	0.	0.	.0	1000.0	*
1	0630	79	0.	0.	.0	1000.0	*
1	0635	80	0.	0.	.0	1000.0	*
1	0640	81	0.	0.	.0	1000.0	*
1	0645	82	0.	0.	.0	1000.0	*
1	0650	83	0.	0.	.0	1000.0	*
1	0655	84	0.	0.	.0	1000.0	*
1	0700	85	0.	0.	.0	1000.0	*
1	0705	86	0.	0.	.0	1000.0	*
1	0710	87	0.	0.	.0	1000.0	*
1	0715	88	0.	0.	.0	1000.0	*
1	0720	89	0.	0.	.0	1000.0	*
1	0725	90	0.	0.	.0	1000.0	*
1	0730	91	0.	0.	.0	1000.0	*
1	0735	92	0.	0.	.0	1000.0	*
1	0740	93	0.	0.	.0	1000.0	*
1	0745	94	0.	0.	.0	1000.0	*
1	0750	95	0.	0.	.0	1000.0	*
1	0755	96	0.	0.	.0	1000.0	*
1	0800	97	0.	0.	.0	1000.0	*
1	0805	98	0.	0.	.0	1000.0	*
1	1400	169	0.	0.	.0	1000.0	
1	1405	170	0.	0.	.1	1000.4	
1	1410	171	0.	0.	.1	1000.7	
1	1415	172	0.	0.	.2	1001.0	
1	1420	173	40.	0.	.0	1000.0	
1	1425	174	0.	0.	.0	1000.0	
1	1430	175	0.	0.	.1	1000.3	
1	1435	176	0.	0.	.1	1000.6	
1	1440	177	0.	0.	.2	1000.9	
1	1445	178	0.	0.	.2	1001.1	
1	1450	179	40.	0.	.0	1000.0	
1	1455	180	0.	0.	.0	1000.0	
1	1500	181	0.	0.	.0	1000.2	
1	1505	182	0.	0.	.1	1000.5	
1	1510	183	0.	0.	.1	1000.7	
1	1515	184	0.	0.	.2	1000.9	
1	1520	185	0.	0.	.2	1001.1	
1	1525	186	40.	0.	.0	1000.0	
1	1530	187	0.	0.	.0	1000.0	
1	1535	188	0.	0.	.0	1000.2	
1	1540	189	0.	0.	.1	1000.4	
1	1545	190	0.	0.	.1	1000.5	
1	1550	191	0.	0.	.1	1000.7	
1	1555	192	0.	0.	.2	1000.9	
1	1600	193	0.	0.	.2	1001.0	
1	1605	194	40.	0.	.0	1000.0	
1	1610	195	0.	0.	.0	1000.0	
1	1615	196	0.	0.	.0	1000.2	
1	1620	197	0.	0.	.1	1000.3	
1	1625	198	0.	0.	.1	1000.4	
1	1630	199	0.	0.	.1	1000.6	
1	1635	200	0.	0.	.1	1000.7	
1	1640	201	0.	0.	.2	1000.9	
1	1645	202	0.	0.	.2	1001.0	
1	1650	203	0.	0.	.2	1001.1	
1	1655	204	40.	0.	.0	1000.0	
1	1700	205	0.	0.	.0	1000.0	
1	1705	206	0.	0.	.0	1000.1	
1	1710	207	0.	0.	.0	1000.3	
1	1715	208	0.	0.	.1	1000.4	
1	1720	209	0.	0.	.1	1000.5	
1	1725	210	0.	0.	.1	1000.6	
1	1730	211	0.	0.	.1	1000.7	
1	1735	212	0.	0.	.2	1000.8	
1	1740	213	0.	0.	.2	1001.0	
1	1745	214	0.	0.	.2	1001.1	
1	1750	215	40.	0.	.0	1000.0	
1	1755	216	0.	0.	.0	1000.0	
1	1800	217	0.	0.	.0	1000.1	
1	1805	218	0.	0.	.0	1000.2	
1	1810	219	0.	0.	.1	1000.3	
1	1815	220	0.	0.	.1	1000.4	
1	1820	221	0.	0.	.1	1000.5	
1	1825	222	0.	0.	.1	1000.6	
1	1830	223	0.	0.	.1	1000.6	
1	1835	224	0.	0.	.1	1000.7	
1	1840	225	0.	0.	.1	1000.7	
1	1845	226	0.	0.	.1	1000.8	
1	1850	227	0.	0.	.2	1000.8	
1	1855	228	0.	0.	.2	1000.9	
1	1900	229	0.	0.	.2	1000.9	
1	1905	230	0.	0.	.2	1000.9	
1	1910	231	0.	0.	.2	1001.0	
1	1915	232	0.	0.	.2	1001.0	
1	1920	233	40.	0.	.0	1000.0	
1	1925	234	0.	0.	.0	1000.0	
1	1930	235	0.	0.	.0	1000.0	
1	1935	236	0.	0.	.0	1000.1	
1	1940	237	0.	0.	.0	1000.1	
1	1945	238	0.	0.	.0	1000.1	
1	1950	239	0.	0.	.0	1000.2	
1	1955	240	0.	0.	.0	1000.2	
1	2000	241	0.	0.	.0	1000.2	
1	2005	242	0.	0.	.0	1000.2	
1	2010	243	0.	0.	.1	1000.3	
1	2015	244	0.	0.	.1	1000.3	
1	2020	245	0.	0.	.1	1000.3	
1	2025	246	0.	0.	.1	1000.4	
1	2030	247	0.	0.	.1	1000.4	
1	2035	248	0.	0.	.1	1000.4	

1	0810	99	0.	0.	.0	1000.0	*	1	2040	249	0.	0.	.1	1000.4
1	0815	100	0.	0.	.0	1000.0	*	1	2045	250	0.	0.	.1	1000.5
1	0820	101	0.	0.	.0	1000.0	*	1	2050	251	0.	0.	.1	1000.5
1	0825	102	0.	0.	.0	1000.0	*	1	2055	252	0.	0.	.1	1000.5
1	0830	103	0.	0.	.0	1000.0	*	1	2100	253	0.	0.	.1	1000.6
1	0835	104	0.	0.	.0	1000.0	*	1	2105	254	0.	0.	.1	1000.6
1	0840	105	0.	0.	.0	1000.0	*	1	2110	255	0.	0.	.1	1000.6
1	0845	106	0.	0.	.0	1000.0	*	1	2115	256	0.	0.	.1	1000.6
1	0850	107	0.	0.	.0	1000.0	*	1	2120	257	0.	0.	.1	1000.7
1	0855	108	0.	0.	.0	1000.0	*	1	2125	258	0.	0.	.1	1000.7
1	0900	109	0.	0.	.0	1000.0	*	1	2130	259	0.	0.	.1	1000.7
1	0905	110	0.	0.	.0	1000.0	*	1	2135	260	0.	0.	.1	1000.7
1	0910	111	0.	0.	.0	1000.1	*	1	2140	261	0.	0.	.1	1000.8
1	0915	112	0.	0.	.0	1000.1	*	1	2145	262	0.	0.	.1	1000.8
1	0920	113	0.	0.	.0	1000.1	*	1	2150	263	0.	0.	.1	1000.8
1	0925	114	0.	0.	.0	1000.1	*	1	2155	264	0.	0.	.1	1000.8
1	0930	115	0.	0.	.0	1000.1	*	1	2200	265	0.	0.	.2	1000.8
1	0935	116	0.	0.	.0	1000.2	*	1	2205	266	0.	0.	.2	1000.9
1	0940	117	0.	0.	.0	1000.2	*	1	2210	267	0.	0.	.2	1000.9
1	0945	118	0.	0.	.0	1000.2	*	1	2215	268	0.	0.	.2	1000.9
1	0950	119	0.	0.	.0	1000.3	*	1	2220	269	0.	0.	.2	1000.9
1	0955	120	0.	0.	.1	1000.3	*	1	2225	270	0.	0.	.2	1001.0
1	1000	121	0.	0.	.1	1000.4	*	1	2230	271	0.	0.	.2	1001.0
1	1005	122	0.	0.	.1	1000.4	*	1	2235	272	0.	0.	.2	1001.0
1	1010	123	0.	0.	.1	1000.5	*	1	2240	273	0.	0.	.2	1001.0
1	1015	124	0.	0.	.1	1000.6	*	1	2245	274	40.	0.	.0	1000.0
1	1020	125	0.	0.	.1	1000.6	*	1	2250	275	0.	0.	.0	1000.0
1	1025	126	0.	0.	.1	1000.7	*	1	2255	276	0.	0.	.0	1000.0
1	1030	127	0.	0.	.1	1000.8	*	1	2300	277	0.	0.	.0	1000.0
1	1035	128	0.	0.	.2	1000.9	*	1	2305	278	0.	0.	.0	1000.1
1	1040	129	0.	0.	.2	1001.0	*	1	2310	279	0.	0.	.0	1000.1
1	1045	130	40.	0.	.0	1000.0	*	1	2315	280	0.	0.	.0	1000.1
1	1050	131	0.	0.	.0	1000.0	*	1	2320	281	0.	0.	.0	1000.1
1	1055	132	0.	0.	.0	1000.1	*	1	2325	282	0.	0.	.0	1000.2
1	1100	133	0.	0.	.1	1000.3	*	1	2330	283	0.	0.	.0	1000.2
1	1105	134	0.	0.	.1	1000.5	*	1	2335	284	0.	0.	.0	1000.2
1	1110	135	0.	0.	.1	1000.7	*	1	2340	285	0.	0.	.0	1000.2
1	1115	136	0.	0.	.2	1000.9	*	1	2345	286	0.	0.	.0	1000.2
1	1120	137	0.	0.	.2	1001.1	*	1	2350	287	0.	0.	.0	1000.3
1	1125	138	40.	0.	.0	1000.0	*	1	2355	288	0.	0.	.0	1000.3
1	1130	139	0.	0.	.0	1000.0	*	2	0000	289	0.	0.	.1	1000.3
1	1135	140	0.	0.	.1	1000.3	*	2	0005	290	0.	0.	.1	1000.3
1	1140	141	0.	0.	.1	1000.8	*	2	0010	291	0.	0.	.1	1000.3
1	1145	142	0.	0.	.3	1001.5	*	2	0015	292	0.	0.	.1	1000.3
1	1150	143	40.	0.	.2	1000.9	*	2	0020	293	0.	0.	.1	1000.4
1	1155	144	40.	0.	.1	1000.7	*	2	0025	294	0.	0.	.1	1000.4
1	1200	145	40.	0.	.2	1001.3	*	2	0030	295	0.	0.	.1	1000.4
1	1205	146	40.	0.	.6	1003.0	*	2	0035	296	0.	0.	.1	1000.4
1	1210	147	200.	0.	.3	1001.9	*	2	0040	297	0.	0.	.1	1000.4
1	1215	148	120.	0.	1.0	1004.2	*	2	0045	298	0.	0.	.1	1000.4
1	1220	149	200.	0.	1.3	1005.3	*	2	0050	299	0.	0.	.1	1000.4
1	1225	150	200.	0.	1.6	1006.7	*	2	0055	300	0.	0.	.1	1000.4
							*							

****

PEAK OUTFLOW IS 0. AT TIME 12.50 HOURS

**** PUMP FLOW HYDROGRAPH *****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
200.	12.17	(CFS)	33.	9.	8.	8.
		(INCHES)	2.278	2.432	2.432	2.432
		(AC-FT)	16.	17.	17.	17.

***** OUTFLOW HYDROGRAPH *****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
0.	12.50	(CFS)	0.	0.	0.	0.
		(INCHES)	.004	.007	.007	.007
		(AC-FT)	0.	0.	0.	0.

PEAK STORAGE TIME MAXIMUM AVERAGE STORAGE

		6-HR	24-HR	72-HR	24.92-HR
(AC-FT)	(HR)				
2.	12.50	0.	0.	0.	0.

		MAXIMUM AVERAGE STAGE			
AK STAGE	TIME	6-HR	24-HR	72-HR	24.92-HR
ET)	(HR)				
007.26	12.50	1001.04	1000.44	1000.42	1000.42

CUMULATIVE AREA = .13 SQ MI

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	SUB15A	56.	12.25	6.	2.	2.	.02		
ROUTED TO	RTE15A	55.	12.25	6.	2.	2.	.02		
HYDROGRAPH AT	SUB15B	98.	12.25	11.	3.	3.	.04		
2 COMBINED AT	ADD15B	153.	12.25	17.	4.	4.	.07		
ROUTED TO	RTE15B	150.	12.42	17.	4.	4.	.07		
HYDROGRAPH AT	SUB14	150.	12.25	16.	4.	4.	.06		
2 COMBINED AT	ADD14	256.	12.33	32.	9.	8.	.13		
PUMP FLOW TO	PUMP	200.	12.17	33.	9.	8.	.13		
HYDROGRAPH AT	PUMP	0.	12.50	0.	0.	0.	.13	1007.26	12.50

HEC2 S/N: 39001226 HMVersion: 5.00 Data File: A:TI3.DAT

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*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            FEBRUARY 1981              *
*          REVISED 02 AUG 88            *
*                                       *
*  RUN DATE  03/19/1990  TIME  13:33:04 *
*                                       *
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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*  THE HYDROLOGIC ENGINEERING CENTER    *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*                                       *
*                                       *
*****************************************
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PRICE/SANTAN INTX PUMP Q=200 CFS

ONSITE

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
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:::::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::::
:::                                       :::
:::   FULL MICRO-COMPUTER IMPLEMENTATION  :::
:::                                       :::
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H A E S T A D   M E T H O D S
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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

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

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

  1           ID        PRICE ROAD ROW HYDROLOGY
  2           ID        ONSITE DRAINAGE/STORAGE ANALYSIS  50 YEAR 24 HOUR STORM
  3           ID        DRAINAGE AREA - CONTRIBUTION TO PRICE/SANTAN INTX PUMP STATION
  4           IT       5                    300
  5           IO       2
              *DIAGRAM

  6           KK  SUBFR1
  7           PH       1       0     .61     1.2     2.1     2.3    2.44    2.70    2.95    3.05
  8           BA   .0251
  9           LS              94
 10           UD    .110

 11           KK  RTEFR1  36-INCH
 12           RK     658  .01750    .012            CIRC       3

 13           KK  SUBFR2
 14           BA   .0320
 15           LS              94
 16           UD    .110

 17           KK  ADDFR2
 18           HC       2

 19           KK  RTEFR2  72-INCH
 20           RK    2242  .00100    .012            CIRC       6

 21           KK  SUBTI2
 22           BA   .0084
 23           LS              90
 24           UD    .110

 25           KK  ADDTI2
 26           HC       2

 27           KK  SUBTI4
 28           BA   .0089
 29           LS              94
 30           UD    .110

 31           KK  RTETI4  30-INCH
 32           RK    1000  .00910    .012            CIRC     2.5

 33           KK  SUBTI5
 34           BA   .0142
 35           LS              94
 36           UD    .110

 37           KK  ADDTI5
 38           HC       2
```

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

  39          KK  RTETI5  36-INCH
  40          RK    1000   .0091    .012            CIRC       3

  41          KK  SUBTI6 (INCLUDES TI8)
  42          BA   .0192
  43          LS              92
  44          UD    .110

  45          KK  ADDTI6
  46          HC       2

  47          KK  RTETI6  48-INCH
  48          RK     756   .0058    .012            CIRC       4

  49          KK  SUBTI3 (INCLUDES TI1)
  50          BA   .0255
  51          LS              93
  52          UD    .110

  53          KK  RTETI3
  54          RK    1144   .0040    .012            CIRC     3.5

  55          KK  ADDTI3
  56          HC       2

  57          KK  SUBTI7
  58          BA   .0293
  59          LS              94
  60          UD    .110

  61          KK  ADDTI7
  62          HC       2

  63          KK  ADDALL
  64          HC       2
  65          KO       1       2

  66          KK    PUMP  2-96" STORAGE RCP'S
  67          KM    L=4400'
  68          RS       1    ELEV    1000       0
  69          SV       0    0.99    2.54    4.08    5.08
  70          SE    1000    1002    1004    1006    1008
  71          SQ     .01      .1      .2      .3      .4
  72          WP                            PUMP
  73          WP    1001      40    1000    PUMP
  74          WP  1001.5      40    1001    PUMP
  75          WP  1001.5      40    1001    PUMP
  76          WP  1002.5      40    1002    PUMP
  77          WP  1002.5      40    1002    PUMP
  78          KO       1       2
  79          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

          (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  6       SUBFR1
               V
               V
 11       RTEFR1
               .
               .
 13            .      SUBFR2
               .           .
               .           .
 17       ADDFR2............
               V
               V
 19       RTEFR2
               .
               .
 21            .      SUBTI2
               .           .
               .           .
 25       ADDTI2............
               .
               .
 27            .      SUBTI4
               .           V
               .           V
 31            .      RTETI4
               .           .
               .           .
 33            .           .      SUBTI5
               .           .           .
               .           .           .
 37            .      ADDTI5............
               .           V
               .           V
               .      RTETI5
               .           .
               .           .
 41            .           .      SUBTI6
               .           .           .
               .           .           .
 45            .      ADDTI6............
               .           V
               .           V
 47            .      RTETI6
               .           .
               .           .
 49            .           .      SUBTI3
               .           .           V
               .           .           V
 53            .           .      RTETI3
               .           .           .
               .           .           .
 55            .      ADDTI3............
               .           .
               .           .
 57            .           .      SUBTI7
               .           .           .
               .           .           .
 61            .      ADDTI7............
               .           .
               .           .
 63       ADDALL............
               V
               V
 66         PUMP
 72            .-------->    PUMP
 66         PUMP
```

(* RUNOFF ALSO COMPUTED AT THIS LOCATION

6400 ERRORS IN STREAM SYSTEM

1	0450	59	0.	*	1	1105	134	4.	*	1	1720	209	2.	*	1	2335	284	0.
1	0455	60	0.	*	1	1110	135	4.	*	1	1725	210	2.	*	1	2340	285	0.
1	0500	61	0.	*	1	1115	136	4.	*	1	1730	211	2.	*	1	2345	286	0.
1	0505	62	0.	*	1	1120	137	5.	*	1	1735	212	2.	*	1	2350	287	0.
1	0510	63	0.	*	1	1125	138	6.	*	1	1740	213	2.	*	1	2355	288	0.
	0515	64	0.	*	1	1130	139	6.	*	1	1745	214	2.	*	2	0000	289	0.
	0520	65	0.	*	1	1135	140	10.	*	1	1750	215	2.	*	2	0005	290	0.
1	0525	66	0.	*	1	1140	141	19.	*	1	1755	216	2.	*	2	0010	291	0.
1	0530	67	0.	*	1	1145	142	28.	*	1	1800	217	2.	*	2	0015	292	0.
1	0535	68	0.	*	1	1150	143	40.	*	1	1805	218	2.	*	2	0020	293	0.
1	0540	69	0.	*	1	1155	144	59.	*	1	1810	219	1.	*	2	0025	294	0.
1	0545	70	0.	*	1	1200	145	101.	*	1	1815	220	1.	*	2	0030	295	0.
1	0550	71	0.	*	1	1205	146	195.	*	1	1820	221	1.	*	2	0035	296	0.
1	0555	72	0.	*	1	1210	147	256.	*	1	1825	222	1.	*	2	0040	297	0.
1	0600	73	0.	*	1	1215	148	213.	*	1	1830	223	1.	*	2	0045	298	0.
1	0605	74	0.	*	1	1220	149	150.	*	1	1835	224	1.	*	2	0050	299	0.
1	0610	75	0.	*	1	1225	150	103.	*	1	1840	225	1.	*	2	0055	300	0.

****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
256.	12.17	(CFS)	23.	6.	6.	6.
		(INCHES)	2.208	2.338	2.338	2.338
		(AC-FT)	11.	12.	12.	12.

CUMULATIVE AREA = .10 SQ MI

*** ***

```
          **************
          *            *
63 KK     *   ADDALL   *
          *            *
          **************
```

KO OUTPUT CONTROL VARIABLES

IPRNT	1	PRINT CONTROL
IPLOT	2	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

64 HC HYDROGRAPH COMBINATION

ICOMP	2	NUMBER OF HYDROGRAPHS TO COMBINE

***

****

HYDROGRAPH AT STATION ADDALL
SUM OF 2 HYDROGRAPHS

****

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0615	76	0.	1		1230	151	137.	1		1845	226	1.
1		0005	2	0.	1		0620	77	0.	1		1235	152	100.	1		1850	227	1.
1		0010	3	0.	1		0625	78	0.	1		1240	153	68.	1		1855	228	1.
1		0015	4	0.	1		0630	79	0.	1		1245	154	45.	1		1900	229	1.
1		0020	5	0.	1		0635	80	0.	1		1250	155	31.	1		1905	230	1.
1		0025	6	0.	1		0640	81	0.	1		1255	156	24.	1		1910	231	1.
1		0030	7	0.	1		0645	82	0.	1		1300	157	21.	1		1915	232	1.
1		0035	8	0.	1		0650	83	0.	1		1305	158	18.	1		1920	233	1.
1		0040	9	0.	1		0655	84	0.	1		1310	159	17.	1		1925	234	1.
1		0045	10	0.	1		0700	85	0.	1		1315	160	16.	1		1930	235	1.
1		0050	11	0.	1		0705	86	0.	1		1320	161	15.	1		1935	236	1.
1		0055	12	0.	1		0710	87	0.	1		1325	162	15.	1		1940	237	1.
1		0100	13	0.	1		0715	88	0.	1		1330	163	14.	1		1945	238	1.
1		0105	14	0.	1		0720	89	0.	1		1335	164	13.	1		1950	239	1.
		0110	15	0.	1		0725	90	0.	1		1340	165	12.	1		1955	240	1.
		0115	16	0.	1		0730	91	0.	1		1345	166	12.	1		2000	241	1.
1		0120	17	0.	1		0735	92	0.	1		1350	167	11.	1		2005	242	1.
1		0125	18	0.	1		0740	93	0.	1		1355	168	11.	1		2010	243	1.
1		0130	19	0.	1		0745	94	0.	1		1400	169	10.	1		2015	244	1.
1		0135	20	0.	1		0750	95	0.	1		1405	170	10.	1		2020	245	1.
1		0140	21	0.	1		0755	96	0.	1		1410	171	10.	1		2025	246	1.

1	0145	22	0.	*	1	0800	97	0.	*	1	1415	172	9.	*	1	2030	247	1.
1	0150	23	0.	*	1	0805	98	0.	*	1	1420	173	9.	*	1	2035	248	1.
1	0155	24	0.	*	1	0810	99	0.	*	1	1425	174	9.	*	1	2040	249	1.
1	0200	25	0.	*	1	0815	100	0.	*	1	1430	175	8.	*	1	2045	250	1.
1	0205	26	0.	*	1	0820	101	0.	*	1	1435	176	8.	*	1	2050	251	1.
	0210	27	0.	*	1	0825	102	0.	*	1	1440	177	8.	*	1	2055	252	1.
	0215	28	0.	*	1	0830	103	0.	*	1	1445	178	8.	*	1	2100	253	1.
1	0220	29	0.	*	1	0835	104	0.	*	1	1450	179	7.	*	1	2105	254	1.
1	0225	30	0.	*	1	0840	105	0.	*	1	1455	180	7.	*	1	2110	255	1.
1	0230	31	0.	*	1	0845	106	0.	*	1	1500	181	7.	*	1	2115	256	1.
1	0235	32	0.	*	1	0850	107	0.	*	1	1505	182	7.	*	1	2120	257	1.
1	0240	33	0.	*	1	0855	108	0.	*	1	1510	183	6.	*	1	2125	258	1.
1	0245	34	0.	*	1	0900	109	0.	*	1	1515	184	6.	*	1	2130	259	1.
1	0250	35	0.	*	1	0905	110	0.	*	1	1520	185	6.	*	1	2135	260	1.
1	0255	36	0.	*	1	0910	111	1.	*	1	1525	186	6.	*	1	2140	261	1.
1	0300	37	0.	*	1	0915	112	1.	*	1	1530	187	5.	*	1	2145	262	1.
1	0305	38	0.	*	1	0920	113	1.	*	1	1535	188	5.	*	1	2150	263	1.
1	0310	39	0.	*	1	0925	114	1.	*	1	1540	189	5.	*	1	2155	264	1.
1	0315	40	0.	*	1	0930	115	1.	*	1	1545	190	5.	*	1	2200	265	1.
1	0320	41	0.	*	1	0935	116	1.	*	1	1550	191	5.	*	1	2205	266	1.
1	0325	42	0.	*	1	0940	117	1.	*	1	1555	192	5.	*	1	2210	267	1.
1	0330	43	0.	*	1	0945	118	1.	*	1	1600	193	5.	*	1	2215	268	1.
1	0335	44	0.	*	1	0950	119	2.	*	1	1605	194	5.	*	1	2220	269	1.
1	0340	45	0.	*	1	0955	120	2.	*	1	1610	195	5.	*	1	2225	270	1.
1	0345	46	0.	*	1	1000	121	2.	*	1	1615	196	5.	*	1	2230	271	1.
1	0350	47	0.	*	1	1005	122	2.	*	1	1620	197	4.	*	1	2235	272	1.
1	0355	48	0.	*	1	1010	123	2.	*	1	1625	198	4.	*	1	2240	273	1.
1	0400	49	0.	*	1	1015	124	3.	*	1	1630	199	4.	*	1	2245	274	1.
1	0405	50	0.	*	1	1020	125	3.	*	1	1635	200	4.	*	1	2250	275	1.
1	0410	51	0.	*	1	1025	126	3.	*	1	1640	201	4.	*	1	2255	276	1.
1	0415	52	0.	*	1	1030	127	3.	*	1	1645	202	4.	*	1	2300	277	1.
1	0420	53	0.	*	1	1035	128	4.	*	1	1650	203	4.	*	1	2305	278	1.
1	0425	54	0.	*	1	1040	129	4.	*	1	1655	204	4.	*	1	2310	279	1.
1	0430	55	0.	*	1	1045	130	4.	*	1	1700	205	4.	*	1	2315	280	1.
1	0435	56	0.	*	1	1050	131	5.	*	1	1705	206	4.	*	1	2320	281	1.
1	0440	57	0.	*	1	1055	132	5.	*	1	1710	207	4.	*	1	2325	282	1.
1	0445	58	0.	*	1	1100	133	6.	*	1	1715	208	4.	*	1	2330	283	1.
1	0450	59	0.	*	1	1105	134	6.	*	1	1720	209	4.	*	1	2335	284	1.
1	0455	60	0.	*	1	1110	135	7.	*	1	1725	210	4.	*	1	2340	285	1.
	0500	61	0.	*	1	1115	136	7.	*	1	1730	211	4.	*	1	2345	286	1.
	0505	62	0.	*	1	1120	137	8.	*	1	1735	212	4.	*	1	2350	287	1.
1	0510	63	0.	*	1	1125	138	9.	*	1	1740	213	3.	*	1	2355	288	1.
1	0515	64	0.	*	1	1130	139	10.	*	1	1745	214	3.	*	2	0000	289	1.
1	0520	65	0.	*	1	1135	140	15.	*	1	1750	215	3.	*	2	0005	290	1.
1	0525	66	0.	*	1	1140	141	26.	*	1	1755	216	3.	*	2	0010	291	0.
1	0530	67	0.	*	1	1145	142	42.	*	1	1800	217	3.	*	2	0015	292	0.
1	0535	68	0.	*	1	1150	143	61.	*	1	1805	218	3.	*	2	0020	293	0.
1	0540	69	0.	*	1	1155	144	90.	*	1	1810	219	3.	*	2	0025	294	0.
1	0545	70	0.	*	1	1200	145	150.	*	1	1815	220	2.	*	2	0030	295	0.
1	0550	71	0.	*	1	1205	146	288.	*	1	1820	221	2.	*	2	0035	296	0.
1	0555	72	0.	*	1	1210	147	411.	*	1	1825	222	1.	*	2	0040	297	0.
1	0600	73	0.	*	1	1215	148	376.	*	1	1830	223	1.	*	2	0045	298	0.
1	0605	74	0.	*	1	1220	149	274.	*	1	1835	224	1.	*	2	0050	299	0.
1	0610	75	0.	*	1	1225	150	189.	*	1	1840	225	1.	*	2	0055	300	0.
				*					*					*				

****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
411.	12.17	(CFS)	39.	10.	10.	10.
		(INCHES)	2.210	2.341	2.341	2.341
		(AC-FT)	19.	20.	20.	20.

CUMULATIVE AREA = .16 SQ MI

STATION ADDALL

(O) OUTFLOW

DAHRMN	PER	0.	40.	80.	120.	160.	200.	240.	280.	320.	360.	400.	440.	0.
[illegible]	10													
[illegible]	20													
10010	30													
10015	40													
10020	50													
10025	60													
10030	70													
10035	80													
10040	90													
10045	100													
10050	110													
10055	120													
10100	130													
10105	140													
10110	150													
10115	160													
10120	170													
10125	180													
10130	190													
10135	200													
10140	210													
10145	220													
10150	230													
10155	240													
10200	250													
10205	260													
10210	270													
10215	280													
10220	290													
10225	300													
10230	310													
10235	320													
10240	330													
10245	340													
[illegible]	350													
[illegible]	360													
10300	370													
10305	380													
10310	390													
10315	400													
10320	410													
10325	420													
10330	430													
10335	440													
10340	450													
10345	460													
10350	470													
10355	480													
10400	490													
10405	500													
10410	510													
10415	520													
10420	530													
10425	540													
10430	550													
10435	560													
10440	570													
10445	580													
10450	590													
10455	600													
10500	610													
10505	620													
10510	630													
10515	640													
10520	650													
10525	660													
10530	670													
10535	680													
[illegible]	690													
[illegible]	700													
10550	710													
10555	720													
10600	730													
10605	740													
10610	750													

```
10615  760
10620  770
10625  780
10630  790
10635  800
    0  810
    5  820
10650  830
10655  840
10700  850
10705  860
10710  870
10715  880
10720  890
10725  900
10730  910
10735  920
10740  930
10745  940
10750  950
10755  960
10800  970
10805  980
10810  990
10815 1000
10820 1010
10825 1020
10830 1030
10835 1040
10840 1050
10845 1060
10850 1070
10855 1080
10900 1090
10905 1100
10910 1110
10915 1120
10920 1130
10925 1140
    70 1150
     5 1160
10940 1170
10945 1180
10950 1190
10955 1200
11000 1210
11005 122.0
11010 123.0
11015 124.0
11020 125.0
11025 126.0
11030 127.0
11035 128.0
11040 129.0
11045 130.0
11050 131.0
11055 132.0
11100 133.0
11105 134. 0
11110 135. 0
11115 136. 0
11120 137. 0
11125 138. 0
11130 139.  0
11135 140.   0
11140 141. . . .0
11145 142.        0
11150 143.         0
11155 144.           0
11200 145.             0
11205 146.               0
11210 147.                 0
11215 148.                   0
    0 149.                     0
    5 150.                       0
11230 151.                         0
11235 152.           0
11240 153.         0
11245 154.        0
11250 155.      0
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          **************
          *            *
66 KK     *     PUMP   *       2-96" STORAGE RCP'S
          *            *
          **************
                         L=4400'

78 KO          OUTPUT CONTROL VARIABLES
                    IPRNT           1  PRINT CONTROL
                    IPLOT           2  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

            HYDROGRAPH ROUTING DATA

68 RS          STORAGE ROUTING
                    NSTPS           1  NUMBER OF SUBREACHES
                     ITYP        ELEV  TYPE OF INITIAL CONDITION
                   RSVRIC     1000.00  INITIAL CONDITION
                        X         .00 WORKING R AND D COEFFICIENT

69 SV            STORAGE          .0       1.0       2.5       4.1       5.1

70 SE          ELEVATION     1000.00   1002.00   1004.00   1006.00   1008.00

71 SQ          DISCHARGE          0.        0.        0.        0.        0.

73 WP          PUMPING DATA

                 PUMP ON    PUMPING    PUMP OFF
                ELEVATION     RATE    ELEVATION

                 1001.0       40.      1000.0
                 1001.5       40.      1001.0
                 1001.5       40.      1001.0
                 1002.5       40.      1002.0
                 1002.5       40.      1002.0

                  ISTAD        PUMP  PUMP FLOW HYDROGRAPH IDENTIFICATION
                                                    ***
```

****

HYDROGRAPH AT STATION PUMP

****

DA	MON	HRMN	ORD	PUMP Q	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	PUMP Q	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.	.0	1000.0	*	1		1230	151	200.	0.	4.8	1007.5
1		0005	2	0.	0.	.0	1000.0	*	1		1235	152	200.	0.	4.3	1006.4
1		0010	3	0.	0.	.0	1000.0	*	1		1240	153	200.	0.	3.5	1005.2
1		0015	4	0.	0.	.0	1000.0	*	1		1245	154	200.	0.	2.5	1003.9
1		0020	5	0.	0.	.0	1000.0	*	1		1250	155	200.	0.	1.3	1002.5
1		0025	6	0.	0.	.0	1000.0	*	1		1255	156	200.	0.	.2	1000.3
1		0030	7	0.	0.	.0	1000.0	*	1		1300	157	0.	0.	.0	1000.0
1		0035	8	0.	0.	.0	1000.0	*	1		1305	158	0.	0.	.1	1000.3
1		0040	9	0.	0.	.0	1000.0	*	1		1310	159	0.	0.	.3	1000.5
1		0045	10	0.	0.	.0	1000.0	*	1		1315	160	0.	0.	.4	1000.7
1		0050	11	0.	0.	.0	1000.0	*	1		1320	161	0.	0.	.5	1001.0
1		0055	12	0.	0.	.0	1000.0	*	1		1325	162	0.	0.	.6	1001.2
1		0100	13	0.	0.	.0	1000.0	*	1		1330	163	40.	0.	.4	1000.8
1		0105	14	0.	0.	.0	1000.0	*	1		1335	164	40.	0.	.2	1000.4
1		0110	15	0.	0.	.0	1000.0	*	1		1340	165	40.	0.	.0	1000.1
1		0115	16	0.	0.	.0	1000.0	*	1		1345	166	0.	0.	.0	1000.0
1		0120	17	0.	0.	.0	1000.0	*	1		1350	167	0.	0.	.1	1000.2
1		0125	18	0.	0.	.0	1000.0	*	1		1355	168	0.	0.	.2	1000.3
1		0130	19	0.	0.	.0	1000.0	*	1		1400	169	0.	0.	.2	1000.5
1		0135	20	0.	0.	.0	1000.0	*	1		1405	170	0.	0.	.3	1000.6
1		0140	21	0.	0.	.0	1000.0	*	1		1410	171	0.	0.	.4	1000.7
1		0145	22	0.	0.	.0	1000.0	*	1		1415	172	0.	0.	.4	1000.9
1		0150	23	0.	0.	.0	1000.0	*	1		1420	173	0.	0.	.5	1001.0
1		0155	24	0.	0.	.0	1000.0	*	1		1425	174	0.	0.	.6	1001.1

1	0200	25	0.	0.	.0	1000.0	*	1	1430	175	40.	0.	.3	1000.7
1	0205	26	0.	0.	.0	1000.0	*	1	1435	176	40.	0.	.1	1000.2
1	0210	27	0.	0.	.0	1000.0	*	1	1440	177	40.	0.	.0	1000.0
1	0215	28	0.	0.	.0	1000.0	*	1	1445	178	0.	0.	.0	1000.0
1	0220	29	0.	0.	.0	1000.0	*	1	1450	179	0.	0.	.1	1000.1
1	0225	30	0.	0.	.0	1000.0	*	1	1455	180	0.	0.	.1	1000.2
1	0230	31	0.	0.	.0	1000.0	*	1	1500	181	0.	0.	.2	1000.3
1	0235	32	0.	0.	.0	1000.0	*	1	1505	182	0.	0.	.2	1000.4
1	0240	33	0.	0.	.0	1000.0	*	1	1510	183	0.	0.	.2	1000.5
1	0245	34	0.	0.	.0	1000.0	*	1	1515	184	0.	0.	.3	1000.6
1	0250	35	0.	0.	.0	1000.0	*	1	1520	185	0.	0.	.3	1000.7
1	0255	36	0.	0.	.0	1000.0	*	1	1525	186	0.	0.	.4	1000.7
1	0300	37	0.	0.	.0	1000.0	*	1	1530	187	0.	0.	.4	1000.8
1	0305	38	0.	0.	.0	1000.0	*	1	1535	188	0.	0.	.4	1000.9
1	0310	39	0.	0.	.0	1000.0	*	1	1540	189	0.	0.	.5	1001.0
1	0315	40	0.	0.	.0	1000.0	*	1	1545	190	0.	0.	.5	1001.0
1	0320	41	0.	0.	.0	1000.0	*	1	1550	191	40.	0.	.3	1000.5
1	0325	42	0.	0.	.0	1000.0	*	1	1555	192	40.	0.	.0	1000.1
1	0330	43	0.	0.	.0	1000.0	*	1	1600	193	0.	0.	.0	1000.0
1	0335	44	0.	0.	.0	1000.0	*	1	1605	194	0.	0.	.0	1000.1
1	0340	45	0.	0.	.0	1000.0	*	1	1610	195	0.	0.	.1	1000.1
1	0345	46	0.	0.	.0	1000.0	*	1	1615	196	0.	0.	.1	1000.2
1	0350	47	0.	0.	.0	1000.0	*	1	1620	197	0.	0.	.1	1000.3
1	0355	48	0.	0.	.0	1000.0	*	1	1625	198	0.	0.	.2	1000.3
1	0400	49	0.	0.	.0	1000.0	*	1	1630	199	0.	0.	.2	1000.4
1	0405	50	0.	0.	.0	1000.0	*	1	1635	200	0.	0.	.2	1000.4
1	0410	51	0.	0.	.0	1000.0	*	1	1640	201	0.	0.	.2	1000.5
1	0415	52	0.	0.	.0	1000.0	*	1	1645	202	0.	0.	.3	1000.5
1	0420	53	0.	0.	.0	1000.0	*	1	1650	203	0.	0.	.3	1000.6
1	0425	54	0.	0.	.0	1000.0	*	1	1655	204	0.	0.	.3	1000.7
1	0430	55	0.	0.	.0	1000.0	*	1	1700	205	0.	0.	.4	1000.7
1	0435	56	0.	0.	.0	1000.0	*	1	1705	206	0.	0.	.4	1000.8
1	0440	57	0.	0.	.0	1000.0	*	1	1710	207	0.	0.	.4	1000.8
1	0445	58	0.	0.	.0	1000.0	*	1	1715	208	0.	0.	.4	1000.9
1	0450	59	0.	0.	.0	1000.0	*	1	1720	209	0.	0.	.5	1000.9
1	0455	60	0.	0.	.0	1000.0	*	1	1725	210	0.	0.	.5	1001.0
1	0500	61	0.	0.	.0	1000.0	*	1	1730	211	0.	0.	.5	1001.0
1	0505	62	0.	0.	.0	1000.0	*	1	1735	212	40.	0.	.3	1000.5
1	0510	63	0.	0.	.0	1000.0	*	1	1740	213	40.	0.	.0	1000.0
1	0515	64	0.	0.	.0	1000.0	*	1	1745	214	0.	0.	.0	1000.0
1	0520	65	0.	0.	.0	1000.0	*	1	1750	215	0.	0.	.0	1000.0
1	0525	66	0.	0.	.0	1000.0	*	1	1755	216	0.	0.	.0	1000.1
1	0530	67	0.	0.	.0	1000.0	*	1	1800	217	0.	0.	.1	1000.1
1	0535	68	0.	0.	.0	1000.0	*	1	1805	218	0.	0.	.1	1000.2
1	0540	69	0.	0.	.0	1000.0	*	1	1810	219	0.	0.	.1	1000.2
1	0545	70	0.	0.	.0	1000.0	*	1	1815	220	0.	0.	.1	1000.3
1	0550	71	0.	0.	.0	1000.0	*	1	1820	221	0.	0.	.1	1000.3
1	0555	72	0.	0.	.0	1000.0	*	1	1825	222	0.	0.	.1	1000.3
1	0600	73	0.	0.	.0	1000.0	*	1	1830	223	0.	0.	.2	1000.3
1	0605	74	0.	0.	.0	1000.0	*	1	1835	224	0.	0.	.2	1000.3
1	0610	75	0.	0.	.0	1000.0	*	1	1840	225	0.	0.	.2	1000.4
1	0615	76	0.	0.	.0	1000.0	*	1	1845	226	0.	0.	.2	1000.4
1	0620	77	0.	0.	.0	1000.0	*	1	1850	227	0.	0.	.2	1000.4
1	0625	78	0.	0.	.0	1000.0	*	1	1855	228	0.	0.	.2	1000.4
1	0630	79	0.	0.	.0	1000.0	*	1	1900	229	0.	0.	.2	1000.4
1	0635	80	0.	0.	.0	1000.0	*	1	1905	230	0.	0.	.2	1000.4
1	0640	81	0.	0.	.0	1000.0	*	1	1910	231	0.	0.	.2	1000.4
1	0645	82	0.	0.	.0	1000.0	*	1	1915	232	0.	0.	.2	1000.5
1	0650	83	0.	0.	.0	1000.0	*	1	1920	233	0.	0.	.2	1000.5
1	0655	84	0.	0.	.0	1000.0	*	1	1925	234	0.	0.	.2	1000.5
1	0700	85	0.	0.	.0	1000.0	*	1	1930	235	0.	0.	.2	1000.5
1	0705	86	0.	0.	.0	1000.0	*	1	1935	236	0.	0.	.3	1000.5
1	0710	87	0.	0.	.0	1000.0	*	1	1940	237	0.	0.	.3	1000.5
1	0715	88	0.	0.	.0	1000.0	*	1	1945	238	0.	0.	.3	1000.5
1	0720	89	0.	0.	.0	1000.0	*	1	1950	239	0.	0.	.3	1000.5
1	0725	90	0.	0.	.0	1000.0	*	1	1955	240	0.	0.	.3	1000.6
1	0730	91	0.	0.	.0	1000.0	*	1	2000	241	0.	0.	.3	1000.6
1	0735	92	0.	0.	.0	1000.0	*	1	2005	242	0.	0.	.3	1000.6
1	0740	93	0.	0.	.0	1000.0	*	1	2010	243	0.	0.	.3	1000.6
1	0745	94	0.	0.	.0	1000.0	*	1	2015	244	0.	0.	.3	1000.6
1	0750	95	0.	0.	.0	1000.0	*	1	2020	245	0.	0.	.3	1000.6
1	0755	96	0.	0.	.0	1000.0	*	1	2025	246	0.	0.	.3	1000.6
1	0800	97	0.	0.	.0	1000.0	*	1	2030	247	0.	0.	.3	1000.6
1	0805	98	0.	0.	.0	1000.0	*	1	2035	248	0.	0.	.3	1000.7
1	0810	99	0.	0.	.0	1000.0	*	1	2040	249	0.	0.	.3	1000.7
1	0815	100	0.	0.	.0	1000.0	*	1	2045	250	0.	0.	.3	1000.7
1	0820	101	0.	0.	.0	1000.0	*	1	2050	251	0.	0.	.3	1000.7
1	0825	102	0.	0.	.0	1000.0	*	1	2055	252	0.	0.	.3	1000.7
1	0830	103	0.	0.	.0	1000.0	*	1	2100	253	0.	0.	.4	1000.7
1	0835	104	0.	0.	.0	1000.0	*	1	2105	254	0.	0.	.4	1000.7

1	0840	105	0.	0.	.0	1000.0	*	1	2110	255	0.	0.	.4	1000.7
1	0845	106	0.	0.	.0	1000.0	*	1	2115	256	0.	0.	.4	1000.7
1	0850	107	0.	0.	.0	1000.0	*	1	2120	257	0.	0.	.4	1000.8
1	0855	108	0.	0.	.0	1000.0	*	1	2125	258	0.	0.	.4	1000.8
1	0900	109	0.	0.	.0	1000.0	*	1	2130	259	0.	0.	.4	1000.8
1	0905	110	0.	0.	.0	1000.0	*	1	2135	260	0.	0.	.4	1000.8
1	0910	111	0.	0.	.0	1000.0	*	1	2140	261	0.	0.	.4	1000.8
1	0915	112	0.	0.	.0	1000.0	*	1	2145	262	0.	0.	.4	1000.8
1	0920	113	0.	0.	.0	1000.0	*	1	2150	263	0.	0.	.4	1000.8
1	0925	114	0.	0.	.0	1000.1	*	1	2155	264	0.	0.	.4	1000.8
1	0930	115	0.	0.	.0	1000.1	*	1	2200	265	0.	0.	.4	1000.8
1	0935	116	0.	0.	.0	1000.1	*	1	2205	266	0.	0.	.4	1000.8
1	0940	117	0.	0.	.0	1000.1	*	1	2210	267	0.	0.	.4	1000.9
1	0945	118	0.	0.	.1	1000.1	*	1	2215	268	0.	0.	.4	1000.9
1	0950	119	0.	0.	.1	1000.1	*	1	2220	269	0.	0.	.4	1000.9
1	0955	120	0.	0.	.1	1000.2	*	1	2225	270	0.	0.	.4	1000.9
1	1000	121	0.	0.	.1	1000.2	*	1	2230	271	0.	0.	.4	1000.9
1	1005	122	0.	0.	.1	1000.2	*	1	2235	272	0.	0.	.4	1000.9
1	1010	123	0.	0.	.1	1000.2	*	1	2240	273	0.	0.	.5	1000.9
1	1015	124	0.	0.	.1	1000.3	*	1	2245	274	0.	0.	.5	1000.9
1	1020	125	0.	0.	.2	1000.3	*	1	2250	275	0.	0.	.5	1000.9
1	1025	126	0.	0.	.2	1000.4	*	1	2255	276	0.	0.	.5	1000.9
1	1030	127	0.	0.	.2	1000.4	*	1	2300	277	0.	0.	.5	1000.9
1	1035	128	0.	0.	.2	1000.4	*	1	2305	278	0.	0.	.5	1001.0
1	1040	129	0.	0.	.2	1000.5	*	1	2310	279	0.	0.	.5	1001.0
1	1045	130	0.	0.	.3	1000.6	*	1	2315	280	0.	0.	.5	1001.0
1	1050	131	0.	0.	.3	1000.6	*	1	2320	281	0.	0.	.5	1001.0
1	1055	132	0.	0.	.3	1000.7	*	1	2325	282	0.	0.	.5	1001.0
1	1100	133	0.	0.	.4	1000.8	*	1	2330	283	0.	0.	.5	1001.0
1	1105	134	0.	0.	.4	1000.8	*	1	2335	284	40.	0.	.2	1000.5
1	1110	135	0.	0.	.5	1000.9	*	1	2340	285	40.	0.	.0	1000.0
1	1115	136	0.	0.	.5	1001.0	*	1	2345	286	0.	0.	.0	1000.0
1	1120	137	40.	0.	.3	1000.6	*	1	2350	287	0.	0.	.0	1000.0
1	1125	138	40.	0.	.1	1000.1	*	1	2355	288	0.	0.	.0	1000.0
1	1130	139	40.	0.	.0	1000.0	*	2	0000	289	0.	0.	.0	1000.0
1	1135	140	0.	0.	.0	1000.0	*	2	0005	290	0.	0.	.0	1000.0
1	1140	141	0.	0.	.1	1000.3	*	2	0010	291	0.	0.	.0	1000.0
1	1145	142	0.	0.	.4	1000.8	*	2	0015	292	0.	0.	.0	1000.0
1	1150	143	0.	0.	.7	1001.5	*	2	0020	293	0.	0.	.0	1000.1
1	1155	144	40.	0.	1.0	1002.0	*	2	0025	294	0.	0.	.0	1000.1
1	1200	145	120.	0.	1.0	1002.0	*	2	0030	295	0.	0.	.0	1000.1
1	1205	146	120.	0.	1.6	1002.8	*	2	0035	296	0.	0.	.0	1000.1
1	1210	147	200.	0.	2.7	1004.2	*	2	0040	297	0.	0.	.0	1000.1
1	1215	148	200.	0.	4.0	1005.9	*	2	0045	298	0.	0.	.0	1000.1
1	1220	149	200.	0.	4.9	1007.6	*	2	0050	299	0.	0.	.0	1000.1
1	1225	150	200.	0.	5.1	1008.0	*	2	0055	300	0.	0.	.0	1000.1
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PEAK OUTFLOW IS 0. AT TIME 12.42 HOURS

***** PUMP FLOW HYDROGRAPH *****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
200.	12.17	(CFS)	38.	10.	10.	10.
		(INCHES)	2.160	2.287	2.287	2.287
		(AC-FT)	19.	20.	20.	20.

***** OUTFLOW HYDROGRAPH *****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
0.	12.42	(CFS)	0.	0.	0.	0.
		(INCHES)	.004	.007	.007	.007
		(AC-FT)	0.	0.	0.	0.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	24.92-HR
5.	12.42	1.	0.	0.	0.

STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	24.92-HR
1008.00	12.42	1001.25	1000.50	1000.49	1000.49

CUMULATIVE AREA = .16 SQ MI

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	SUBFR1	70.	12.17	6.	2.	2.	.03		
ROUTED TO	RTEFR1	69.	12.17	6.	2.	2.	.03		
HYDROGRAPH AT	SUBFR2	89.	12.17	8.	2.	2.	.03		
2 COMBINED AT	ADDFR2	158.	12.17	14.	4.	4.	.06		
ROUTED TO	RTEFR2	148.	12.25	14.	4.	4.	.06		
HYDROGRAPH AT	SUBTI2	20.	12.17	2.	0.	0.	.01		
2 COMBINED AT	ADDTI2	164.	12.25	16.	4.	4.	.07		
HYDROGRAPH AT	SUBTI4	25.	12.17	2.	1.	1.	.01		
ROUTED TO	RTETI4	24.	12.17	2.	1.	1.	.01		
HYDROGRAPH AT	SUBTI5	40.	12.17	3.	1.	1.	.01		
2 COMBINED AT	ADDTI5	63.	12.17	6.	1.	1.	.02		
ROUTED TO	RTETI5	61.	12.17	6.	1.	1.	.02		
HYDROGRAPH AT	SUBTI6	50.	12.17	4.	1.	1.	.02		
2 COMBINED AT	ADDTI6	112.	12.17	10.	3.	3.	.04		
ROUTED TO	RTETI6	108.	12.17	10.	3.	3.	.04		
HYDROGRAPH AT	SUBTI3	69.	12.17	6.	2.	2.	.03		
ROUTED TO	RTETI3	66.	12.17	6.	2.	2.	.03		
2 COMBINED AT	ADDTI3	174.	12.17	16.	4.	4.	.07		
HYDROGRAPH AT	SUBTI7	82.	12.17	7.	2.	2.	.03		
2 COMBINED AT	ADDTI7	256.	12.17	23.	6.	6.	.10		
2 COMBINED AT	ADDALL	411.	12.17	39.	10.	10.	.16		
PUMP FLOW TO	PUMP	200.	12.17	38.	10.	10.	.16		
HYDROGRAPH AT	PUMP	0.	12.42	0.	0.	0.	.16	1008.00	12.42

HEC2 S/N: 39001226 HMVersion: 5.00 Data File: A:MCCLIN4.DAT

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                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             FEBRUARY 1981             *
*           REVISED 02 AUG 88           *
*                                       *
*  RUN DATE  03/08/1990  TIME  08:33:10 *
*                                       *
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*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*                                      *
*                                      *
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MCCLINTOCK PUMP STATION
PUMP Q=200 CFS
ONSITE

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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
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::::::::::::::::::::::::::::::::::::::::::::
:::                                      :::
:::   FULL MICRO-COMPUTER IMPLEMENTATION  :::
:::                                      :::
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H A E S T A D   M E T H O D S
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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

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

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

  1           ID        PRICE ROAD ROW HYDROLOGY
  2           ID        ONSITE DRAINAGE/STORAGE ANALYSIS  50 YEAR 24 HOUR STORM
  3           ID        DRAINAGE AREA - CONTRIBUTION TO MCCLINTOCK RD. PUMP STATION
  4           IT       5                    300
  5           IO       2
              *DIAGRAM

  6           KK   SUBS6
  7           PH       1       0     .61     1.2     2.1     2.3    2.44    2.70    2.95    3.05
  8           BA   .0204
  9           LS             94
 10           UD    .115

 11           KK   RTES6  36-INCH
 12           RK    1400  .00400    .012            CIRC       3

 13           KK   SUBS7
 14           BA   .0205
 15           LS             94
 16           UD    .115

 17           KK   ADDS7
 18           HC       2

 19           KK   RTES7  54-INCH
 20           RK     700  .00400    .012            CIRC     4.5

 21           KK  SUBS10
 22           BA   .0240
 23           LS             94
 24           UD    .115

 25           KK  RTES10
 26           RK    1300    .004    .012            CIRC     3.5

 27           KK  SUBS89
 28           BA   .0452
 29           LS             94
 30           UD    .115

 31           KK  ADDS89
 32           HC       2

 33           KK  RTES89
 34           RK     600  .00400    .012            CIRC       6

 35           KK  ADDS10
 36           HC       2
 37           KO       1       2
```

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

  38          KK    PUMP  2-96" STORAGE RCP'S
  39          KM    L=1200'
  40          RS       1    ELEV    1000       0
  41          SV       0    0.27    0.69    1.11    1.39
  42          SE    1000    1002    1004    1006    1008
  43          SQ     .01      .1      .2      .3      .4
  44          WP                            PUMP
  45          WP    1001      40    1000    PUMP
  46          WP  1001.5      40    1001    PUMP
  47          WP  1001.5      40    1001    PUMP
  48          WP  1002.5      40    1002    PUMP
  49          WP  1002.5      40    1002    PUMP
  50          KO       1       2
  51          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

  6       SUBS6
              V
              V
 11       RTES6
              .
              .
 13           .       SUBS7
              .           .
              .           .
 17       ADDS7............
              V
              V
 19       RTES7
              .
              .
 21           .      SUBS10
              .           V
              .           V
 25           .      RTES10
              .           .
              .           .
 27           .           .      SUBS89
              .           .           .
              .           .           .
 31           .      ADDS89............
              .           V
              .           V
 33           .      RTES89
              .           .
              .           .
 35       ADDS10............
              V
              V
 38         PUMP
 44           .-------->    PUMP
 38         PUMP
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

6400 ERRORS IN STREAM SYSTEM

36 HC HYDROGRAPH COMBINATION

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

HYDROGRAPH AT STATION ADDS10

SUM OF 2 HYDROGRAPHS

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0615	76	0.	1		1230	151	91.	1		1845	226	1.
1		0005	2	0.	1		0620	77	0.	1		1235	152	66.	1		1850	227	1.
1		0010	3	0.	1		0625	78	0.	1		1240	153	44.	1		1855	228	1.
1		0015	4	0.	1		0630	79	0.	1		1245	154	29.	1		1900	229	1.
1		0020	5	0.	1		0635	80	0.	1		1250	155	21.	1		1905	230	1.
1		0025	6	0.	1		0640	81	0.	1		1255	156	16.	1		1910	231	1.
1		0030	7	0.	1		0645	82	0.	1		1300	157	14.	1		1915	232	1.
1		0035	8	0.	1		0650	83	0.	1		1305	158	12.	1		1920	233	1.
1		0040	9	0.	1		0655	84	0.	1		1310	159	12.	1		1925	234	1.
1		0045	10	0.	1		0700	85	0.	1		1315	160	11.	1		1930	235	1.
1		0050	11	0.	1		0705	86	0.	1		1320	161	10.	1		1935	236	1.
1		0055	12	0.	1		0710	87	0.	1		1325	162	10.	1		1940	237	1.
1		0100	13	0.	1		0715	88	0.	1		1330	163	9.	1		1945	238	1.
1		0105	14	0.	1		0720	89	0.	1		1335	164	9.	1		1950	239	1.
1		0110	15	0.	1		0725	90	0.	1		1340	165	8.	1		1955	240	1.
1		0115	16	0.	1		0730	91	0.	1		1345	166	8.	1		2000	241	1.
1		0120	17	0.	1		0735	92	0.	1		1350	167	8.	1		2005	242	1.
1		0125	18	0.	1		0740	93	0.	1		1355	168	7.	1		2010	243	1.
1		0130	19	0.	1		0745	94	0.	1		1400	169	7.	1		2015	244	1.
1		0135	20	0.	1		0750	95	0.	1		1405	170	7.	1		2020	245	1.
1		0140	21	0.	1		0755	96	0.	1		1410	171	7.	1		2025	246	1.
1		0145	22	0.	1		0800	97	0.	1		1415	172	6.	1		2030	247	1.
1		0150	23	0.	1		0805	98	0.	1		1420	173	6.	1		2035	248	1.
1		0155	24	0.	1		0810	99	0.	1		1425	174	6.	1		2040	249	1.
1		0200	25	0.	1		0815	100	0.	1		1430	175	6.	1		2045	250	1.
1		0205	26	0.	1		0820	101	0.	1		1435	176	6.	1		2050	251	1.
1		0210	27	0.	1		0825	102	0.	1		1440	177	5.	1		2055	252	1.
1		0215	28	0.	1		0830	103	0.	1		1445	178	5.	1		2100	253	1.
1		0220	29	0.	1		0835	104	0.	1		1450	179	5.	1		2105	254	1.
1		0225	30	0.	1		0840	105	0.	1		1455	180	5.	1		2110	255	1.
1		0230	31	0.	1		0845	106	0.	1		1500	181	5.	1		2115	256	1.
1		0235	32	0.	1		0850	107	0.	1		1505	182	5.	1		2120	257	1.
1		0240	33	0.	1		0855	108	0.	1		1510	183	4.	1		2125	258	1.
1		0245	34	0.	1		0900	109	0.	1		1515	184	4.	1		2130	259	1.
1		0250	35	0.	1		0905	110	0.	1		1520	185	4.	1		2135	260	1.
1		0255	36	0.	1		0910	111	1.	1		1525	186	4.	1		2140	261	1.
1		0300	37	0.	1		0915	112	1.	1		1530	187	4.	1		2145	262	1.
1		0305	38	0.	1		0920	113	1.	1		1535	188	4.	1		2150	263	1.
1		0310	39	0.	1		0925	114	1.	1		1540	189	4.	1		2155	264	1.
1		0315	40	0.	1		0930	115	1.	1		1545	190	3.	1		2200	265	1.
1		0320	41	0.	1		0935	116	1.	1		1550	191	3.	1		2205	266	1.
1		0325	42	0.	1		0940	117	1.	1		1555	192	3.	1		2210	267	1.
1		0330	43	0.	1		0945	118	1.	1		1600	193	3.	1		2215	268	1.
1		0335	44	0.	1		0950	119	1.	1		1605	194	3.	1		2220	269	0.
1		0340	45	0.	1		0955	120	1.	1		1610	195	3.	1		2225	270	0.
1		0345	46	0.	1		1000	121	2.	1		1615	196	3.	1		2230	271	0.

1	0350	47	0.	*	1	1005	122	2.	*	1	1620	197	3.	*	1	2235	272	0.
1	0355	48	0.	*	1	1010	123	2.	*	1	1625	198	3.	*	1	2240	273	0.
1	0400	49	0.	*	1	1015	124	2.	*	1	1630	199	3.	*	1	2245	274	0.
1	0405	50	0.	*	1	1020	125	2.	*	1	1635	200	3.	*	1	2250	275	0.
1	0410	51	0.	*	1	1025	126	2.	*	1	1640	201	3.	*	1	2255	276	0.
1	0415	52	0.	*	1	1030	127	3.	*	1	1645	202	3.	*	1	2300	277	0.
1	0420	53	0.	*	1	1035	128	3.	*	1	1650	203	3.	*	1	2305	278	0.
1	0425	54	0.	*	1	1040	129	3.	*	1	1655	204	3.	*	1	2310	279	0.
1	0430	55	0.	*	1	1045	130	3.	*	1	1700	205	3.	*	1	2315	280	0.
1	0435	56	0.	*	1	1050	131	4.	*	1	1705	206	3.	*	1	2320	281	0.
1	0440	57	0.	*	1	1055	132	4.	*	1	1710	207	3.	*	1	2325	282	0.
1	0445	58	0.	*	1	1100	133	4.	*	1	1715	208	3.	*	1	2330	283	0.
1	0450	59	0.	*	1	1105	134	5.	*	1	1720	209	2.	*	1	2335	284	0.
1	0455	60	0.	*	1	1110	135	5.	*	1	1725	210	2.	*	1	2340	285	0.
1	0500	61	0.	*	1	1115	136	6.	*	1	1730	211	2.	*	1	2345	286	0.
1	0505	62	0.	*	1	1120	137	6.	*	1	1735	212	2.	*	1	2350	287	0.
1	0510	63	0.	*	1	1125	138	7.	*	1	1740	213	2.	*	1	2355	288	0.
1	0515	64	0.	*	1	1130	139	8.	*	1	1745	214	2.	*	2	0000	289	0.
1	0520	65	0.	*	1	1135	140	12.	*	1	1750	215	2.	*	2	0005	290	0.
1	0525	66	0.	*	1	1140	141	21.	*	1	1755	216	2.	*	2	0010	291	0.
1	0530	67	0.	*	1	1145	142	32.	*	1	1800	217	2.	*	2	0015	292	0.
1	0535	68	0.	*	1	1150	143	46.	*	1	1805	218	2.	*	2	0020	293	0.
1	0540	69	0.	*	1	1155	144	67.	*	1	1810	219	2.	*	2	0025	294	0.
1	0545	70	0.	*	1	1200	145	111.	*	1	1815	220	1.	*	2	0030	295	0.
1	0550	71	0.	*	1	1205	146	212.	*	1	1820	221	1.	*	2	0035	296	0.
1	0555	72	0.	*	1	1210	147	288.	*	1	1825	222	1.	*	2	0040	297	0.
1	0600	73	0.	*	1	1215	148	252.	*	1	1830	223	1.	*	2	0045	298	0.
1	0605	74	0.	*	1	1220	149	182.	*	1	1835	224	1.	*	2	0050	299	0.
1	0610	75	0.	*	1	1225	150	126.	*	1	1840	225	1.	*	2	0055	300	0.
				*					*					*				

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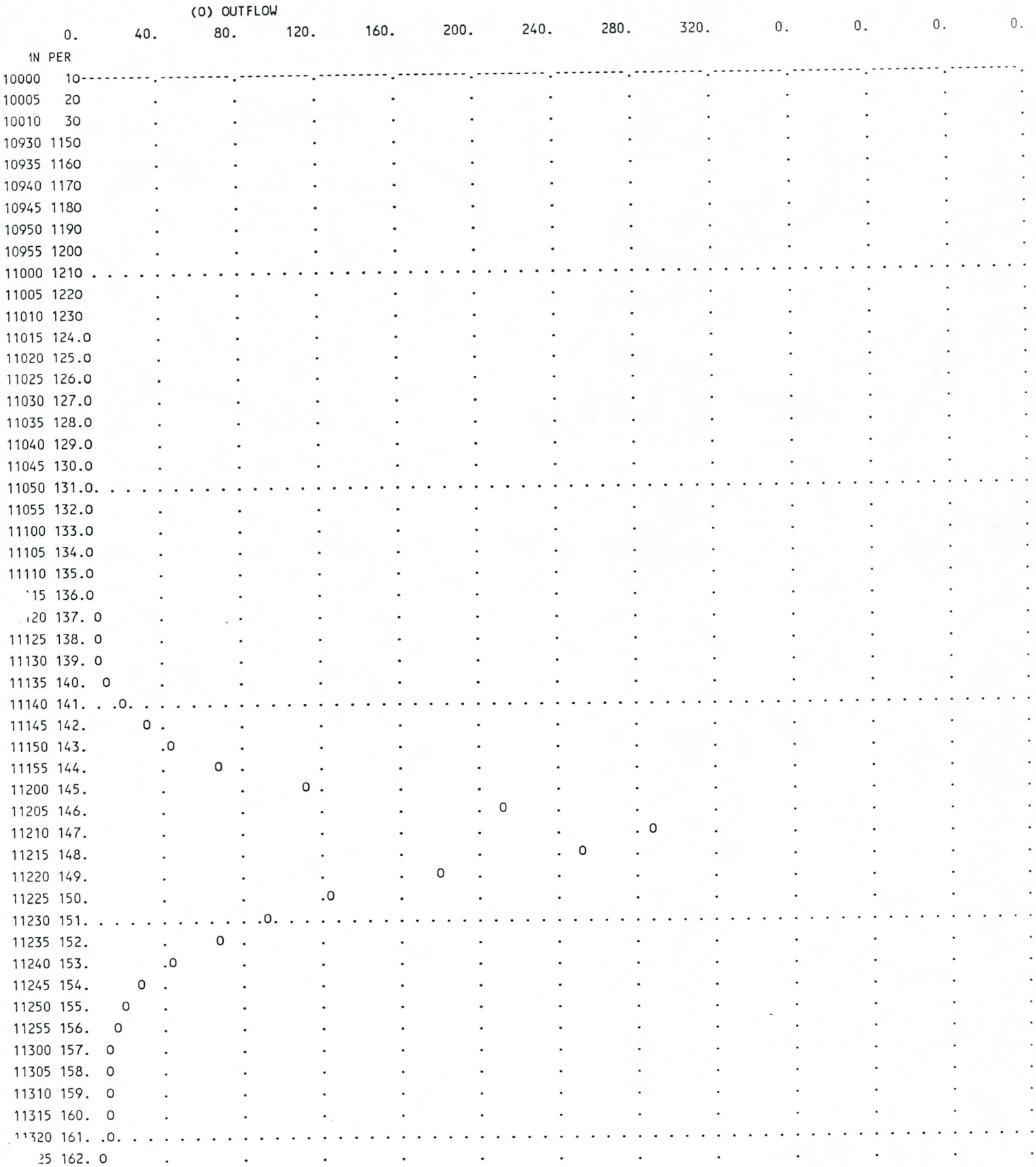
PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
288.	12.17	(CFS)	27.	7.	7.	7.
		(INCHES)	2.264	2.402	2.402	2.402
		(AC-FT)	13.	14.	14.	14.

CUMULATIVE AREA = .11 SQ MI

STATION ADDS10



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              **************
              *            *
38 KK         *     PUMP   *      2-96" STORAGE RCP'S
              *            *
              **************
                                L=1200'

50 KO                OUTPUT CONTROL VARIABLES
                          IPRNT          1  PRINT CONTROL
                          IPLOT          2  PLOT CONTROL
                          QSCAL         0.  HYDROGRAPH PLOT SCALE

                   HYDROGRAPH ROUTING DATA

40 RS                STORAGE ROUTING
                          NSTPS          1  NUMBER OF SUBREACHES
                           ITYP       ELEV  TYPE OF INITIAL CONDITION
                          RSVRIC    1000.00  INITIAL CONDITION
                               X        .00 WORKING R AND D COEFFICIENT

41 SV                  STORAGE          .0        .3        .7       1.1       1.4

 ? SE                ELEVATION     1000.00   1002.00   1004.00   1006.00   1008.00

43 SQ                DISCHARGE          0.        0.        0.        0.        0.

45 WP                PUMPING DATA

                       PUMP ON    PUMPING    PUMP OFF
                      ELEVATION     RATE    ELEVATION

                        1001.0       40.      1000.0
                        1001.5       40.      1001.0
                        1001.5       40.      1001.0
                        1002.5       40.      1002.0
                        1002.5       40.      1002.0

                          ISTAD        PUMP  PUMP FLOW HYDROGRAPH IDENTIFICATION

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HYDROGRAPH AT STATION PUMP

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DA	MON	HRMN	ORD	PUMP Q	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	PUMP Q	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.	.0	1000.0	1		1230	151	200.	0.	.3	1002.3
1		0005	2	0.	0.	.0	1000.0	1		1235	152	200.	0.	.0	1000.0
1		0010	3	0.	0.	.0	1000.0	1		1240	153	0.	0.	.0	1000.0
1		0015	4	0.	0.	.0	1000.0	1		1245	154	0.	0.	.3	1001.9

1	0020	5	0.	0.	.0	1000.0	*	1	1250	155	120.	0.	.0	1000.0
1	0025	6	0.	0.	.0	1000.0	*	1	1255	156	0.	0.	.0	1000.0
1	0030	7	0.	0.	.0	1000.0	*	1	1300	157	0.	0.	.1	1000.8
1	0035	8	0.	0.	.0	1000.0	*	1	1305	158	0.	0.	.2	1001.4
1	0040	9	0.	0.	.0	1000.0	*	1	1310	159	40.	0.	.0	1000.0
1	0045	10	0.	0.	.0	1000.0	*	1	1315	160	0.	0.	.0	1000.0
1	0050	11	0.	0.	.0	1000.0	*	1	1320	161	0.	0.	.1	1000.5
1	0055	12	0.	0.	.0	1000.0	*	1	1325	162	0.	0.	.1	1001.1
1	0100	13	0.	0.	.0	1000.0	*	1	1330	163	40.	0.	.0	1000.0
1	0105	14	0.	0.	.0	1000.0	*	1	1335	164	0.	0.	.0	1000.0
1	0110	15	0.	0.	.0	1000.0	*	1	1340	165	0.	0.	.1	1000.4
1	0115	16	0.	0.	.0	1000.0	*	1	1345	166	0.	0.	.1	1000.9
1	0120	17	0.	0.	.0	1000.0	*	1	1350	167	0.	0.	.2	1001.3
1	0125	18	0.	0.	.0	1000.0	*	1	1355	168	40.	0.	.0	1000.0
1	0130	19	0.	0.	.0	1000.0	*	1	1400	169	0.	0.	.0	1000.0
1	0135	20	0.	0.	.0	1000.0	*	1	1405	170	0.	0.	.0	1000.4
1	0140	21	0.	0.	.0	1000.0	*	1	1410	171	0.	0.	.1	1000.7
1	0145	22	0.	0.	.0	1000.0	*	1	1415	172	0.	0.	.1	1001.0
1	0150	23	0.	0.	.0	1000.0	*	1	1420	173	40.	0.	.0	1000.0
1	0155	24	0.	0.	.0	1000.0	*	1	1425	174	0.	0.	.0	1000.0
1	0200	25	0.	0.	.0	1000.0	*	1	1430	175	0.	0.	.0	1000.3
1	0205	26	0.	0.	.0	1000.0	*	1	1435	176	0.	0.	.1	1000.6
1	0210	27	0.	0.	.0	1000.0	*	1	1440	177	0.	0.	.1	1000.9
1	0215	28	0.	0.	.0	1000.0	*	1	1445	178	0.	0.	.2	1001.1
1	0220	29	0.	0.	.0	1000.0	*	1	1450	179	40.	0.	.0	1000.0
1	0225	30	0.	0.	.0	1000.0	*	1	1455	180	0.	0.	.0	1000.0
1	0230	31	0.	0.	.0	1000.0	*	1	1500	181	0.	0.	.0	1000.2
1	0235	32	0.	0.	.0	1000.0	*	1	1505	182	0.	0.	.1	1000.5
1	0240	33	0.	0.	.0	1000.0	*	1	1510	183	0.	0.	.1	1000.7
1	0245	34	0.	0.	.0	1000.0	*	1	1515	184	0.	0.	.1	1000.9
1	0250	35	0.	0.	.0	1000.0	*	1	1520	185	0.	0.	.2	1001.1
1	0255	36	0.	0.	.0	1000.0	*	1	1525	186	40.	0.	.0	1000.0
1	0300	37	0.	0.	.0	1000.0	*	1	1530	187	0.	0.	.0	1000.0
1	0305	38	0.	0.	.0	1000.0	*	1	1535	188	0.	0.	.0	1000.2
1	0310	39	0.	0.	.0	1000.0	*	1	1540	189	0.	0.	.0	1000.4
1	0315	40	0.	0.	.0	1000.0	*	1	1545	190	0.	0.	.1	1000.5
1	0320	41	0.	0.	.0	1000.0	*	1	1550	191	0.	0.	.1	1000.7
1	0325	42	0.	0.	.0	1000.0	*	1	1555	192	0.	0.	.1	1000.9
1	0330	43	0.	0.	.0	1000.0	*	1	1600	193	0.	0.	.1	1001.0
1	0335	44	0.	0.	.0	1000.0	*	1	1605	194	40.	0.	.0	1000.0
1	0340	45	0.	0.	.0	1000.0	*	1	1610	195	0.	0.	.0	1000.0
1	0345	46	0.	0.	.0	1000.0	*	1	1615	196	0.	0.	.0	1000.2
1	0350	47	0.	0.	.0	1000.0	*	1	1620	197	0.	0.	.0	1000.3
1	0355	48	0.	0.	.0	1000.0	*	1	1625	198	0.	0.	.1	1000.5
1	0400	49	0.	0.	.0	1000.0	*	1	1630	199	0.	0.	.1	1000.6
1	0405	50	0.	0.	.0	1000.0	*	1	1635	200	0.	0.	.1	1000.8
1	0410	51	0.	0.	.0	1000.0	*	1	1640	201	0.	0.	.1	1000.9
1	0415	52	0.	0.	.0	1000.0	*	1	1645	202	0.	0.	.1	1001.0
1	0420	53	0.	0.	.0	1000.0	*	1	1650	203	40.	0.	.0	1000.0
1	0425	54	0.	0.	.0	1000.0	*	1	1655	204	0.	0.	.0	1000.0
1	0430	55	0.	0.	.0	1000.0	*	1	1700	205	0.	0.	.0	1000.1
1	0435	56	0.	0.	.0	1000.0	*	1	1705	206	0.	0.	.0	1000.3
1	0440	57	0.	0.	.0	1000.0	*	1	1710	207	0.	0.	.1	1000.4
1	0445	58	0.	0.	.0	1000.0	*	1	1715	208	0.	0.	.1	1000.5
1	0450	59	0.	0.	.0	1000.0	*	1	1720	209	0.	0.	.1	1000.7
1	0455	60	0.	0.	.0	1000.0	*	1	1725	210	0.	0.	.1	1000.8
1	0500	61	0.	0.	.0	1000.0	*	1	1730	211	0.	0.	.1	1000.9
1	0505	62	0.	0.	.0	1000.0	*	1	1735	212	0.	0.	.1	1001.0
1	0510	63	0.	0.	.0	1000.0	*	1	1740	213	40.	0.	.0	1000.0
1	0515	64	0.	0.	.0	1000.0	*	1	1745	214	0.	0.	.0	1000.0

1	0520	65	0.	0.	.0	1000.0	*	1	1750	215	0.	0.	.0	1000.1
1	0525	66	0.	0.	.0	1000.0	*	1	1755	216	0.	0.	.0	1000.2
1	0530	67	0.	0.	.0	1000.0	*	1	1800	217	0.	0.	.0	1000.3
1	0535	68	0.	0.	.0	1000.0	*	1	1805	218	0.	0.	.1	1000.5
1	0540	69	0.	0.	.0	1000.0	*	1	1810	219	0.	0.	.1	1000.5
1	0545	70	0.	0.	.0	1000.0	*	1	1815	220	0.	0.	.1	1000.6
1	0550	71	0.	0.	.0	1000.0	*	1	1820	221	0.	0.	.1	1000.7
1	0555	72	0.	0.	.0	1000.0	*	1	1825	222	0.	0.	.1	1000.7
1	0600	73	0.	0.	.0	1000.0	*	1	1830	223	0.	0.	.1	1000.8
1	0605	74	0.	0.	.0	1000.0	*	1	1835	224	0.	0.	.1	1000.8
1	0610	75	0.	0.	.0	1000.0	*	1	1840	225	0.	0.	.1	1000.8
1	0615	76	0.	0.	.0	1000.0	*	1	1845	226	0.	0.	.1	1000.9
1	0620	77	0.	0.	.0	1000.0	*	1	1850	227	0.	0.	.1	1000.9
1	0625	78	0.	0.	.0	1000.0	*	1	1855	228	0.	0.	.1	1000.9
1	0630	79	0.	0.	.0	1000.0	*	1	1900	229	0.	0.	.1	1001.0
1	0635	80	0.	0.	.0	1000.0	*	1	1905	230	0.	0.	.1	1001.0
1	0640	81	0.	0.	.0	1000.0	*	1	1910	231	40.	0.	.0	1000.0
1	0645	82	0.	0.	.0	1000.0	*	1	1915	232	0.	0.	.0	1000.0
1	0650	83	0.	0.	.0	1000.0	*	1	1920	233	0.	0.	.0	1000.0
1	0655	84	0.	0.	.0	1000.0	*	1	1925	234	0.	0.	.0	1000.1
1	0700	85	0.	0.	.0	1000.0	*	1	1930	235	0.	0.	.0	1000.1
1	0705	86	0.	0.	.0	1000.0	*	1	1935	236	0.	0.	.0	1000.1
1	0710	87	0.	0.	.0	1000.0	*	1	1940	237	0.	0.	.0	1000.2
1	0715	88	0.	0.	.0	1000.0	*	1	1945	238	0.	0.	.0	1000.2
1	0720	89	0.	0.	.0	1000.0	*	1	1950	239	0.	0.	.0	1000.2
1	0725	90	0.	0.	.0	1000.0	*	1	1955	240	0.	0.	.0	1000.3
1	0730	91	0.	0.	.0	1000.0	*	1	2000	241	0.	0.	.0	1000.3
1	0735	92	0.	0.	.0	1000.0	*	1	2005	242	0.	0.	.0	1000.3
1	0740	93	0.	0.	.0	1000.0	*	1	2010	243	0.	0.	.0	1000.4
1	0745	94	0.	0.	.0	1000.0	*	1	2015	244	0.	0.	.1	1000.4
1	0750	95	0.	0.	.0	1000.0	*	1	2020	245	0.	0.	.1	1000.4
1	0755	96	0.	0.	.0	1000.0	*	1	2025	246	0.	0.	.1	1000.5
1	0800	97	0.	0.	.0	1000.0	*	1	2030	247	0.	0.	.1	1000.5
1	0805	98	0.	0.	.0	1000.0	*	1	2035	248	0.	0.	.1	1000.5
1	0810	99	0.	0.	.0	1000.0	*	1	2040	249	0.	0.	.1	1000.5
1	0815	100	0.	0.	.0	1000.0	*	1	2045	250	0.	0.	.1	1000.6
1	0820	101	0.	0.	.0	1000.0	*	1	2050	251	0.	0.	.1	1000.6
1	0825	102	0.	0.	.0	1000.0	*	1	2055	252	0.	0.	.1	1000.6
1	0830	103	0.	0.	.0	1000.0	*	1	2100	253	0.	0.	.1	1000.6
1	0835	104	0.	0.	.0	1000.0	*	1	2105	254	0.	0.	.1	1000.7
1	0840	105	0.	0.	.0	1000.0	*	1	2110	255	0.	0.	.1	1000.7
1	0845	106	0.	0.	.0	1000.0	*	1	2115	256	0.	0.	.1	1000.7
1	0850	107	0.	0.	.0	1000.0	*	1	2120	257	0.	0.	.1	1000.8
1	0855	108	0.	0.	.0	1000.1	*	1	2125	258	0.	0.	.1	1000.8
1	0900	109	0.	0.	.0	1000.1	*	1	2130	259	0.	0.	.1	1000.8
1	0905	110	0.	0.	.0	1000.1	*	1	2135	260	0.	0.	.1	1000.8
1	0910	111	0.	0.	.0	1000.1	*	1	2140	261	0.	0.	.1	1000.9
1	0915	112	0.	0.	.0	1000.1	*	1	2145	262	0.	0.	.1	1000.9
1	0920	113	0.	0.	.0	1000.2	*	1	2150	263	0.	0.	.1	1000.9
1	0925	114	0.	0.	.0	1000.2	*	1	2155	264	0.	0.	.1	1000.9
1	0930	115	0.	0.	.0	1000.3	*	1	2200	265	0.	0.	.1	1000.9
1	0935	116	0.	0.	.0	1000.3	*	1	2205	266	0.	0.	.1	1001.0
1	0940	117	0.	0.	.0	1000.4	*	1	2210	267	0.	0.	.1	1001.0
1	0945	118	0.	0.	.1	1000.4	*	1	2215	268	0.	0.	.1	1001.0
1	0950	119	0.	0.	.1	1000.5	*	1	2220	269	40.	0.	.0	1000.0
1	0955	120	0.	0.	.1	1000.5	*	1	2225	270	0.	0.	.0	1000.0
1	1000	121	0.	0.	.1	1000.6	*	1	2230	271	0.	0.	.0	1000.0
1	1005	122	0.	0.	.1	1000.7	*	1	2235	272	0.	0.	.0	1000.0
1	1010	123	0.	0.	.1	1000.8	*	1	2240	273	0.	0.	.0	1000.1
1	1015	124	0.	0.	.1	1000.9	*	1	2245	274	0.	0.	.0	1000.1

1	1020	125	0.	0.	.1	1001.0	*	1	2250	275	0.	0.	.0	1000.1
1	1025	126	0.	0.	.1	1001.1	*	1	2255	276	0.	0.	.0	1000.1
1	1030	127	40.	0.	.0	1000.0	*	1	2300	277	0.	0.	.0	1000.2
1	1035	128	0.	0.	.0	1000.0	*	1	2305	278	0.	0.	.0	1000.2
1	1040	129	0.	0.	.0	1000.2	*	1	2310	279	0.	0.	.0	1000.2
1	1045	130	0.	0.	.0	1000.3	*	1	2315	280	0.	0.	.0	1000.2
1	1050	131	0.	0.	.1	1000.5	*	1	2320	281	0.	0.	.0	1000.3
1	1055	132	0.	0.	.1	1000.7	*	1	2325	282	0.	0.	.0	1000.3
1	1100	133	0.	0.	.1	1000.9	*	1	2330	283	0.	0.	.0	1000.3
1	1105	134	0.	0.	.2	1001.1	*	1	2335	284	0.	0.	.0	1000.3
1	1110	135	40.	0.	.0	1000.0	*	1	2340	285	0.	0.	.0	1000.3
1	1115	136	0.	0.	.0	1000.0	*	1	2345	286	0.	0.	.0	1000.4
1	1120	137	0.	0.	.0	1000.3	*	1	2350	287	0.	0.	.1	1000.4
1	1125	138	0.	0.	.1	1000.6	*	1	2355	288	0.	0.	.1	1000.4
1	1130	139	0.	0.	.1	1001.0	*	2	0000	289	0.	0.	.1	1000.4
1	1135	140	0.	0.	.2	1001.5	*	2	0005	290	0.	0.	.1	1000.4
1	1140	141	40.	0.	.0	1000.3	*	2	0010	291	0.	0.	.1	1000.5
1	1145	142	40.	0.	.0	1000.0	*	2	0015	292	0.	0.	.1	1000.5
1	1150	143	0.	0.	.3	1002.0	*	2	0020	293	0.	0.	.1	1000.5
1	1155	144	120.	0.	.0	1000.0	*	2	0025	294	0.	0.	.1	1000.5
1	1200	145	0.	0.	.6	1003.6	*	2	0030	295	0.	0.	.1	1000.5
1	1205	146	200.	0.	.3	1002.4	*	2	0035	296	0.	0.	.1	1000.5
1	1210	147	200.	0.	.7	1004.0	*	2	0040	297	0.	0.	.1	1000.5
1	1215	148	200.	0.	1.2	1006.4	*	2	0045	298	0.	0.	.1	1000.5
1	1220	149	200.	0.	1.3	1007.2	*	2	0050	299	0.	0.	.1	1000.5
1	1225	150	200.	0.	1.0	1005.3	*	2	0055	300	0.	0.	.1	1000.5
							*							

****

OUTFLOW IS 0. AT TIME 12.33 HOURS

***** PUMP FLOW HYDROGRAPH *****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
200.	12.08	(CFS)	29.	8.	7.	7.
		(INCHES)	2.440	2.627	2.627	2.627
		(AC-FT)	14.	15.	15.	15.

***** OUTFLOW HYDROGRAPH *****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	24.92-HR
0.	12.33	(CFS)	0.	0.	0.	0.
		(INCHES)	.004	.009	.009	.009
		(AC-FT)	0.	0.	0.	0.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	24.92-HR
1.	12.33	0.	0.	0.	0.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	24.92-HR
07.20	12.33	1000.90	1000.41	1000.40	1000.40

CUMULATIVE AREA = .11 SQ MI

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	SUBS6	56.	12.17	5.	1.	1.	.02		
ROUTED TO	RTES6	52.	12.17	5.	1.	1.	.02		
HYDROGRAPH AT	SUBS7	56.	12.17	5.	1.	1.	.02		
2 COMBINED AT	ADDS7	109.	12.17	10.	3.	3.	.04		
ROUTED TO	RTES7	105.	12.17	10.	3.	3.	.04		
HYDROGRAPH AT	SUBS10	66.	12.17	6.	2.	1.	.02		
ROUTED TO	RTES10	62.	12.17	6.	2.	1.	.02		
HYDROGRAPH AT	SUBS89	124.	12.17	11.	3.	3.	.05		
2 COMBINED AT	ADDS89	186.	12.17	17.	4.	4.	.07		
ROUTED TO	RTES89	182.	12.17	17.	4.	4.	.07		
2 COMBINED AT	ADDS10	288.	12.17	27.	7.	7.	.11		
PUMP FLOW TO	PUMP	200.	12.08	29.	8.	7.	.11		
HYDROGRAPH AT	PUMP	0.	12.33	0.	0.	0.	.11	1007.20	12.33

APPENDIX III.C

Off-site Collector System Design Data

PRICE ROAD GEC
OFF-SITE PRICE EXPRESSWAY
OFF-SITE SANTAN FREEWAY
STORM SEWER DESIGN FREQUENCY=100 YEARS P6=3.11 IN. P24=3.70 IN. P1=2.44 IN. FN-A:STORM3.WS
SEWER CALCULATION SHEET PIPE N=.012 TW=

OFF-SITE COLLECTOR SYSTEMS NOTE: Q'S FROM HEC-1 OFFSITE ANALYSIS 6-25-90

LINE NO.	STATION FROM - TO	DA NO.	INCREM CA	SUM CA	TIME INLET	TIME SEWER	TIME DESIGN	I IN/HR	Q CFS	CROWN EL INLET	CROWN EL OUTLET	LENGTH FT	SLOPE FT/FT	DIAM IN	QFULL CFS	V FPS	SF FT/FT	HL FT	ELEV INLET	ELEV OUTLET	ASSUMED LOSS FT	STR
	COLLECTOR FROM ELLIOT TO BASIN "E"																					
P1-1EL	P.S.-319120	-							375*	1183.04	1182.63	320.0	0.00129	102	420	6.6	0.00104	0.33	1187.65	1186.82	0.50	
P1-2EL	319280-321525	-							375*	1182.63	1179.71	2245.0	0.00130	102	420	6.6	0.00104	2.33	1186.82	1183.98	0.50	
P1-3EL	321525-BASIN	-							375*	1179.71	1179.36	270.0	0.00131	102	420	6.6	0.00104	0.28	1183.98	1183.20	0.50	
	COLLECTOR FROM WARNER TO BASIN "E"																					
P1-1WR	324250-322040	-							307*	1176.69	1174.56	2160.0	0.00099	96	310	6.1	0.00096	2.07	1186.35	1183.78	0.50	
P1-2WR	322040-BASIN	-							307*	1174.56	1174.48	80.0	0.00100	96	312	6.1	0.00096	0.08	1183.78	1183.20	0.50	
	COLLECTOR FROM COUNTRY CLUB TO SANTAN STA 1467+90																					
P1-1CC	148240-148550	-							95	1177.58	1173.48	310.0	0.01323	42	125	9.9	0.00761	2.36	1179.30	1176.44	0.50	
P1-2CC	146790-148240	-							95	1173.48	1172.46	1450.0	0.00070	68x43	55	6.0	0.00211	3.06	1176.44	1172.88	0.50	
	COLLECTOR FROM FRYE TO BASIN "H"																					
P1-1FR	337900-338200	-							200	1180.50	1177.50	300.0	0.01000	54	213	12.6	0.00882	2.65	1185.48	1182.33	0.50	
P1-2FR	338200-338800	-							200	1177.50	1175.00	600.0	0.00417	66	235	8.4	0.00302	1.81	1182.33	1180.02	0.50	
P1-3FR	338800-339170	-							200	1175.00	1170.77	370.0	0.01143	66	389	8.4	0.00302	1.12	1180.02	1178.40	0.50	
P1-4FR									200	1163.58	1161.96	325.0	0.00500	66	257	8.4	0.00302	0.98	1179.88	1178.40	0.50	
	COLLECTOR FROM CHANDLER TO BASIN "G"													DOUBLE								
P1-1CH	333180-335060	-							917	1181.00	1179.00	1910.0	0.00105	8'x6'	556	9.7	0.00286	5.46	1184.96	1179.00	0.50	
	GRAVITY DRAINS FROM BASINS F AND G																					
DRAIN	322010-325950	- (BASIN F TO BASIN E)							-	1175.60	1170.32	3940.0	0.00134	36	26	-	-	-	-	-	-	
DRAIN	333100-339170	- (BASIN G TO BASIN H)							-	1168.35	1163.58	6170.0	0.00077	54	59	-	-	-	-	-	-	

*INCLUDES 200 CFS PUMPED DISCHARGE FROM ON-SITE PUMP STATIONS

PRICE ROAD GEC
SANTAN FREEWAY
CHANNEL DESIGN — FREQUENCY=100 YEAR — FN=A:CHAN1.WS
SUMMARY SHEET

OFFSITE COLLECTOR CHANNELS — 6-11-90

REACH	STATION FROM - TO	LENGTH FT	Q100 CFS	'n'	BW FT	SS H:V	DEPTH* FT	TW FT	SLOPE FT/FT	V FPS	SQ YD CONC/LF
SANTAN OFFSITE COLLECTOR CHANNEL (LINED)											
56TH ST TO BASIN "B"	129980-132900	2,720	641	0.018	10	2:1	6.0	34	0.00130	6.3	4.1
BASIN "B" TO KYRENE RD	134100-135260	1,160	1620	0.018	15	2:1	7.0	43	0.00252	10.3	5.1
KYRENE RD TO .5M W OF MCCLINTOCK DR	135360-143360	8,000	603	0.018	14	2:1	5.5	36	0.00110	6.3	4.3
.5M W OF MCCLINTOCK DR TO MCCLINTOCK DR	143360-145890	2,530	553	0.018	12	2:1	5.5	34	0.00130	6.1	4.1
MCCLINTOCK DR TO STA 1467+90	145990-146790	800	95	0.018	4	2:1	4.0	20	0.00130	4.3	2.4

*INCLUDES 1 FOOT FREEBOARD

Design - I'll send the letter after we log it. RB

ARIZONA DEPARTMENT OF TRANSPORTATION

CULVERT COMPUTATION RECORD

PROJECT: PRICE ROAD GEC

STATION: Santan 1328+00

DESIGNER: EL

DATE: 3/21/90

HYDROLOGIC AND CHANNEL INFORMATION

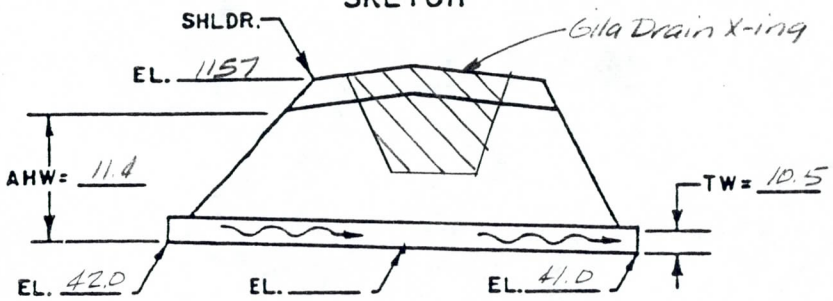
DRAINAGE AREA 2.74 s.m

100yr- Q_1 = 641 (from HEC-1) TW_1 = 10.5

Q_2 = ____ TW_2 = ____

(Q_1 = DESIGN DISCHARGE, SAY Q_{25}
Q_2 = CHECK DISCHARGE, SAY Q_{50})

SKETCH



S_0 = 0.004 ft/ft L = 250' L/100 S_0 = 1.0

MEAN STREAM VELOCITY = 6.3

CULVERT DESCRIPTION		Q	CAP. CHART HW	HEADWATER COMPUTATION										CONTROL HW	OUTLET VELOCITY	COST	DHW ELEV.	COMMENTS
				INLET CONT.		OUTLET CONTROL $HW = H + h_o - LS_o$												
SIZE	ENTR. TYPE			$\frac{HW}{D}$	HW	K_e	H	d_c	$\frac{d_c + D}{2}$	TW	h_o	LS_o	HW					
2-10 x 4	2	641		1.4	5.6	0.5	1.9	–	–	10.5	10.5	1.0	11.4	11.4	8.0		1153.4	Shown on concept plan

SUMMARY & RECOMMENDATIONS

ARIZONA DEPARTMENT OF TRANSPORTATION

CULVERT COMPUTATION RECORD

PROJECT: PRICE ROAD GEC

STATION: Santan 1332+00 (Basin B)

DESIGNER: EL

DATE: 3-21-90

HYDROLOGIC AND CHANNEL INFORMATION

DRAINAGE AREA 18.4 sm

100yr - Q_1 = 2311 *

Q_2 = ____

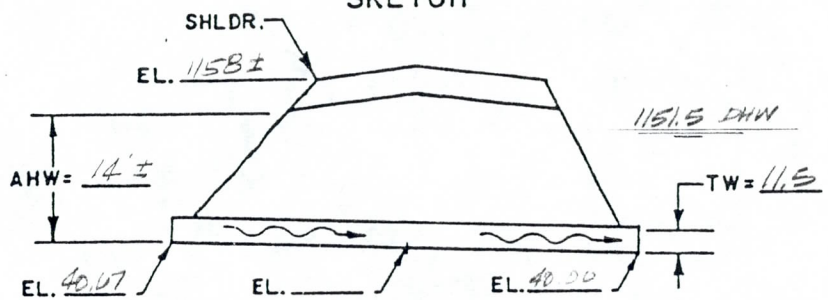
TW_1 = 11.5

TW_2 = ____

* 1911 (off-site) + 400 (on-site)

(Q_1 = DESIGN DISCHARGE, SAY Q_{25}
Q_2 = CHECK DISCHARGE, SAY Q_{50})

SKETCH



S_0 = 0.0019 ft/ft L = 350' L/100 S_0 = 0.67

MEAN STREAM VELOCITY = ____

CULVERT DESCRIPTION		Q	CAP. CHART HW	HEADWATER COMPUTATION										CONTROL HW	OUTLET VELOCITY	COST	DHW ELEV.	COMMENTS
				INLET CONT.		OUTLET CONTROL $HW = H + h_o - LS_o$												
SIZE	ENTR. TYPE			$\frac{HW}{D}$	HW	K_e	H	d_c	$\frac{d_c + D}{2}$	TW	h_o	LS_o	HW					
5-10' x 5'	2	2311	–	1.45	7.25	0.5	3.0	–	–	11.5	11.5	.67	13.83	13.83	9.2		1154.50	Show on concept plan

SUMMARY & RECOMMENDATIONS

ARIZONA DEPARTMENT OF TRANSPORTATION

CULVERT COMPUTATION RECORD

PROJECT: PRICE ROAD GEC

STATION: Santan 1353+10 (Kyrene Rd)

DESIGNER: EL

DATE: 3-21-90

HYDROLOGIC AND CHANNEL INFORMATION

DRAINAGE AREA —

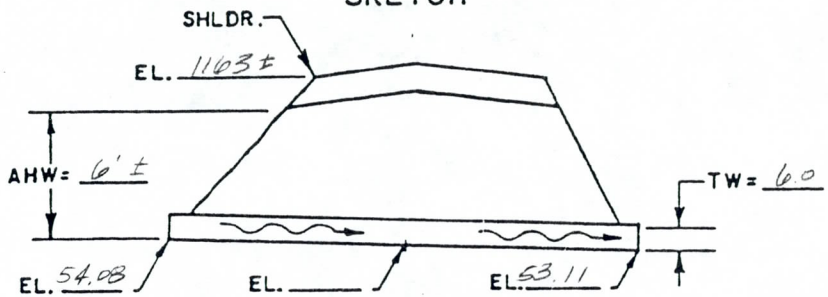
Offsite 100 yr - Q_1 = 812 = $\frac{1220-403}{2}+403$ TW_1 = —

Q_2 = 1212 * TW_2 = 6.0

* 812 (off-site) + 400 (on-site)

(Q_1 = DESIGN DISCHARGE, SAY Q_{25}
Q_2 = CHECK DISCHARGE, SAY Q_{50})

SKETCH



S_0 = 0.00994 ft/ft L = 100' L/100 S_0 = 0.97'

MEAN STREAM VELOCITY = 6.3

CULVERT DESCRIPTION		Q	CAP. CHART HW	HEADWATER COMPUTATION										CONTROL HW	OUTLET VELOCITY	COST	DHW ELEV.	COMMENTS
				INLET CONT.		OUTLET CONTROL $HW = H + h_o - LS_o$												
SIZE	ENTR. TYPE			$\frac{HW}{D}$	HW	K_e	H	d_c	$\frac{d_c + D}{2}$	TW	h_o	LS_o	HW					
3-10' x 5'	2	1212	—	1.28	6.4	0.5	18	—	—	6.0	6.0	.97	6.83	6.83	8.1		1160.91	Show on concept plan

SUMMARY & RECOMMENDATIONS

ARIZONA DEPARTMENT OF TRANSPORTATION

CULVERT COMPUTATION RECORD

PROJECT: PRICE ROAD GEC

STATION: Santan 1459+45 (McClintock)

DESIGNER: EL

DATE: Rev 6-11-90 3-21-90

HYDROLOGIC AND CHANNEL INFORMATION

DRAINAGE AREA —

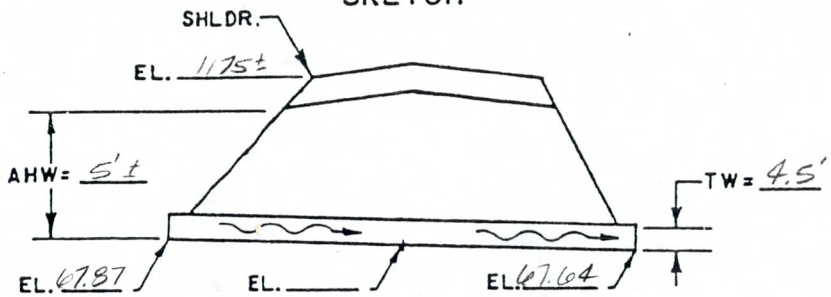
Offsite 100yr - Q_1 = 224 = $\frac{353-95}{2}+95$ TW_1 = 4.0

Q_2 = 424* TW_2 = 4.5

* 224 (off-site) + 200 (on-site)

(Q_1 = DESIGN DISCHARGE, SAY Q_{25})
(Q_2 = CHECK DISCHARGE, SAY Q_{50})

SKETCH



S_0 = 0.001 ft/ft L = 140' L/100 S_0 = 0.23'

MEAN STREAM VELOCITY = 4.3

CULVERT DESCRIPTION		Q	CAP. CHART HW	HEADWATER COMPUTATION										CONTROL HW	OUTLET VELOCITY	COST	DHW ELEV.	COMMENTS
				INLET CONT.		OUTLET CONTROL $HW = H + h_0 - LS_0$												
SIZE	ENTR. TYPE			$\frac{HW}{D}$	HW	K_e	H	d_c	$\frac{d_c+D}{2}$	TW	h_0	LS_0	HW					
2-10' x 4'	2	424	-	1.03	4.12	0.5	0.77	-	-	4.5	4.5	.23	5.04	5.04	5.3		1172.91	Show on concept plan

SUMMARY & RECOMMENDATIONS

HEC2 S/N: 39001226 HMVersion: 5.00 Data File: SANTAN.DAT

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*             FEBRUARY 1981             *
*           REVISED 02 AUG 88           *
*                                       *
*  RUN DATE  01/25/1990  TIME  14:34:15 *
*                                       *
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*
*    U.S. ARMY CORPS OF ENGINEE
*  THE HYDROLOGIC ENGINEERING C
*          609 SECOND STREET
*       DAVIS, CALIFORNIA 95616
*
*
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OFFSITE HYDROLOGY FOR AREAS CONTRIBUTING TO THE SANTAN OFFSITE COLLECTOR SYSTEM.

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

```
:::::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::::
:::                                       :::
:::   FULL MICRO-COMPUTER IMPLEMENTATION  :::
:::                                       :::
:::::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::::
```

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============================
H A E S T A D   M E T H O D S
============================
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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

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

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

              *DIAGRAM
   1          ID        PRICE ROAD OFFSITE HYDROLOGY
   2          ID        AREA WEST OF PRICE ROAD, NORTH OF SOUTHWEST LOOP
   3          ID        FLOWS TO SANTAN OFFSITE COLLECTOR SYSTEM
   4          ID        INITIAL ABSTRACTION USED TO REPRESENT DEVELOPMENT RETENTION PROVIDED
   5          ID        100 YEAR - 24 HOUR STORM  (PHOENIX DISTRIBUTION)
   6          ID        HDR - PHOENIX
   7          IT      10                    300
   8          IN      30
   9          IO       4       0       0

  10          KK  MCSWL2
  11          KM        CHANDLER - AGRICULTURAL (PART SECTION 36)
  12          KM        COMPUTE RUNOFF HYDROGRAPH FOR AGRICULTURAL AREA
  13          PH       1   18.38    0.71    1.39    2.44    2.66    2.81    3.11    3.33    3.70
  14          BA  0.1550
  15          LS    1.5      83
  16          UD   0.88

  17          KK    RT1
  18          KM        ROUTE MCSWL2 HYDROGRAPH TO MCSWL3 CONFLUENCE
  19          RK   1600  .00200   0.016            TRAP     0.0    25.0

  20          KK  MCSWL3
  21          KM        CHANDLER - AGRICULTURAL  (PART SECTION 36)
  22          KM        COMPUTE RUNOFF HYDROGRAPH FOR AGRICULTURAL AREA
  23          BA  0.1700
  24          LS    1.5      83
  25          UD   0.91

  26          KK   COMB1
  27          KM        COMBINE MCSWL3 - AT HALF-MILE POINT OF SECTION 36
  28          KM        THIS COMBINE FOR INFO. ONLY, SHOULD BE 99 CFS AT THIS POINT
  29          HC       2

  30          KK  SECT25
  31          KM       CHANDLER
  32          KM       COMPUTE RUNOFF FOR SECTION 25
  33          PH       1   18.38    0.71    1.39    2.44    2.66    2.81    3.11    3.33    3.70
  34          BA   1.00
  35          LS   1.81      84
  36          UD   0.91

  37          KK    RT1
  38          KM       ROUTE SECTION 25 HYDROGRAPH TO OUTLET-A(OLD) - SW CORNER SECT. 36
  39          RK   4400  0.0011   0.016            TRAP     0.0    25.0

  40          KK  SECT36
  41          KM       CHANDLER
  42          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 36
  43          BA   0.83
  44          LS   1.95      84
  45          UD   0.94
```

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

  46          KK  SECT36
  47          KM      COMBINE RT1 - SECT36 HYDROGRAPHS TO GIVE HYDROGRAPH AT SW COR SECT. 36
  48          HC      2

  49          KK  RT2536
  50          KM      ROUTE TO MID-SECTION POINT OF SECT. 35
  51          RK   2600    .008    .016            TRAP     9.5       2

  52          KK  RUSWL1
  53          KM       CHANDLER - COMMERCIAL (PART SECTION 35)
  54          KM       COMPUTE RUNOFF HYDROGRAPH FOR COMMERCIAL AREA
  55          BA  0.2145
  56          LS    3.0      92
  57          UD   0.45

  58          KK    RT1
  59          KM       ROUTE RUSWL1 HYDROGRAPH TO RUSWL3 CONFLUENCE
  60          RK   1200  .00330   0.016            TRAP     0.0    25.0

  61          KK  RUSWL2
  62          KM       CHANDLER - RESIDENTIAL - 0.16 (OLD) PART SECTION 35
  63          KM       COMPUTE RUNOFF HYDROGRAPH FOR RESIDENTIAL AREA
  64          BA  0.0933
  65          LS    2.9      84
  66          UD   0.51

  67          KK    RT2
  68          KM       ROUTE RUSWL2 HYDROGRAPH TO RUSWL3 CONFLUENCE
  69          RK   1800  .00330   0.016            TRAP     0.0    25.0

  70          KK  RUSWL3
  71          KM       CHANDLER - AGRICULTURAL  (PART SECTION 35)
  72          KM       COMPUTE RUNOFF HYDROGRAPH FOR AGRICULTURAL AREA
  73          BA  0.0990
  74          LS    1.5      83
  75          UD   0.57

  76          KK   COMB1
  77          HC      4

  78          KK    RT3
  79          KM       ROUTE COMB1 HYDROGRAPH TO SW COR. SECT. 35 (PLUS 1000 FT. WEST)
  80          RK   3600  .00800   0.016            TRAP     9.5     2.0

  81          KK  RUSWL4
  82          KM       CHANDLER - RESIDENTIAL - 0.16 (PART SECTION 34 AND 35)
  83          KM       COMPUTE RUNOFF HYDROGRAPH FOR RESIDENTIAL AREA
  84          BA   .1638
  85          LS   2.90      84
  86          UD   0.48
```

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

  87          KK  RUSWL5
  88          KM        CHANDLER - OPEN FIELD  (PART SECTION 34 AND 35)
  89          KM        COMPUTE RUNOFF HYDROGRAPH FOR OPEN FIELD
  90          BA  0.0890
  91          LS    1.00      83
  92          UD    0.39

  93          KK     RT4
  94          KM        ROUTE RUSWL5 HYDROGRAPH TO OUTLET
  95          RK    1000  .00330   0.016            TRAP     0.0    25.0

  96          KK  RUSWL6
  97          KM        CHANDLER - RESIDENTIAL - 0.16  (PART SECTION 34 AND 35)
  98          KM        COMPUTE RUNOFF HYDROGRAPH FOR RESIDENTIAL AREA
  99          BA  0.1464
 100          LS     2.9      84
 101          UD    0.34

 102          KK   COMB2
 103          HC       3

 104          KK     RT5
 105          KM        ROUTE COMB2 HYDROGRAPH TO OUTLET
 106          RK    1400  .00330   0.016            TRAP     0.0    25.0

 107          KK  RUSWL7
 108          KM        CHANDLER - RESIDENTIAL - 0.16  (PART SECTION 34 AND 35)
 109          KM        COMPUTE RUNOFF HYDROGRAPH FOR RESIDENTIAL AREA
 110          BA   .1281
 111          LS    2.90      84
 112          UD    0.34

 113          KK  RUSWL8
 114          KM        CHANDLER - PARK/SCHOOL (PART SECTION 34 AND 35)
 115          KM        COMPUTE RUNOFF HYDROGRAPH FOR PARK/SCHOOL
 116          BA  0.0628
 117          LS       0      64
 118          UD    0.22

 119          KK  RUSWL9
 120          KM        CHANDLER - AGRICULTURAL  (PART SECTION 34 AND 35)
 121          KM        COMPUTE RUNOFF HYDROGRAPH FOR AGRICULTURAL AREA
 122          BA  0.0961
 123          LS     1.5      83
 124          UD    0.23

 125          KK    SW34
 126          HC       5
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 127          KK    RT35
 128          KM        ROUTE TO BOTTOM OF SECTION 34
 129          RK    4000   .0013    .016           TRAP      10      2.0

 130          KK   SECT9
 131          KM       TEMPE (TO OLD OUTLET B)
 132          KM       COMPUTE RUNOFF FOR SECTION 9
 133          BA    0.33
 134          LS    1.94      83
 135          UD    0.44

 136          KK  SECT10   OUTLET 3
 137          KM       TEMPE
 138          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 10 - OUTLET 3
 139          BA    0.03
 140          LS    1.50      83
 141          UD    0.92

 142          KK  SECT10   OUTLET 2
 143          KM       TEMPE
 144          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 10 - OUTLET 2
 145          BA    0.19
 146          LS    2.25      88
 147          UD    0.53

 148          KK     RT1
 149          KM       ROUTE SECTION 10 OUTLET 2 HYDROGRAPH TO KYRENE/ELLIOT INTERSECTION
 150          RK    2100  0.0010   0.016            TRAP     0.0    25.0

 151          KK   COMB1
 152          KM       COMBINE SECT9 * SECT10-3 * RT1 TO GIVE HYDROGRAPH AT KYRENE/ELLIOT
 153          HC       3

 154          KK     RT2
 155          KM       ROUTE COMB1 HYDROGRAPH TO KYRENE/WARNER INTERSECTION
 156          RK    5280  0.0004   0.016            TRAP     0.0    25.0

 157          KK  SECT16   OUTLET 1
 158          KM       TEMPE
 159          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 16 - OUTLET 1
 160          BA    0.14
 161          LS    1.54      83
 162          UD    0.41

 163          KK  SECT15   OUTLET 2
 164          KM       TEMPE
 165          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 15 - OUTLET 2
 166          BA    0.31
 167          LS    1.45      83
 168          UD    0.98
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 169          KK   COMB2
 170          KM       COMBINE RT2 * SECT16-1 * SECT15-2 TO GIVE HYDROGRAPH AT KYRENE/WARNER
 171          HC       3

 172          KK     RT3
 173          KM       ROUTE COMB2 HYDROGRAPH TO KYRENE/RAY INTERSECTION
 174          RK    5280  0.0020   0.016            TRAP     0.0    25.0

 175          KK  SECT21   OUTLET 1
 176          KM       TEMPE
 177          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 21 - OUTLET 1
 178          BA    0.42
 179          LS    1.41      83
 180          UD    0.61

 181          KK  SECT22   OUTLET 1
 182          KM       TEMPE
 183          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 22 - OUTLET 1
 184          BA    0.82
 185          LS    2.26      83
 186          UD    0.38

 187          KK   COMB3
 188          KM       COMBINE RT3 * SECT21-1 * SECT22-1 TO GIVE HYDROGRAPH AT KYRENE/RAY
 189          HC       3

 190          KK     RT4
 191          KM       ROUTE COMB3 HYDROGRAPH TO KYRENE/CHANDLER INTERSECTION
 192          RK    5280  0.0019   0.016            TRAP     0.0    25.0

 193          KK  SECT12
 194          KM       TEMPE
 195          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 12
 196          BA    0.50
 197          LS    3.00      83
 198          UD    0.58

 199          KK     RT5
 200          KM       ROUTE SECT12 HYDROGRAPH TO SECT11 CONFLUENCE
 201          RK    2600  0.0006   0.016            TRAP     0.0    25.0

 202          KK  SECT11
 203          KM       TEMPE
 204          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 11
 205          BA    0.51
 206          LS    2.41      86
 207          UD    0.71

 208          KK   COMB4
 209          KM       COMBINE SECT12 * SECT11 HYDROGRAPHS
 210          HC       2
```

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

 211          KK     RT6
 212          KM       ROUTE COMB4 HYDROGRAPH TO RURAL/ELLIOT INTERSECTION
 213          RK    2600  0.0006   0.016            TRAP     0.0    25.0

 214          KK  SECT10   OUTLET 1
 215          KM       TEMPE
 216          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 10 - OUTLET 1
 217          BA    0.50
 218          LS    2.41      84
 219          UD    0.36

 220          KK   COMB5
 221          KM       COMBINE SECT10-1 * RT6 HYDROGRAPHS
 222          HC       2

 223          KK     RT7
 224          KM       ROUTE COMB5 HYDROGRAPH TO RURAL/WARNER INTERSECTION
 225          RK    5280  0.0006   0.016            TRAP     0.0    25.0

 226          KK  SECT13
 227          KM       TEMPE
 228          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 13
 229          BA    1.00
 230          LS    2.72      88
 231          UD    0.32

 232          KK     RT8
 233          KM       ROUTE SECT13 HYDROGRAPH TO RURAL/WARNER INTERSECTION
 234          RK    5280  0.0009   0.016            TRAP     0.0    25.0

 235          KK  SECT14
 236          KM       TEMPE
 237          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 14
 238          BA    1.00
 239          LS    2.83    75.7
 240          UD    0.75

 241          KK  SECT15   OUTLET 1
 242          KM       TEMPE
 243          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 15 - OUTLET 1
 244          BA    0.69
 245          LS    2.18      81
 246          UD    0.82

 247          KK   COMB6
 248          KM       COMBINE RT7 * RT8 * SECT14 * SECT15-1 TO GIVE HYDROGRAPH AT
 249          KM       RURAL/CHANDLER INTERSECTION
 250          HC       4
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 251          KK     RT9
 252          KM       ROUTE COMB6 HYDROGRAPH TO RURAL/CHANDLER INTERSECTION
 253          RK    5280  0.0006   0.016            TRAP     0.0    25.0

 254          KK  SECT24
 255          KM       TEMPE
 256          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 24
 257          BA    1.00
 258          LS    2.77      83
 259          UD    0.60

 260          KK    RT10
 261          KM       ROUTE SECT24 HYDROGRAPH TO SECT23 CONFLUENCE
 262          RK    5280  0.0011   0.016            TRAP     0.0    25.0

 263          KK  SECT23
 264          KM       TEMPE
 265          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 23
 266          BA    1.00
 267          LS    2.97      83
 268          UD    0.78

 269          KK  SECT22   OUTLET 2
 270          KM       TEMPE
 271          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 22 - OUTLET 2
 272          BA    0.13
 273          LS    1.45      83
 274          UD    0.33

 275          KK   COMB7
 276          KM       COMBINE RT9 * RT10 * SECT22-2 * SECT23 TO GIVE HYDROGRAPH AT
 277          KM       RURAL/RAY INTERSECTION
 278          HC       4

 279          KK    RT11
 280          KM       ROUTE COMB7 HYDROGRAPH TO RURAL/CHANDLER INTERSECTION
 281          RK    5280  0.0009   0.016            TRAP     0.0    25.0

 282          KK  SECT26
 283          KM       CHANDLER
 284          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 26
 285          BA    1.00
 286          LS    1.82      85
 287          UD    0.96

 288          KK   COMB8
 289          KM       COMBINE RT11 * SECT26
 290          HC       2
```

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

 291          KK    RT12
 292          KM       ROUTE COMB8 HYDROGRAPH TO KYRENE/CHANDLER INTERSECTION
 293          RK    5280  0.0009   0.016            TRAP     0.0    25.0

 294          KK  SECT28   OUTLET 1
 295          KM       CHANDLER
 296          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 28 - OUTLET 1
 297          BA    0.69
 298          LS    2.51      85
 299          UD    0.35

 300          KK  SECT27
 301          KM       CHANDLER
 302          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 27
 303          BA    1.00
 304          LS    2.18      88
 305          UD    1.38

 306          KK   COMB9
 307          KM       COMBINE SECT27 * RT13 * RT12 * RT4 TO GIVE HYDROGRAPH AT
 308          KM       KYRENE/CHANDLER INTERSECTION
 309          HC       4

 310          KK    RT13
 311          KM       ROUTE COMB9 HYDROGRAPH TO KYRENE/SOUTHWEST LOOP INTERSECTION
 312          RK    4000  0.0006   0.016            TRAP     0.0    25.0

 313          KK  SECT34
 314          KM       CHANDLER
 315          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 34
 316          BA    0.67
 317          LS    2.04      83
 318          UD    1.05

 319          KK   COMBB
 320          KM        COMBINE HYDROGRAPHS AT SW CORNER SECTION 34 (INCL. 35,36,25)
 321          HC       3

 322          KK  SECT33   OUTLET 2
 323          KM       CHANDLER
 324          KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 33 - OUTLET 2
 325          BA    0.26
 326          LS    1.53      86
 327          UD    0.54

 328          KK   COMBB
 329          KM        COMBINE HYDROGRAPHS AT BASIN B FROM AREAS TO THE EAST
 330          HC       2
```

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

  331         KK  SECT16   OUTLET 3
  332         KM       TEMPE
  333         KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 16 - OUTLET 3
  334         BA    0.23
  335         LS    3.00      88
  336         UD    0.39

  337         KK     RT1
  338         KM       ROUTE SECTION 16 OUTLET 3 HYDROGRAPH TO 56TH/RAY INTERSECTION
  339         RK    5280  0.0010   0.016            TRAP     0.0    25.0

  340         KK  SECT20
  341         KM       TEMPE
  342         KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 20
  343         BA    0.29
  344         LS    1.10      83
  345         UD    0.28

  346         KK   COMB1
  347         KM       COMBINE SECT10 * RT1 TO GIVE HYDROGRAPH AT 56TH/RAY INTERSECTION
  348         HC       2

  349         KK     RT2
  350         KM       ROUTE COMB1 HYDROGRAPH TO 56TH/CHANDLER INTERSECTION
  351         RK    5280  0.0010   0.016            TRAP     0.0    25.0

  352         KK  SECT29
  353         KM       CHANDLER
  354         KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 29
  355         BA    0.50
  356         LS    2.12      85
  357         UD    0.62

  358         KK   COMB2
  359         KM       COMBINE SECT29 * RT2 TO GIVE HYDROGRAPH AT 56TH/CHANDLER INTERSECTION
  360         HC       2

  361         KK     RT3
  362         KM       ROUTE COMB2 HYDROGRAPH TO OUTLET-C AT 56TH/SOUTHWEST LOOP INTERSECTION
  363         RK    3600  0.0010   0.016            TRAP     0.0    25.0

  364         KK  SECT16   OUTLET 2
  365         KM       TEMPE
  366         KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 16 - OUTLET 2
  367         BA    0.50
  368         LS    1.52      83
  369         UD    0.54

  370         KK     RT4
  371         KM       ROUTE SECT16 - OUTLET 2 HYDROGRAPH TO RAY/SO.PAC RR INTERSECTION
  372         RK    5400  0.0010   0.016            TRAP     0.0    25.0
```

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

  373         KK  SECT21   OUTLET 2
  374         KM       TEMPE
  375         KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 21 - OUTLET 2
  376         BA    0.59
  377         LS    1.60      83
  378         UD    0.60

  379         KK   COMB3
  380         KM       COMBINE SECT21-2 * RT4 * HYDROGRAPHS AT RAY/SO.PAC. RR INTERSECTION
  381         HC       2

  382         KK     RT5
  383         KM       ROUTE COMB3 HYDROGRAPH TO CHANDLER/SO.PAC. RR INTERSECTION
  384         RK    5500  0.0010   0.016            TRAP     0.0    25.0

  385         KK  SECT28   OUTLET 2
  386         KM       CHANDLER
  387         KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 28 - OUTLET 2
  388         BA    0.30
  389         LS    1.97      85
  390         UD    0.58

  391         KK   COMB4
  392         KM       COMBINE SECT28-2 * RT5 HYDROGRAPHS AT CHANDLER/SO.PAC. RR INTERSECTION
  393         HC       2

  394         KK     RT6
  395         KM       ROUTE COMB4 HYDROGRAPH TO SOUTHWEST LOOP/SO.PAC. RR INTERSECTION
  396         RK    3700  0.0010   0.016            TRAP     0.0    25.0

  397         KK  SECT32
  398         KM       CHANDLER
  399         KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 32
  400         BA    0.33
  401         LS    1.50      83
  402         UD    0.60

  403         KK  OUTLTC
  404         KM       COMBINE RT6 * SECT32 * RT3 TO GIVE HYDOGRAPH AT OUTLET-C AT
  405         KM       SOUTHWEST LOOP/SO.PAC. RR INTERSECTION
  406         HC       3

  407         KK  SECT33   OUTLET 1
  408         KM       CHANDLER
  409         KM       COMPUTE RUNOFF HYDROGRAPH FOR SECTION 33 - OUTLET 1
  410         BA    0.53
  411         LS    2.22      82
  412         UD    0.18
```

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

 413          KK  BASINB
 414          KM       COMBINE SECT33-1 AND OLD OUTLET C AREA
 415          HC       2

 416          KK  BASINB
 417          KM       COMBINE ALL HYDROGRAPHS AT BASIN B
 418          HC       2
 419          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

   10     MCSWL2
               V
               V
   17        RT1
               .
               .
   20          .      MCSWL3
               .           .
               .           .
   26      COMB1............
               .
               .
   30          .      SECT25
               .           V
               .           V
   37          .         RT1
               .           .
               .           .
   40          .           .      SECT36
               .           .           .
               .           .           .
   46          .      SECT36............
               .           V
               .           V
   49          .      RT2536
               .           .
               .           .
   52          .           .      RUSWL1
               .           .           V
               .           .           V
   58          .           .         RT1
               .           .           .
               .           .           .
   61          .           .           .      RUSWL2
               .           .           .           V
               .           .           .           V
   67          .           .           .         RT2
               .           .           .           .
               .           .           .           .
   70          .           .           .           .      RUSWL3
               .           .           .           .           .
               .           .           .           .           .
   76          .       COMB1..................................
               .           V
               .           V
   78          .         RT3
               .           .
               .           .
   81          .           .      RUSWL4
               .           .           .
               .           .           .
   87          .           .           .      RUSWL5
               .           .           .           V
               .           .           .           V
   93          .           .           .         RT4
               .           .           .           .
               .           .           .           .
   96          .           .           .           .      RUSWL6
               .           .           .           .           .
               .           .           .           .           .
  102          .           .       COMB2......................
               .           .           V
               .           .           V
  104          .           .         RT5
               .           .           .
               .           .           .
  107          .           .           .      RUSWL7
               .           .           .           .
               .           .           .           .
  113          .           .           .           .      RUSWL8
               .           .           .           .           .
               .           .           .           .           .
  119          .           .           .           .           .      RUSWL9
```

```
125   SW34.....................................
        V
        V
127   RT35
        .
        .
130     .     SECT9
        .       .
        .       .
136     .       .     SECT10
        .       .       .
        .       .       .
142     .       .       .       SECT10
        .       .       .         V
        .       .       .         V
148     .       .       .        RT1
        .       .       .         .
        .       .       .         .
151     .     COMB1.......................
        .       V
        .       V
154     .      RT2
        .       .
        .       .
157     .       .     SECT16
        .       .       .
        .       .       .
163     .       .       .       SECT15
        .       .       .         .
        .       .       .         .
169     .     COMB2.......................
        .       V
        .       V
172     .      RT3
        .       .
        .       .
175     .       .     SECT21
        .       .       .
        .       .       .
181     .       .       .       SECT22
        .       .       .         .
        .       .       .         .
187     .     COMB3.......................
        .       V
        .       V
190     .      RT4
        .       .
        .       .
193     .       .     SECT12
        .       .       V
        .       .       V
199     .       .      RT5
        .       .       .
        .       .       .
202     .       .       .       SECT11
        .       .       .         .
        .       .       .         .
208     .       .     COMB4............
        .       .       V
        .       .       V
211     .       .      RT6
        .       .       .
        .       .       .
214     .       .       .       SECT10
        .       .       .         .
        .       .       .         .
220     .       .     COMB5............
        .       .       V
        .       .       V
223     .       .      RT7
        .       .       .
        .       .       .
226     .       .       .       SECT13
        .       .       .         V
        .       .       .         V
232     .       .       .        RT8
        .       .       .         .
        .       .       .         .
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235                                                   SECT14
                                                        .
241                                                     .        SECT15
                                                        .          .
247                                          COMB6.................................
                                                V
                                                V
251                                           RT9
                                                .
254                                                  SECT24
                                                        V
                                                        V
260                                                    RT10
                                                        .
                                                        .
263                                                   SECT23
                                                        .
                                                        .
269                                                     .        SECT22
                                                        .          .
                                                        .          .
275                                          COMB7.................................
                                                V
                                                V
279                                           RT11
                                                .
                                                .
282                                                  SECT26
                                                        .
                                                        .
288                                          COMB8............
                                                V
                                                V
291                                           RT12
                                                .
                                                .
294                                                  SECT28
                                                        .
                                                        .
300                                                   SECT27
                                                        .
                                                        .
306                                     COMB9.................................
                                           V
                                           V
310                                      RT13
                                           .
                                           .
313                                           SECT34
                                                .
                                                .
319                                COMBB......................
                                      .
                                      .
322                                 SECT33
                                      .
                                      .
328                                COMBB............
                                      .
                                      .
331                                 SECT16
                                      V
                                      V
337                                   RT1
                                      .
                                      .
340                                           SECT20
                                                .
                                                .
346                                     COMB1............
                                           V
                                           V
349                                      RT2
                                           .
                                           .
352                                           SECT29
                                                .
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358          .          .        COMB2............
             .          .           V
             .          .           V
361          .          .         RT3
             .          .           .
             .          .           .
364          .          .           .      SECT16
             .          .           .          V
             .          .           .          V
370          .          .           .        RT4
             .          .           .          .
             .          .           .          .
373          .          .           .          .      SECT21
             .          .           .          .          .
             .          .           .          .          .
379          .          .           .      COMB3............
             .          .           .          V
             .          .           .          V
382          .          .           .        RT5
             .          .           .          .
             .          .           .          .
385          .          .           .          .      SECT28
             .          .           .          .          .
             .          .           .          .          .
391          .          .           .      COMB4............
             .          .           .          V
             .          .           .          V
394          .          .           .        RT6
             .          .           .          .
             .          .           .          .
397          .          .           .          .      SECT32
             .          .           .          .          .
             .          .           .          .          .
403          .          .        OUTLTC......................
             .          .           .
             .          .           .
407          .          .           .      SECT33
             .          .           .          .
             .          .           .          .
413          .          .        BASINB............
             .          .           .
             .          .           .
416          .       BASINB............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAG
HYDROGRAPH AT	MCSWL2	47.	13.17	15.	4.	2.	.16		
ROUTED TO	RT1	46.	13.33	15.	4.	2.	.16		
HYDROGRAPH AT	MCSWL3	50.	13.17	17.	5.	2.	.17		
2 COMBINED AT	COMB1	95.	13.17	32.	9.	5.	.32		
HYDROGRAPH AT	SECT25	214.	13.33	77.	24.	11.	1.00		
ROUTED TO	RT1	213.	13.50	76.	24.	11.	1.00		
HYDROGRAPH AT	SECT36	144.	13.33	55.	17.	8.	.83		
2 COMBINED AT	SECT36	353.	13.50	130.	41.	20.	1.83		
ROUTED TO	RT2536	351.	13.50	130.	41.	20.	1.83		
HYDROGRAPH AT	RUSWL1	5.	14.83	4.	1.	1.	.21		
ROUTED TO	RT1	5.	15.00	4.	1.	1.	.21		
HYDROGRAPH AT	RUSWL2	2.	14.33	1.	0.	0.	.09		
ROUTED TO	RT2	2.	14.67	1.	0.	0.	.09		
HYDROGRAPH AT	RUSWL3	40.	12.83	10.	3.	1.	.10		
4 COMBINED AT	COMB1	371.	13.50	144.	46.	22.	2.24		
ROUTED TO	RT3	367.	13.50	144.	46.	22.	2.24		
HYDROGRAPH AT	RUSWL4	3.	14.33	2.	1.	0.	.16		
HYDROGRAPH AT	RUSWL5	70.	12.50	12.	4.	2.	.09		
ROUTED TO	RT4	68.	12.67	12.	4.	2.	.09		
HYDROGRAPH AT	RUSWL6	3.	14.17	2.	1.	0.	.15		
3 COMBINED AT	COMB2	68.	12.67	16.	5.	2.	.40		
ROUTED TO	RT5	67.	12.67	16.	5.	2.	.40		
HYDROGRAPH AT	RUSWL7	2.	14.17	2.	1.	0.	.13		
HYDROGRAPH AT	RUSWL8	30.	12.33	4.	1.	1.	.06		
HYDROGRAPH AT	RUSWL9	59.	12.50	10.	3.	1.	.10		
5 COMBINED AT	SW34	403.	13.50	173.	56.	27.	2.92		
ROUTED TO	RT35	401.	13.67	171.	56.	27.	2.92		
HYDROGRAPH AT	SECT9	86.	12.83	22.	7.	3.	.33		
HYDROGRAPH AT	SECT10	9.	13.17	3.	1.	0.	.03		
HYDROGRAPH AT	SECT10	35.	13.00	11.	4.	2.	.19		
ROUTED TO	RT1	35.	13.17	11.	3.	2.	.19		
3 COMBINED AT	COMB1	113.	12.83	35.	11.	5.	.55		
ROUTED TO	RT2	113.	13.50	35.	11.	5.	.55		
HYDROGRAPH AT	SECT16	67.	12.67	13.	4.	2.	.14		
HYDROGRAPH AT	SECT15	91.	13.33	31.	9.	4.	.31		
3 COMBINED AT	COMB2	217.	13.50	78.	24.	12.	1.00		

ROUTED TO	RT3	212.	13.83	77.	24.	12.	1.00
HYDROGRAPH AT	SECT21	180.	12.83	44.	13.	6.	.42
HYDROGRAPH AT	SECT22	132.	12.83	37.	12.	6.	.82
3 COMBINED AT	COMB3	391.	13.00	156.	49.	24.	2.24
ROUTED TO	RT4	387.	13.17	155.	49.	24.	2.24
HYDROGRAPH AT	SECT12	6.	15.17	4.	2.	1.	.50
ROUTED TO	RT5	6.	15.67	4.	2.	1.	.50
HYDROGRAPH AT	SECT11	49.	13.33	21.	7.	3.	.51
2 COMBINED AT	COMB4	49.	13.33	24.	9.	4.	1.01
ROUTED TO	RT6	49.	13.50	24.	9.	4.	1.01
HYDROGRAPH AT	SECT10	61.	12.83	19.	6.	3.	.50
2 COMBINED AT	COMB5	81.	13.33	41.	15.	7.	1.51
ROUTED TO	RT7	81.	14.00	41.	15.	7.	1.51
HYDROGRAPH AT	SECT13	50.	13.00	26.	10.	5.	1.00
ROUTED TO	RT8	50.	13.67	25.	10.	5.	1.00
HYDROGRAPH AT	SECT14	15.	14.50	10.	4.	2.	1.00
HYDROGRAPH AT	SECT15	78.	13.33	31.	10.	5.	.69
4 COMBINED AT	COMB6	198.	13.83	103.	39.	19.	4.20
ROUTED TO	RT9	197.	14.33	103.	39.	19.	4.20
HYDROGRAPH AT	SECT24	27.	13.83	17.	7.	3.	1.00
ROUTED TO	RT10	27.	14.50	17.	7.	3.	1.00
HYDROGRAPH AT	SECT23	14.	15.17	10.	4.	2.	1.00
HYDROGRAPH AT	SECT22	76.	12.50	13.	4.	2.	.13
4 COMBINED AT	COMB7	242.	14.33	133.	54.	26.	6.33
ROUTED TO	RT11	240.	14.67	133.	54.	26.	6.33
HYDROGRAPH AT	SECT26	214.	13.33	79.	24.	12.	1.00
2 COMBINED AT	COMB8	335.	14.50	203.	78.	38.	7.33
ROUTED TO	RT12	332.	14.83	203.	78.	38.	7.33
HYDROGRAPH AT	SECT28	66.	12.83	23.	8.	4.	.69
HYDROGRAPH AT	SECT27	116.	14.00	60.	20.	10.	1.00
4 COMBINED AT	COMB9	745.	13.50	432.	155.	75.	11.26
ROUTED TO	RT13	731.	13.67	431.	155.	75.	11.26
HYDROGRAPH AT	SECT34	90.	13.50	38.	12.	6.	.67
3 COMBINED AT	COMBB	1220.	13.67	632.	223.	108.	14.85
HYDROGRAPH AT	SECT33	120.	12.83	28.	8.	4.	.26
2 COMBINED AT	COMBB	1260.	13.67	652.	231.	112.	15.11
HYDROGRAPH AT	SECT16	4.	14.83	3.	1.	1.	.23
ROUTED TO	RT1	4.	15.83	3.	1.	1.	.23
HYDROGRAPH AT	SECT20	249.	12.50	38.	11.	5.	.29
2 COMBINED AT	COMB1	249.	12.50	40.	12.	6.	.52

ROUTED TO	RT2	246.	12.83	39.	12.	6.	.52
HYDROGRAPH AT	SECT29	91.	13.00	29.	9.	4.	.50
2 COMBINED AT	COMB2	330.	12.83	68.	21.	10.	1.02
ROUTED TO	RT3	305.	13.17	67.	21.	10.	1.02
HYDROGRAPH AT	SECT16	205.	12.83	48.	14.	7.	.50
ROUTED TO	RT4	202.	13.17	47.	14.	7.	.50
HYDROGRAPH AT	SECT21	207.	12.83	53.	16.	8.	.59
2 COMBINED AT	COMB3	373.	13.00	100.	30.	14.	1.09
ROUTED TO	RT5	367.	13.50	99.	30.	15.	1.09
HYDROGRAPH AT	SECT28	71.	13.00	21.	6.	3.	.30
2 COMBINED AT	COMB4	416.	13.33	118.	37.	18.	1.39
ROUTED TO	RT6	411.	13.67	118.	36.	18.	1.39
HYDROGRAPH AT	SECT32	130.	12.83	32.	10.	5.	.33
3 COMBINED AT	OUTLTC	641.	13.50	213.	67.	32.	2.74
HYDROGRAPH AT	SECT33	120.	12.50	24.	8.	4.	.53
2 COMBINED AT	BASINB	671.	13.50	237.	75.	36.	3.27
2 COMBINED AT	BASINB	1911.	13.67	883.	306.	148.	18.38

APPENDIX III.D

HEC-1 Regional Detention Basin Operation Model
(Maximum Discharge to CLO = 450 cfs)

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****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             FEBRUARY 1981            *
*           REVISED 02 AUG 88          *
*                                      *
*  RUN DATE  04/10/1990  TIME  01:59:36 *
*                                      *
****************************************
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****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*                                      *
*                                      *
****************************************
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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
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:::::::::::::::::::::::::::::::::::::::::::::
:::::::::::::::::::::::::::::::::::::::::::::
:::                                       :::
:::   FULL MICRO-COMPUTER IMPLEMENTATION  :::
:::                                       :::
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H A E S T A D   M E T H O D S
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

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

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

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

  1           ID        PRICE EXPRESSWAY AND SANTAN HYDROLOGY       <PRICE45>
  2           ID        REGIONAL DETENTION BASIN OPERATION MODEL
  3           ID        100-YEAR 24-HOUR STORM - MAXIMUM Q OUT = 450 CFS
  4           ID        60-HOUR SIMULATION PERIOD
  5           ID        HDR - PHOENIX
  6           IT      20                    300
  7           IN      12                    300
  8           IO       3
              *DIRGRAM
              *

  9           KK  OUTLTA
 10           KM        INFLOW HYDROGRAPH INTO OUTLET - A ** WEST OF PRICE ROAD **
 11           BA    1.83
 12           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 13           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 14           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 15           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 16           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 17           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 18           QI    0.00    8.69   34.31   83.80  140.26  263.13  351.28  386.06  375.05  339.29
 19           QI  294.41  251.49  214.56  184.89  161.12  141.89  125.94  112.53  100.73   90.17
 20           QI   80.65   72.10   64.59   58.19   52.79   48.36   44.73   41.69   39.10   36.91
 21           QI   35.08   33.60   32.50   31.85   31.59   31.65   31.97   32.41   32.76   32.97
 22           QI   32.98   32.79   32.46   32.03   31.56   31.06   30.54   30.01   29.48   28.97
 23           QI   28.46   27.97   27.49   27.03   26.58   26.14   25.72   25.31   24.92   24.54
 24           QI   24.17   23.65   22.77   21.34   19.38   17.08   14.50   11.88    9.57    7.58
 25           QI    5.90    4.55    3.51    2.73    2.13    1.68    1.32    1.04    0.83    0.66
 26           QI    0.53    0.42    0.34    0.28    0.23    0.19    0.15    0.13    0.11    0.09
 27           QI    0.07    0.06    0.05    0.04    0.04    0.03    0.03    0.02    0.02    0.02
 28           QI    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.00    0.00
 29           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 30           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 31           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 32           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 33           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 34           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 35           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 36           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 37           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 38           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 39           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 40           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 41           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *

 42           KK  OUTLTB
 43           KM        INFLOW HYDROGRAPH INTO OUTLET - B  ** WEST OF PRICE ROAD **
 44           BA   13.81
 45           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 46           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 47           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 48           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 49           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 50           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  51          QI     0.00    32.86   137.22   233.21   249.32   380.95   674.79   760.84   749.06   756.87
  52          QI   753.78   746.83   726.28   693.30   718.99   770.40   759.96   718.86   671.64   621.59
  53          QI   572.32   527.27   487.24   452.18   421.50   394.24   369.13   345.18   322.22   300.74
  54          QI   281.42   265.73   252.48   241.01   232.67   226.74   221.01   215.68   210.72   206.18
  55          QI   202.02   198.33   195.24   192.86   191.32   190.73   190.70   190.33   189.13   187.32
  56          QI   185.20   182.96   180.63   178.23   175.74   173.18   170.61   168.08   165.60   163.20
  57          QI   160.85   156.02   150.87   145.81   138.01   129.16   120.25   111.88   104.27    97.29
  58          QI    90.81    84.78    79.00    73.24    67.42    61.63    55.81    49.94    44.22    38.90
  59          QI    34.14    29.98    26.39    23.32    20.66    18.38    16.38    14.63    13.08    11.71
  60          QI    10.50     9.42     8.45     7.60     6.84     6.16     5.56     5.03     4.56     4.14
  61          QI     3.76     3.42     3.12     2.85     2.60     2.38     2.18     2.01     1.85     1.70
  62          QI     1.57     1.45     1.34     1.24     1.15     1.07     0.99     0.92     0.86     0.80
  63          QI     0.75     0.70     0.65     0.61     0.57     0.53     0.50     0.47     0.44     0.42
  64          QI     0.40     0.37     0.35     0.33     0.32     0.30     0.28     0.27     0.25     0.24
  65          QI     0.23     0.22     0.21     0.20     0.19     0.18     0.17     0.16     0.16     0.15
  66          QI     0.14     0.14     0.13     0.12     0.12     0.11     0.11     0.10     0.10     0.10
  67          QI     0.09     0.09     0.08     0.08     0.08     0.08     0.07     0.07     0.07     0.06
  68          QI     0.06     0.06     0.06     0.06     0.05     0.05     0.05     0.05     0.05     0.05
  69          QI     0.04     0.04     0.04     0.04     0.04     0.04     0.04     0.03     0.03     0.03
  70          QI     0.03     0.03     0.03     0.03     0.03     0.03     0.03     0.03     0.02     0.02
  71          QI     0.02     0.02     0.02     0.02     0.02     0.02     0.02     0.02     0.02     0.02
  72          QI     0.02     0.02     0.02     0.02     0.02     0.02     0.02     0.01     0.01     0.01
  73          QI     0.01     0.01     0.01     0.01     0.01     0.01     0.01     0.01     0.01     0.01
  74          QI     0.01     0.01     0.01     0.01     0.01     0.01     0.01     0.01     0.01     0.00
              *

  75          KK  COMBAB
  76          KM        COMBINE FLOWS FROM OUTLET A & B AT APPROX GILA DRAIN LOCATION
  77          HC       2
              *

  78          KK  OUTLTC
  79          KM        INFLOW HYDROGRAPH INTO OUTLET - C  ** WEST OF PRICE ROAD **
  80          BA    2.74
  81          QI     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
  82          QI     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
  83          QI     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
  84          QI     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
  85          QI     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
  86          QI     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00     0.00
  87          QI     0.00    12.36    49.09    95.59   133.50   421.42   540.13   593.40   651.24   576.03
  88          QI   479.10   392.20   323.44   270.43   229.91   198.91   174.70   155.15   138.74   124.81
  89          QI   113.62   104.33    94.74    86.25    79.09    73.06    67.94    63.49    59.59    56.22
  90          QI    53.34    50.96    49.10    47.79    47.02    46.65    46.40    46.40    46.80    47.21
  91          QI    47.24    47.08    46.93    46.81    46.61    46.30    45.79    45.14    44.41    43.65
  92          QI    42.89    42.15    41.42    40.72    40.04    39.38    38.74    38.13    37.53    36.96
  93          QI    36.41    35.72    34.69    33.15    31.03    28.46    25.91    23.41    20.76    18.00
  94          QI    15.44    13.26    11.47     9.95     8.65     7.52     6.53     5.65     4.85     4.14
  95          QI     3.53     3.02     2.58     2.22     1.91     1.66     1.44     1.26     1.10     0.96
  96          QI     0.85     0.74     0.66     0.59     0.52     0.47     0.42     0.37     0.34     0.30
  97          QI     0.28     0.25     0.23     0.21     0.19     0.17     0.16     0.14     0.13     0.12
  98          QI     0.11     0.10     0.09     0.09     0.08     0.07     0.07     0.06     0.06     0.06
  99          QI     0.05     0.05     0.05     0.04     0.04     0.04     0.03     0.03     0.03     0.03
 100          QI     0.03     0.03     0.02     0.02     0.02     0.02     0.02     0.02     0.02     0.02
 101          QI     0.02     0.01     0.01     0.01     0.01     0.01     0.01     0.01     0.01     0.01
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 102          QI    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01
 103          QI    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.00    0.00    0.00
 104          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 105          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 106          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 107          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 108          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 109          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 110          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *

 111          KK  COMABC
 112          KM        COMBINE OUTLETS A,B & C
 113          KM        TOTAL FLOW FROM WEST OF PRICE ROAD
 114          HC       2
              *
              *
 115          IN       5                    300

 116          KK  KYRENE
 117          KM        ONSITE DRAINAGE/STORAGE ANALYSIS 50 YEAR 24 HOUR STORM
 118          KM        USE PUMP STATION 'INFLOW' HYDROGRAPH FROM KYRENE2.DAT ONSITE FILE
 119          KM        PUMP STATION DESIGN Q IS 200 CFS.
 120          BA    0.11
 121          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 122          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 123          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 124          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 125          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 126          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 127          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 128          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 129          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 130          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 131          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 132          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00     1.0     1.0     1.0
 133          QI    1.00    1.00    1.00    1.00    1.00    1.00    2.00    2.00    2.00    2.00
 134          QI    2.00    3.00    3.00    3.00    4.00    4.00    4.00    5.00    5.00    6.00
 135          QI    9.00   14.00   22.00   34.00   54.00   94.00  159.00  209.00  216.00  188.00
 136          QI  150.00  116.00   88.00   65.00   47.00   35.00   26.00   20.00   17.00   14.00
 137          QI   12.00   11.00   11.00   10.00    9.00    9.00    8.00    8.00    8.00    7.00
 138          QI    7.00    7.00    6.00    6.00    6.00    6.00    6.00    5.00    5.00    5.00
 139          QI    5.00    5.00    5.00    5.00    4.00    4.00    4.00    4.00    4.00    4.00
 140          QI    3.00    3.00    3.00    3.00    3.00    3.00    3.00    3.00    3.00    3.00
 141          QI    3.00    3.00    3.00    3.00    3.00    3.00    3.00    3.00    3.00    2.00
 142          QI    2.00    2.00    2.00    2.00    2.00    2.00    2.00    2.00    2.00    2.00
 143          QI    2.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00
 144          QI    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00
 145          QI    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00
 146          QI    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00
 147          QI    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    0.00    0.00
 148          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 149          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 150          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 151          KK  CKYREN
 152          KM        COMBINE PUMPOUT FROM ONSITE USEING INFLOW HYDROGRAPH TO PUMP STATION
 153          HC       2
              *
              *
              *

 154          KK  MCCLINTOCK
 155          KM        ONSITE DRAINAGE/STORAGE ANALYSIS 50 YEAR 24 HOUR STORM
 156          KM        USE PUMP STATION 'OUTFLOW' HYDROGRAPH FROM MCCLIN4.DAT ONSITE FILE
 157          KM        PUMP STATION DESIGN Q IS 200 CFS.
 158          BA    0.11
 159          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 160          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 161          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 162          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 163          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 164          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 165          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 166          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 167          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 168          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 169          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 170          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 171          QI    0.00    0.00    0.00    0.00    0.00    0.00   40.00    0.00    0.00    0.00
 172          QI    0.00    0.00    0.00    0.00   40.00    0.00    0.00    0.00    0.00    0.00
 173          QI   40.00   40.00    0.00  120.00    0.00  200.00  200.00  200.00  200.00  200.00
 174          QI  200.00  200.00    0.00    0.00  120.00    0.00    0.00    0.00   40.00    0.00
 175          QI    0.00    0.00   40.00    0.00    0.00    0.00    0.00   40.00    0.00    0.00
 176          QI    0.00    0.00   40.00    0.00    0.00    0.00    0.00    0.00    0.00   40.00
 177          QI    0.00    0.00    0.00    0.00    0.00   40.00    0.00    0.00    0.00    0.00
 178          QI    0.00    0.00    0.00   40.00    0.00    0.00    0.00    0.00    0.00    0.00
 179          QI    0.00    0.00   40.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 180          QI    0.00    0.00   40.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 181          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 182          QI   40.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 183          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 184          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 185          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00   40.00    0.00
 186          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 187          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 188          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *
              *

 189          KK  CMCCLINTOCK
 190          KM        COMBINE PUMPOUT FROM ONSITE USEING OUTFLOW HYDROGRAPH FROM PUMP STATION
 191          HC       2
              *
              *
 192          IN      20                      300
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 193          KK  ADJPKB
 194          KM        ADJUST REGIONAL BASIN B VOLUME FOR REDUCTION IN PEAK PUMPING AT MAX HEAD
 195          KM        ADD IN HYDROGRAPH ORDINATES THAT CORRESPONDS TO THE PUMPING RATE
 196          KM        REDUCTIONS DURING THE PEAK FLOW PERIOD IN THE PRICE TUNNEL.
 197          KM        ADDING IN ORDINATES IS REQUIRED TO ACCOUNT FOR THE VOLUME OUTFLOW
 198          KM        REDUCTION WHEN THE RATE IS DECREASED.  HEC-1 ONLY HAS THE ABILITY
 199          KM        TO TURN ON AND OFF PUMPS FOR WATER SURFACE ELEVATIONS AND CANNOT
 200          KM        REDUCE PUMP FLOWS TO ACCOUNT FOR CHANGES IN THE DOWNSTREAM CAPACITIES.
 201          BA    0.01
 202          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 203          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 204          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 205          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00  100.00  100.00  100.00
 206          QI   100.0   100.0  100.00  100.00  100.00  100.00   67.00   33.00    0.00    0.00
 207          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 208          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 209          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 210          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 211          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 212          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 213          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 214          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 215          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 216          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 217          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 218          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 219          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 220          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 221          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 222          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 223          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 224          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 225          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 226          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 227          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 228          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 229          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 230          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 231          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *

 232          KK   CADJB
 233          KM        COMBINE BASIN ADJUSTMENT FLOWS TO BASIN B
 234          KO       1
 235          HC       2
              *

 236          KK   ROABC
 237          KM        ROUTE TOTAL FLOW FROM WEST OF PRICE ROAD THROUGH REGIONAL BASIN B
 238          KM        MAX PUMPING RATE OF 150 cfs OUTFLOW TO BASIN H AT PRICE/PECOS (1390x995)
 239          KO       1
 240          RS       1    ELEV     0.0
 241          SV     0.0    1.59     3.3    30.3   533.0   638.6
 242          SE    24.2    24.3    24.4    26.2    50.2    54.2
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 243          SQ     0.0    60.0   150.0   150.0   150.0   150.0
              *
              *
 244          IN      20                     300

 245          KK    ADJB
 246          KM        ADJUST REGIONAL BASIN B HYDROGRAPH for REDUCTION IN PEAK PUMPING AT MAX,
 247          KM        SUBTRACT OUT THE ORDINATES ADDED INTO BASIN B IN ADJPKB ABOVE.  THIS
 248          KM        WILL ADJUST THE OUTFLOW HYDROGRAPH TO ACCOUNT FOR PEAK OUTFLOW
 249          KM        REDUCTION DUE TO THE CARRIAGE LANE OUTFALL CAPACITY DURING THE
 250          KM        PEAK FLOWS CONDITIONS.
 251          BA    0.01
 252          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 253          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 254          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 255          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00 -100.00 -100.00 -100.00
 256          QI  -100.0  -100.0 -100.00 -100.00 -100.00 -100.00  -67.00  -33.00    0.00    0.00
 257          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 258          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 259          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 260          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 261          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 262          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 263          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 264          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 265          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 266          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 267          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 268          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 269          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 270          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 271          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 272          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 273          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 274          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 275          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 276          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 277          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 278          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 279          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 280          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 281          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *

 282          KK    CADJB
 283          KM        COMBINE BASIN ADJUSTMENT FLOWS TO BASIN E
 284          KM        THIS HYDROGRAPH IS SIMULAR TO WHAT ACTUAL REGULATED OUTFLOW
 285          KM        HYDROGRAPH WOULD LOOK LIKE FOR REGULATED OUTFLOW CONDITIONS.
 286          KO       1
 287          HC       2
              *
              *
 288          IN      12                     310
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

289           KK    BASH
290           KM        OFFSITE INFLOW INTO BASIN H AT PRICE AND PECOS INTERCHANGE FROM EAST
291           KO       3
292           BA    6.76
293           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
294           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
295           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
296           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
297           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.01    0.04    0.10    0.21
298           QI    0.39    0.64    0.98    1.43    2.00    2.72    3.65    4.88    6.57    9.81
299           QI   17.35   40.17   84.15  157.71  255.02  413.77  498.78  738.94  766.73  724.13
300           QI  651.16  578.19  513.98  461.77  419.16  385.17  357.03  332.76  310.86  290.82
301           QI  273.04  257.39  243.47  230.94  219.41  208.60  198.28  188.77  180.16  231.06
302           QI  266.57  267.73  269.41  275.07  284.98  292.73  296.44  298.71  300.62  302.74
303           QI  305.48  308.84  312.78  317.34  322.46  327.76  332.81  337.94  343.13  347.90
304           QI  352.29  356.32  360.03  363.42  366.42  368.99  371.12  372.80  374.07  374.93
305           QI  375.45  375.48  374.63  372.22  368.09  362.92  357.28  351.35  345.22  339.24
306           QI  333.55  328.09  322.75  317.35  311.81  306.05  300.07  293.86  287.41  280.73
307           QI  273.87  266.79  259.39  251.92  244.89  238.17  231.52  225.00  218.58  212.28
308           QI  206.10  200.05  194.15  188.41  182.85  177.47  172.30  167.36  162.81  159.09
309           QI  156.68  155.31  154.12  152.82  151.49  150.11  148.70  147.25  145.78  144.30
310           QI  142.82  141.38  139.94  138.43  136.93  135.42  133.94  132.46  131.00  129.55
311           QI  128.13  126.72  125.34  123.98  122.65  121.34  120.07  118.96  118.33  118.14
312           QI  118.07  118.01  117.94  117.88  117.82  117.76  117.70  117.64  117.57  117.51
313           QI  117.44  117.38  117.32  117.25  117.19  117.12  117.05  116.99  116.92  116.85
314           QI  116.79  116.72  116.65  116.58  116.51  116.44  116.37  116.30  116.23  116.16
315           QI  116.09  116.02  115.95  115.88  115.81  115.74  115.67  115.60  115.53  115.46
316           QI  115.38  115.31  115.24  115.17  115.09  114.99  114.83  114.61  114.38  114.14
317           QI  113.91  113.68  113.45  113.22  112.99   57.77   57.54   57.32   57.09   56.87
318           QI   56.65   56.43   56.21   55.99   55.77   55.56   55.34   55.12   54.91   54.70
319           QI   54.49   54.28   54.07   53.86   53.65   53.44   53.24   53.03   52.83   52.63
320           QI   52.43   52.23   52.03   51.83   51.63   51.43   51.24   51.04   50.85   50.65
321           QI   50.45   50.24   50.02   49.79   49.55   49.31   49.06   48.80   48.54   48.27
322           QI   48.00   47.72   47.44   47.16   46.88   46.59   46.30   46.01   45.73   45.43
323           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *
              *
324           IN       5                       300

325           KK  INTERCHANGE INFLOW
326           KM        ONSITE DRAINAGE/STORAGE ANALYSIS -50 YEAR 24 HOUR STORM
327           KM        USE OUTFLOW HYDROGRAPH FROM THE PRICE/SANTAN INTERCHANGE
328           BA    0.16
329           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
330           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
331           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
332           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
333           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
334           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
335           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
336           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
337           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
338           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
339           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 340          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 341          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 342          QI    0.00    0.00    0.00    0.00    0.00    0.00   40.00   40.00   40.00    0.00
 343          QI    0.00    0.00    0.00   40.00  120.00  120.00  200.00  200.00  200.00  200.00
 344          QI  200.00  200.00  200.00  200.00  200.00  200.00    0.00    0.00    0.00    0.00
 345          QI    0.00    0.00   40.00   40.00   40.00    0.00    0.00    0.00    0.00    0.00
 346          QI    0.00    0.00    0.00    0.00   40.00   40.00   40.00    0.00    0.00    0.00
 347          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 348          QI   40.00   40.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 349          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 350          QI    0.00   40.00   40.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 351          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 352          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 353          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 354          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 355          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 356          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 357          QI    0.00    0.00    0.00   40.00   40.00    0.00    0.00    0.00    0.00    0.00
 358          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *
              *

 359          KK  CINTERCHANGE
 360          KM        COMBINE ONSITE FLOWS TO BASIN H. USE ONSITE FROM PUMP STATION AT ELLIOT
 361          HC       2
              *

 362          KK   CBASH
 363          KM        COMBINE PUMPOUT FROM BASIN B WITH INFLOW FROM EAST INTO BASIN H
 364          KM        BASIN OUTFLOW IS 88 FROM EAST BASIN AND 767 FROM OFFSITE
 365          HC       2
              *
 366          IN      12                     310

 367          KK    BASG
 368          KM        INFLOW INTO PRICE BASIN G FROM EAST
 369          BA    4.37
 370          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 371          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 372          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 373          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 374          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 375          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.01    0.04    0.17    0.82
 376          QI    4.27   23.63   65.05  129.91  189.65  223.82  228.38  209.70  175.27  397.10
 377          QI  954.28  905.32  843.40  750.42  650.70  561.76  486.59  424.50  372.86  329.62
 378          QI  293.55  262.86  236.31  213.14  192.75  174.77  159.23  145.96  134.73  125.14
 379          QI  116.85  109.70  103.63   98.58   94.39   90.95   88.07   85.64   83.62   82.08
 380          QI   80.98   80.17   79.47   78.77   78.01   77.18   76.25   75.24   74.12   72.95
 381          QI   71.75   70.55   69.36   68.18   67.03   65.90   64.80   63.73   62.69   61.68
 382          QI   60.70   59.62   58.31   56.55   54.32   51.67   48.71   45.61   42.47   39.16
 383          QI   35.68   32.14   28.66   25.32   22.21   19.38   16.87   14.65   12.72   11.04
 384          QI    9.58    8.32    7.25    6.33    5.55    4.90    4.32    3.81    3.37    2.97
 385          QI    2.60    2.32    2.07    1.85    1.66    1.48    1.33    1.20    1.08    0.97
 386          QI    0.88    0.80    0.72    0.65    0.59    0.54    0.49    0.45    0.41    0.37
 387          QI    0.34    0.31    0.28    0.26    0.24    0.22    0.20    0.19    0.17    0.16
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 388          QI    0.14    0.13    0.12    0.11    0.11    0.10    0.09    0.08    0.08    0.07
 389          QI    0.07    0.06    0.06    0.05    0.05    0.05    0.04    0.04    0.04    0.03
 390          QI    0.03    0.03    0.03    0.03    0.02    0.02    0.02    0.02    0.02    0.02
 391          QI    0.02    0.02    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01
 392          QI    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01    0.01
 393          QI    0.01    0.01    0.01    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 394          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 395          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 396          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 397          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 398          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 399          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 400          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *

 401          KK   RBASG
 402          KM        ROUTE OFFSITE FLOW INTO BASIN H FROM EAST OF REGIONAL BASIN G
 403          KM     54 ~~48~~ INCH GRAVITY LINE OUTFLOW TO BASIN H
 404          KO       1
 405          RS       1    ELEV     0.0
 406          SV     0.0    0.89   177.0   233.0
 407          SE    67.3    67.4    83.3    87.3
 408          SQ     0.0    52.0    52.0    52.0
              *

 409          KK   CBASG
 410          KM        COMBINE PUMPOUT FROM BASIN B AND INFLOW FROM EAST INTO BASIN H
 411          KM        AND BASIN G OUTFLOW.
 412          KO       3
 413          HC       2
              *
              *
 414          IN      20                     300

 415          KK    ADJH
 416          KM        ADJUST REGIONAL BASIN H VOLUME FOR REDUCTION IN PEAK PUMPING AT MAX HEAD
 417          KM        ADD IN HYDROGRAPH ORDINATES THAT CORRESPOND~~S~~ TO THE PUMPING RATE
 418          KM        REDUCTIONS DURING THE PEAK FLOW PERIOD IN THE PRICE TUNNEL.
 419          KM        ADDING IN ORDINATES IS REQUIRED TO ACCOUNT FOR THE VOLUME OUTFLOW
 420          KM        REDUCTION WHEN THE RATE I~~N~~S DECREASED.  HEC-1 ONLY HAS THE A~~B~~LITY
 421          KM        TO TURN ON AND OFF PUMPS FOR WATER SURFACE ELEVATIONS AND CANNOT
 422          KM        REDUCE PUMP FLOWS TO ACCOUNT FOR CHANGES IN THE DOWNSTREAM CAPACITIES.
 423          BA    0.01
 424          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 425          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 426          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 427          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00   33.00  250.00  250.00
 428          QI   250.0   250.0  250.00  250.00  250.00  250.00  166.70   83.30    0.00    0.00
 429          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 430          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 431          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 432          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 433          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 434          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 435          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 436          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 437          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 438          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 439          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 440          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 441          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 442          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 443          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 444          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 445          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 446          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 447          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 448          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 449          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 450          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 451          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 452          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 453          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *

 454          KK   CADJH
 455          KM        COMBINE BASIN ADJUSTMENT FLOWS TO BASIN H
 456          HC       2
              *

 457          KK   RBASH
 458          KM        ROUTE TOTAL FLOW FROM WEST OF PRICE ROAD AND BASINS G AND H THROUGH
 459          KM        REGIONAL BASIN H. PUMPED OUTFLOW TO BASIN E AT 375 CFS.
 460          KO       1
 461          RS       1    ELEV     0.0
 462          SV    0.00     2.1     4.2     6.3     8.3    10.6    11.9   211.3   389.0   473.4
 463          SE    52.4    52.6    52.7   52.85   53.03    53.2    53.3    68.4    78.4    82.4
 464          SQ     0.0    75.0   150.0   225.0   300.0   375.0   375.0   375.0   375.0   375.0
              *
              *
 465          IN      20                     300

 466          KK   ADJVH
 467          KM        ADJUST REGIONAL BASIN H HYDROGRAPH for REDUCTION IN PEAK PUMPING AT MAX.
 468          KM        SUBTRACT OUT THE ORDINATES ADDED INTO BASIN H IN ADJH ABOVE.  THIS
 469          KM        WILL ADJUST THE OUTFLOW HYDROGRAPH TO ACCOUNT FOR PEAK OUTFLOW
 470          KM        REDUCTION DUE TO THE CARRIAGE LANE OUTFALL CAPACITY DURING THE
 471          KM        PEAK FLOWS CONDITIONS.
 472          KO       3
 473          BA    0.01
 474          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 475          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 476          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 477          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00  -33.00 -250.00 -250.00
 478          QI  -250.0  -250.0 -250.00 -250.00 -250.00 -250.00 -166.70  -58.30    0.00    0.00
 479          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 480          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 481          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 482          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 483          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 484          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 485          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 486          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 487          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 488          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 489          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 490          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 491          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 492          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 493          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 494          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 495          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 496          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 497          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 498          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 499          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 500          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 501          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 502          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 503          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *

 504          KK   CADJH
 505          KM        COMBINE BASIN ADJUSTMENT FLOWS TO BASIN H
 506          KO       1
 507          HC       2
              *
 508          IN       5                    310

 509          KK    BASF
 510          KM        INFLOW INTO REGIONAL BASIN F    FROM EAST
 511          KO       3
 512          BA    1.10
 513          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 514          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 515          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 516          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 517          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 518          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 519          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 520          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 521          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 522          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 523          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 524          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 525          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 526          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 527          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.99    7.72   27.01
 528          QI   62.42  103.74  136.34  149.12  145.73  134.54  121.97  112.45  104.41   97.27
 529          QI   91.09   85.71   81.08   77.05   73.43   70.09   67.01   64.18   61.62   59.36
 530          QI   57.36   55.57   53.93   52.41   50.99   49.67   48.43   47.27   46.17   45.14
 531          QI   44.16   42.94   41.14   38.57   35.76   33.18   31.07   29.53   28.34   27.37
 532          QI   26.58   25.90   25.31   24.77   24.29   23.84   23.42   23.02   22.65   22.29
 533          QI   21.94   21.62   21.30   20.99   20.70   20.41   20.13   19.86   19.59   19.34
 534          QI   19.09   18.85   18.62   18.39   18.17   17.96   17.75   17.69   17.95   18.64
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

535           QI   19.47   20.21   20.75   21.02   21.13   21.15   21.09   21.00   20.87   20.73
536           QI   20.58   20.42   20.26   20.09   19.93   19.77   19.61   19.45   19.29   19.14
537           QI   18.99   18.84   18.70   18.55   18.41   18.28   18.14   18.01   17.88   17.75
538           QI   17.62   17.50   17.38   17.25   17.14   17.02   16.91   16.79   16.68   16.57
539           QI   16.46   16.36   16.25   16.15   16.05   15.95   15.85   15.75   15.66   15.56
540           QI   15.47   15.37   15.28   15.19   15.11   15.02   14.93   14.85   14.76   14.68
541           QI   14.60   14.52   14.44   14.36   14.28   14.21   14.13   14.06   13.98   13.56
542           QI   12.37   10.18    7.64    5.32    3.51    2.36    1.59    1.06    0.71    0.47
543           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *

544           KK   CBASF
545           KM        COMBINE PUMPOUT FROM BASIN H AND INFLOW FROM EAST INTO BASIN F
546           KM        AT BASIN E. ASSUME NO ATTENUATION FROM BASIN F.
547           HC       2
              *
548           IN      12                      310

549           KK    BASE
550           KM        OFFSITE INFLOW HYDROGRAPH INTO REGIONAL BASIN E  FROM EAST
551           BA    6.33
552           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
553           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
554           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
555           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
556           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
557           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
558           QI    0.00    4.72   38.91  108.14  150.90  136.90  135.11  164.13  145.88  135.97
559           QI  147.92  157.47  167.59  197.37  278.68  292.07  285.94  271.57  254.64  238.20
560           QI  223.73  210.96  199.42  188.35  177.63  167.39  157.69  148.56  140.08  132.39
561           QI  125.53  120.09  116.38  113.35  110.91  108.81  106.45  104.08  102.03  100.37
562           QI   99.10   98.20   97.57   97.12   96.77   96.39   95.92   95.31   94.56   93.70
563           QI   92.77   91.80   90.82   89.83   88.84   87.86   86.90   85.96   85.04   84.14
564           QI   83.27   80.84   76.02   71.47   66.96   62.27   58.96   56.84   55.13   53.27
565           QI   51.05   48.42   45.45   42.23   38.91   35.63   32.57   29.84   27.48   25.52
566           QI   23.94   22.68   21.67   20.86   20.20   19.67   19.24   18.90   18.62   18.39
567           QI   18.20   18.04   17.91   17.80   17.70   17.61   17.53   17.47   17.40   17.34
568           QI   17.29   17.24   17.19   17.15   17.10   17.06   17.02   16.98   16.94   16.91
569           QI   16.87   16.83   16.79   16.75   16.72   16.68   16.64   16.61   16.57   16.53
570           QI   16.50   16.46   16.42   16.39   16.35   16.31   16.28   16.24   16.20   16.16
571           QI   16.13   16.09   16.05   16.02   15.98   15.94   15.90   15.86   15.83   15.79
572           QI   15.75   15.71   15.67   15.64   15.60   15.56   15.52   15.48   15.45   15.41
573           QI   15.37   15.33   15.30   15.26   15.22   15.18   15.15   15.11   15.07   15.03
574           QI   14.99   14.96   14.92   14.88   14.84   14.81   14.77   14.74   14.70   14.66
575           QI   14.63   14.59   14.55   14.51   14.48   14.44   14.40   14.37   14.33   14.30
576           QI   14.26   14.22   14.19   14.15   14.11   14.08   14.04   13.99   13.91   13.83
577           QI   13.74   13.65   13.56   13.47   13.38   13.29   13.20   13.11   13.03   12.94
578           QI   12.86   12.77   12.69   12.60   12.52   12.44   12.35   12.27   12.19   12.11
579           QI   12.03   11.95   11.87   11.79   11.72   11.64   11.56   11.48   11.41   11.33
580           QI   11.26   11.18   11.11   11.04   10.96   10.89   10.82   10.74   10.67   10.60
581           QI   10.53   10.46   10.39   10.32   10.25   10.18   10.12   10.05    9.98    9.91
582           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

583           KK   CBASE
584           KM        COMBINE PUMPOUT FROM BASIN H AND INFLOW FROM EAST INTO BASIN E AND
585           KM        BASIN F OUTFLOW AT BASIN E.
586           HC       2
              *
587           IN       5                    300

588           KK  WARNER
589           KM        ONSITE DRAINAGE/STORAGE ANALYSIS  50 YEAR 24 HOUR STORM
590           KM        DRAINAGE AREA - CHANDLER TO WARNER ONSITE PUMP STATION -
591           KM        PUMP STATION CAPACITY IS 200 CFS.
592           BA    0.13
593           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
594           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
595           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
596           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
597           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
598           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
599           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
600           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
601           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
602           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
603           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
604           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
605           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00   40.00
606           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00   40.00    0.00    0.00
607           QI    0.00    0.00   40.00   40.00   40.00   40.00  200.00  120.00  200.00  200.00
608           QI  200.00  200.00  200.00  200.00  200.00    0.00    0.00  120.00    0.00    0.00
609           QI    0.00   40.00   40.00    0.00    0.00    0.00    0.00   40.00    0.00    0.00
610           QI    0.00    0.00   40.00    0.00    0.00    0.00    0.00    0.00   40.00    0.00
611           QI    0.00    0.00    0.00    0.00    0.00   40.00    0.00    0.00    0.00    0.00
612           QI    0.00    0.00    0.00   40.00    0.00    0.00    0.00    0.00    0.00    0.00
613           QI    0.00    0.00    0.00   40.00    0.00    0.00    0.00    0.00    0.00    0.00
614           QI    0.00    0.00    0.00    0.00   40.00    0.00    0.00    0.00    0.00    0.00
615           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
616           QI    0.00    0.00   40.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
617           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
618           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
619           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
620           QI    0.00    0.00    0.00   40.00    0.00    0.00    0.00    0.00    0.00    0.00
621           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
622           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *
              *

623           KK  CWARNR
624           KM        COMBINE PUMPOUT FROM ONSITE BASIN AT WARNER ROAD AND INFLOW TO BASIN E
625           HC       2
              *
626           IN       5                    340
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

627           KK  ELLIOT
628           KM        ONSITE DRAINAGE/STORAGE ANALYSIS  50 YEAR 24 HOUR STORM
629           KM        PUMP STATION CAPACITY IS 200 CFS.
630           KM        DRAINAGE AREA - GUADELUPE TO ELLIOT ONSITE PUMP STATION
631           BA    0.16
632           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
633           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
634           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
635           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
636           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
637           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
638           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
639           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
640           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
641           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
642           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
643           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
644           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
645           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00   40.00    0.00
646           QI    0.00    0.00    0.00    0.00  120.00    0.00  120.00  120.00  200.00  200.00
647           QI  200.00  200.00  200.00  200.00  200.00  200.00  120.00    0.00    0.00    0.00
648           QI  120.00    0.00    0.00    0.00    0.00   40.00   40.00    0.00    0.00    0.00
649           QI    0.00    0.00   40.00   40.00    0.00    0.00    0.00    0.00    0.00    0.00
650           QI   40.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00   40.00
651           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
652           QI   40.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
653           QI    0.00    0.00    0.00   40.00    0.00    0.00    0.00    0.00    0.00    0.00
654           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
655           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00   40.00    0.00    0.00
656           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
657           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
658           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
659           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
660           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
661           QI    0.00    0.00    0.00    0.00    0.00   40.00    0.00    0.00    0.00    0.00
662           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
663           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
664           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
665           QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *
              *

666           KK  CELIOT
667           KM        COMBINE ONSITE FLOWS TO BASIN E FROM PUMP STATION AT ELLIOT
668           HC       2
              *
669           IN      20                      300

670           KK  ADJPEK
671           KM        ADJUST REGIONAL BASIN E VOLUME FOR REDUCTION IN PEAK PUMPING AT MAX HEAD
672           KM        ADD IN HYDROGRAPH ORDINATES THAT CORRESPONDS TO THE PUMPING RATE
673           KM        REDUCTIONS DURING THE PEAK FLOW PERIOD IN THE PRICE TUNNEL.
674           KM        ADDING IN ORDINATES IS REQUIRED TO ACCOUNT FOR THE VOLUME OUTFLOW
675           KM        REDUCTION WHEN THE RATE IN DECREASED.  HEC-1 ONLY HAS THE ABLILTY
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 676          KM        TO TURN ON AND OFF PUMPS FOR WATER SURFACE ELEVATIONS AND CANNOT
 677          KM        REDUCE PUMP FLOWS TO ACCOUNT FOR CHANGES IN THE DOWNSTREAM CAPACITIES.
 678          BA    0.01
 679          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 680          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 681          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 682          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00  118.00  300.00  300.00
 683          QI   300.0   300.0  300.00  300.00  300.00  300.00  200.00  100.00    0.00    0.00
 684          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 685          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 686          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 687          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 688          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 689          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 690          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 691          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 692          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 693          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 694          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 695          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 696          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 697          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 698          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 699          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 700          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 701          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 702          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 703          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 704          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 705          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 706          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 707          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 708          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *

 709          KK    CADJ
 710          KM        COMBINE BASIN ADJUSTMENT FLOWS TO BASIN E
 711          HC       2
              *

 712          KK   RBASE
 713          KM        ROUTE TOTAL FLOW FROM BASIN F AND EAST THROUGH REGIONAL BASIN E
 714          KM        MAX PUMPING RATE OF 450 CFS OUTFLOW TO CARRIAGE LANE OUTFALL (568X850)
 715          KO       1
 716          RS       1    ELEV     0.0
 717          SV     0.0    0.53     4.4     6.1     8.3     9.9    10.5   111.5   213.0   261.8
 718          SE    57.2    57.6    58.0    58.3    58.7    59.0    59.1    73.2    83.2    87.2
 719          SQ     0.0    75.0   150.0   225.0   300.0   375.0   450.0   450.0   450.0   450.0
              *
              *
 720          IN      20                     300
```

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

 721          KK  ADJOUT
 722          KM        ADJUST REGIONAL BASIN E HYDROGRAPH for REDUCTION IN PEAK PUMPING AT MAX HEAD
 723          KM        SUBTRACT OUT THE ORDINATES ADDED INTO BASIN E IN ADJPEK ABOVE.  THIS
 724          KM        WILL ADJUST THE OUTFLOW HYDROGRAPH TO ACCOUNT FOR PEAK OUTFLOW
 725          KM        REDUCTION DUE TO THE CARRIAGE LANE OUTFALL CAPACITY DURING THE
 726          KM        PEAK FLOWS CONDITIONS.
 727          BA    0.01
 728          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 729          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 730          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 731          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00 -118.00 -300.00 -300.00
 732          QI  -300.0 -300.00 -300.00 -300.00 -300.00 -300.00 -200.00 -100.00    0.00    0.00
 733          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 734          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 735          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 736          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 737          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 738          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 739          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 740          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 741          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 742          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 743          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 744          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 745          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 746          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 747          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 748          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 749          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 750          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 751          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 752          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 753          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 754          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 755          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 756          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
 757          QI    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00    0.00
              *
              *

 758          KK  CADOUT
 759          KM        COMBINE BASIN ADJUSTMENT FLOWS FROM BASIN E
 760          KO       1
 761          HC       2
              *
 762          ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

   9       OUTLTA
                .
                .
  42            .      OUTLTB
                .           .
                .           .
  75       COMBAB............
                .
                .
  78            .      OUTLTC
                .           .
                .           .
 111       COMABC............
                .
                .
 116            .      KYRENE
                .           .
                .           .
 151       CKYREN............
                .
                .
 154            .      MCCLIN
                .           .
                .           .
 189       CMCCLI............
                .
                .
 193            .      ADJPKB
                .           .
                .           .
 232        CADJB............
                V
                V
 236        ROABC
                .
                .
 245            .        ADJB
                .           .
                .           .
 282        CADJB............
                .
                .
 289            .        BASH
                .           .
                .           .
 325            .           .      INTERC
                .           .           .
                .           .           .
 359            .      CINTER............
                .           .
                .           .
 362        CBASH............
                .
```

```
            .
367         .        BASG
            .          V
            .          V
401         .       RBASG
            .           .
            .           .
409     CBASG............
            .
            .
415         .        ADJH
            .           .
            .           .
454     CADJH............
            V
            V
457     RBASH
            .
            .
466         .       ADJVH
            .           .
            .           .
504     CADJH............
            .
            .
509         .        BASF
            .           .
            .           .
544     CBASF............
            .
            .
549         .        BASE
            .           .
            .           .
583     CBASE............
            .
            .
588         .      WARNER
            .           .
            .           .
623    CWARNR............
            .
            .
627         .      ELLIOT
            .           .
            .           .
666    CELIOT............
            .
            .
670         .      ADJPEK
            .           .
            .           .
709      CADJ............
            V
            V
712     RBASE
            .
            .
721         .      ADJOUT
            .           .
```

758 CADOUT.....

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*            FEBRUARY 1981             *
*          REVISED 02 AUG 88           *
*                                      *
*  RUN DATE  04/10/1990  TIME  01:59:36 *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*  THE HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*                                      *
*                                      *
****************************************
```

PRICE EXPRESSWAY AND SANTAN HYDROLOGY <PRICE45>
REGIONAL RETENTION BASIN OPERATION MODEL
100-YEAR 24-HOUR STORM - MAXIMUM Q OUT = 450 CFS
60-HOUR SIMULATION PERIOD
HDR - PHOENIX

```
  8 IO        OUTPUT CONTROL VARIABLES
                    IPRNT          3  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT        HYDROGRAPH TIME DATA
                     NMIN         20  MINUTES IN COMPUTATION INTERVAL
                    IDATE      1    0  STARTING DATE
                    ITIME        0000  STARTING TIME
                       NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE      5    0  ENDING DATE
                   NDTIME        0340  ENDING TIME
                    ICENT          19  CENTURY MARK

              COMPUTATION INTERVAL     .33 HOURS
                   TOTAL TIME BASE   99.67 HOURS

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

*** ***

```
          **************
          *            *
  9 KK    *    OUTLTA  *
          *            *
          **************
```

INFLOW HYDROGRAPH INTO OUTLET - A ** WEST OF PRICE ROAD **

```
 7 IN          TIME DATA FOR INPUT TIME SERIES
                    JXMIN          12  TIME INTERVAL IN MINUTES
                   JXDATE      1    0  STARTING DATE
                   JXTIME           0  STARTING TIME

            SUBBASIN RUNOFF DATA

 11 BA         SUBBASIN CHARACTERISTICS
                    TAREA        1.83  SUBBASIN AREA

                                                          ***

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

                     HYDROGRAPH AT STATION   OUTLTA

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     99.67-HR
   374.     13.33        (CFS)      142.         44.         15.          11.
                       (INCHES)     .721        .899        .899         .899
                        (AC-FT)      70.         88.         88.          88.

                      CUMULATIVE AREA =    1.83 SQ MI
```

*** ***

```
          **************
          *            *
 42 KK    *    OUTLTB  *
          *            *
          **************
                          INFLOW HYDROGRAPH INTO OUTLET - B  ** WEST OF PRICE ROAD **

 7 IN          TIME DATA FOR INPUT TIME SERIES
                    JXMIN          12  TIME INTERVAL IN MINUTES
                   JXDATE      1    0  STARTING DATE
                   JXTIME           0  STARTING TIME

            SUBBASIN RUNOFF DATA

 44 BA         SUBBASIN CHARACTERISTICS
                    TAREA       13.81  SUBBASIN AREA

                                                          ***

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

                     HYDROGRAPH AT STATION   OUTLTB

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     99.67-HR
   770.     15.00        (CFS)      531.        197.         66.          47.
                       (INCHES)     .358        .530        .530         .530
                        (AC-FT)      264.        390.        391.         391.
```

CUMULATIVE AREA = 13.81 SQ MI

*** ***

```
          **************
          *            *
 75 KK    *    COMBAB  *
          *            *
          **************
```

COMBINE FLOWS FROM OUTLET A & B AT APPROX GILA DRAIN LOCATION

77 HC HYDROGRAPH COMBINATION

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

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

HYDROGRAPH AT STATION COMBAB

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	99.67-HR
1115.	13.67	(CFS)	672.	241.	80.	58.
		(INCHES)	.399	.573	.573	.573
		(AC-FT)	333.	478.	478.	478.

CUMULATIVE AREA = 15.64 SQ MI

*** ***

```
          **************
          *            *
 78 KK    *    OUTLTC  *
          *            *
          **************
```

INFLOW HYDROGRAPH INTO OUTLET - C ** WEST OF PRICE ROAD **

7 IN TIME DATA FOR INPUT TIME SERIES

JXMIN 12 TIME INTERVAL IN MINUTES

JXDATE 1 0 STARTING DATE

JXTIME 0 STARTING TIME

SUBBASIN RUNOFF DATA

80 BA SUBBASIN CHARACTERISTICS

TAREA 2.74 SUBBASIN AREA

***

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

HYDROGRAPH AT STATION OUTLTC

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	99.67-HR
626.	13.67	(CFS)	217.	68.	23.	16.
		(INCHES)	.735	.923	.923	.923
		(AC-FT)	107.	135.	135.	135.

CUMULATIVE AREA = 2.74 SQ MI

*** ***

```
          **************
          *            *
111 KK    *    COMABC  *
          *            *
          **************
```

COMBINE OUTLETS A,B & C
TOTAL FLOW FROM WEST OF PRICE ROAD

114 HC HYDROGRAPH COMBINATION
ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

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

HYDROGRAPH AT STATION COMABC

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	99.67-HR
1741.	13.67	(CFS)	887.	309.	103.	74.
		(INCHES)	.449	.625	.625	.625
		(AC-FT)	440.	613.	613.	613.

CUMULATIVE AREA = 18.38 SQ MI

*** ***

```
          **************
          *            *
116 KK    *    KYRENE  *
          *            *
          **************
```

ONSITE DRAINAGE/STORAGE ANALYSIS 50 YEAR 24 HOUR STORM
USE PUMP STATION 'INFLOW' HYDROGRAPH FROM KYRENE2.DAT ONSITE FILE
PUMP STATION DESIGN Q IS 200 CFS.

115 IN TIME DATA FOR INPUT TIME SERIES
JXMIN 5 TIME INTERVAL IN MINUTES
JXDATE 1 0 STARTING DATE
JXTIME 0 STARTING TIME

```
            SUBBASIN RUNOFF DATA

120 BA          SUBBASIN CHARACTERISTICS
                      TAREA          .11  SUBBASIN AREA

                                                          ***

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

                       HYDROGRAPH AT STATION   KYRENE

PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                    6-HR        24-HR        72-HR      99.67-HR
   216.      12.33        (CFS)        26.           7.           2.           2.
                        (INCHES)     2.174       2.301        2.301        2.301
                         (AC-FT)       13.          13.          13.          13.

                       CUMULATIVE AREA =     .11 SQ MI


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


          **************
          *            *
151 KK    *    CKYREN  *
          *            *
          **************
                              COMBINE PUMPOUT FROM ONSITE USEING INFLOW HYDROGRAPH TO PUMP STATION

153 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***

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

                       HYDROGRAPH AT STATION   CKYREN

PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                    6-HR        24-HR        72-HR      99.67-HR
  1750.      13.67        (CFS)       902.         316.         105.          76.
                        (INCHES)      .454        .635         .635         .635
                         (AC-FT)      447.         626.         627.         627.

                       CUMULATIVE AREA =   18.49 SQ MI


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


          **************
          *            *
154 KK    *    MCCLIN  *     TOCK
          *            *
          **************
```

```
                    ONSITE DRAINAGE/STORAGE ANALYSIS 50 YEAR 24 HOUR STORM
                    USE PUMP STATION 'OUTFLOW' HYDROGRAPH FROM MCCLIN4.DAT ONSITE FILE
                    PUMP STATION DESIGN Q IS 200 CFS.

115 IN        TIME DATA FOR INPUT TIME SERIES
                JXMIN          5  TIME INTERVAL IN MINUTES
               JXDATE     1   0  STARTING DATE
               JXTIME         0  STARTING TIME

          SUBBASIN RUNOFF DATA

158 BA        SUBBASIN CHARACTERISTICS
                TAREA        .11  SUBBASIN AREA

                                                    ***

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

                HYDROGRAPH AT STATION   MCCLIN

PEAK FLOW    TIME                        MAXIMUM AVERAGE FLOW
  (CFS)      (HR)                6-HR      24-HR      72-HR     99.67-HR
   200.     12.33      (CFS)     16.         5.         2.          1.
              (INCHES)     1.315      1.690      1.690       1.690
              (AC-FT)       8.         10.        10.         10.

              CUMULATIVE AREA =     .11 SQ MI


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


          **************
          *            *
189 KK    *   CMCCLI   *     NTOCK
          *            *
          **************
                    COMBINE PUMPOUT FROM ONSITE USEING OUTFLOW HYDROGRAPH FROM PUMP STATION

191 HC        HYDROGRAPH COMBINATION
                ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                    ***

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

                HYDROGRAPH AT STATION   CMCCLI

PEAK FLOW    TIME                        MAXIMUM AVERAGE FLOW
  (CFS)      (HR)                6-HR      24-HR      72-HR     99.67-HR
  1750.     13.67      (CFS)    912.       321.       107.         77.
              (INCHES)      .456       .641       .642        .642
              (AC-FT)      452.       636.       637.        637.

              CUMULATIVE AREA =   18.60 SQ MI
```

*** ***

```
          **************
          *            *
193 KK    *    ADJPKB  *
          *            *
          **************
                          ADJUST REGIONAL BASIN B VOLUME FOR REDUCTION IN PEAK PUMPING AT MAX HEAD
                          ADD IN HYDROGRAPH ORDINATES THAT CORRESPONDS TO THE PUMPING RATE
                          REDUCTIONS DURING THE PEAK FLOW PERIOD IN THE PRICE TUNNEL.
                          ADDING IN ORDINATES IS REQUIRED TO ACCOUNT FOR THE VOLUME OUTFLOW
                          REDUCTION WHEN THE RATE IN DECREASED.  HEC-1 ONLY HAS THE ABLILTY
                          TO TURN ON AND OFF PUMPS FOR WATER SURFACE ELEVATIONS AND CANNOT
                          REDUCE PUMP FLOWS TO ACCOUNT FOR CHANGES IN THE DOWNSTREAM CAPACITIES.

192 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN          20  TIME INTERVAL IN MINUTES
                     JXDATE      1    0  STARTING DATE
                     JXTIME           0  STARTING TIME

             SUBBASIN RUNOFF DATA

201 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .01  SUBBASIN AREA

                                                          ***

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

                       HYDROGRAPH AT STATION   ADJPKB

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     99.67-HR
   100.      12.33        (CFS)      56.         14.          5.          3.
                        (INCHES)   51.653      51.653      51.653      51.653
                         (AC-FT)     28.         28.         28.         28.

                        CUMULATIVE AREA =     .01 SQ MI
```

*** ***

```
          **************
          *            *
232 KK    *     CADJB  *
          *            *
          **************
                          COMBINE BASIN ADJUSTMENT FLOWS TO BASIN B

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

235 HC          HYDROGRAPH COMBINATION
```

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

***

HYDROGRAPH AT STATION CADJB
SUM OF 2 HYDROGRAPHS

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	2		0100	76	175.	3		0200	151	0.	4		0300	226	0.
1		0020	2	0.	2		0120	77	152.	3		0220	152	0.	4		0320	227	0.
1		0040	3	0.	2		0140	78	131.	3		0240	153	0.	4		0340	228	0.
1		0100	4	0.	2		0200	79	112.	3		0300	154	0.	4		0400	229	0.
1		0120	5	0.	2		0220	80	97.	3		0320	155	0.	4		0420	230	0.
1		0140	6	0.	2		0240	81	83.	3		0340	156	0.	4		0440	231	0.
1		0200	7	0.	2		0300	82	71.	3		0400	157	0.	4		0500	232	0.
1		0220	8	0.	2		0320	83	59.	3		0420	158	0.	4		0520	233	0.
1		0240	9	0.	2		0340	84	48.	3		0440	159	0.	4		0540	234	0.
1		0300	10	0.	2		0400	85	38.	3		0500	160	0.	4		0600	235	0.
1		0320	11	0.	2		0420	86	31.	3		0520	161	0.	4		0620	236	0.
1		0340	12	0.	2		0440	87	25.	3		0540	162	0.	4		0640	237	0.
1		0400	13	0.	2		0500	88	20.	3		0600	163	0.	4		0700	238	0.
1		0420	14	0.	2		0520	89	17.	3		0620	164	0.	4		0720	239	0.
1		0440	15	0.	2		0540	90	14.	3		0640	165	0.	4		0740	240	0.
1		0500	16	0.	2		0600	91	11.	3		0700	166	0.	4		0800	241	0.
1		0520	17	0.	2		0620	92	10.	3		0720	167	0.	4		0820	242	0.
1		0540	18	0.	2		0640	93	8.	3		0740	168	0.	4		0840	243	0.
1		0600	19	0.	2		0700	94	7.	3		0800	169	0.	4		0900	244	0.
1		0620	20	0.	2		0720	95	6.	3		0820	170	0.	4		0920	245	0.
1		0640	21	0.	2		0740	96	5.	3		0840	171	0.	4		0940	246	0.
1		0700	22	0.	2		0800	97	4.	3		0900	172	0.	4		1000	247	0.
1		0720	23	0.	2		0820	98	3.	3		0920	173	0.	4		1020	248	0.
1		0740	24	0.	2		0840	99	3.	3		0940	174	0.	4		1040	249	0.
1		0800	25	0.	2		0900	100	3.	3		1000	175	0.	4		1100	250	0.
1		0820	26	0.	2		0920	101	2.	3		1020	176	0.	4		1120	251	0.
1		0840	27	0.	2		0940	102	2.	3		1040	177	0.	4		1140	252	0.
1		0900	28	0.	2		1000	103	2.	3		1100	178	0.	4		1200	253	0.
1		0920	29	0.	2		1020	104	1.	3		1120	179	0.	4		1220	254	0.
1		0940	30	0.	2		1040	105	1.	3		1140	180	0.	4		1240	255	0.
1		1000	31	1.	2		1100	106	1.	3		1200	181	0.	4		1300	256	0.
1		1020	32	1.	2		1120	107	1.	3		1220	182	0.	4		1320	257	0.
1		1040	33	2.	2		1140	108	1.	3		1240	183	0.	4		1340	258	0.
1		1100	34	3.	2		1200	109	1.	3		1300	184	0.	4		1400	259	0.
1		1120	35	4.	2		1220	110	1.	3		1320	185	0.	4		1420	260	0.
1		1140	36	49.	2		1240	111	1.	3		1340	186	0.	4		1440	261	0.
1		1200	37	54.	2		1300	112	1.	3		1400	187	0.	4		1500	262	0.
1		1220	38	681.	2		1320	113	1.	3		1420	188	0.	4		1520	263	0.
1		1240	39	637.	2		1340	114	0.	3		1440	189	0.	4		1540	264	0.
1		1300	40	1192.	2		1400	115	0.	3		1500	190	0.	4		1600	265	0.
1		1320	41	1794.	2		1420	116	0.	3		1520	191	0.	4		1620	266	0.
1		1340	42	1850.	2		1440	117	0.	3		1540	192	0.	4		1640	267	0.
1		1400	43	1635.	2		1500	118	0.	3		1600	193	0.	4		1700	268	0.
1		1420	44	1452.	2		1520	119	0.	3		1620	194	0.	4		1720	269	0.
1		1440	45	1242.	2		1540	120	0.	3		1640	195	0.	4		1740	270	0.
1		1500	46	1216.	2		1600	121	0.	3		1700	196	0.	4		1800	271	0.
1		1520	47	1082.	2		1620	122	0.	3		1720	197	0.	4		1820	272	0.

1	1540	48	923.	*	2	1640	123	0.	*	3	1740	198	0.	*	4	1840	273	0.
1	1600	49	770.	*	2	1700	124	0.	*	3	1800	199	0.	*	4	1900	274	0.
1	1620	50	669.	*	2	1720	125	0.	*	3	1820	200	0.	*	4	1920	275	0.
1	1640	51	585.	*	2	1740	126	0.	*	3	1840	201	0.	*	4	1940	276	0.
1	1700	52	519.	*	2	1800	127	0.	*	3	1900	202	0.	*	4	2000	277	0.
1	1720	53	464.	*	2	1820	128	0.	*	3	1920	203	0.	*	4	2020	278	0.
1	1740	54	454.	*	2	1840	129	0.	*	3	1940	204	0.	*	4	2040	279	0.
1	1800	55	372.	*	2	1900	130	0.	*	3	2000	205	0.	*	4	2100	280	0.
1	1820	56	341.	*	2	1920	131	0.	*	3	2020	206	0.	*	4	2120	281	0.
1	1840	57	319.	*	2	1940	132	0.	*	3	2040	207	0.	*	4	2140	282	0.
1	1900	58	306.	*	2	2000	133	0.	*	3	2100	208	0.	*	4	2200	283	0.
1	1920	59	297.	*	2	2020	134	0.	*	3	2120	209	0.	*	4	2220	284	0.
1	1940	60	290.	*	2	2040	135	0.	*	3	2140	210	0.	*	4	2240	285	0.
1	2000	61	283.	*	2	2100	136	0.	*	3	2200	211	0.	*	4	2300	286	0.
1	2020	62	277.	*	2	2120	137	0.	*	3	2220	212	0.	*	4	2320	287	0.
1	2040	63	272.	*	2	2140	138	0.	*	3	2240	213	0.	*	4	2340	288	0.
1	2100	64	269.	*	2	2200	139	0.	*	3	2300	214	0.	*	5	0000	289	0.
1	2120	65	267.	*	2	2220	140	0.	*	3	2320	215	0.	*	5	0020	290	0.
1	2140	66	263.	*	2	2240	141	0.	*	3	2340	216	0.	*	5	0040	291	0.
1	2200	67	258.	*	2	2300	142	0.	*	4	0000	217	0.	*	5	0100	292	0.
1	2220	68	291.	*	2	2320	143	0.	*	4	0020	218	0.	*	5	0120	293	0.
1	2240	69	245.	*	2	2340	144	0.	*	4	0040	219	0.	*	5	0140	294	0.
1	2300	70	239.	*	3	0000	145	0.	*	4	0100	220	0.	*	5	0200	295	0.
1	2320	71	233.	*	3	0020	146	0.	*	4	0120	221	0.	*	5	0220	296	0.
1	2340	72	227.	*	3	0040	147	0.	*	4	0140	222	0.	*	5	0240	297	0.
2	0000	73	221.	*	3	0100	148	0.	*	4	0200	223	0.	*	5	0300	298	0.
2	0020	74	211.	*	3	0120	149	0.	*	4	0220	224	0.	*	5	0320	299	0.
2	0040	75	196.	*	3	0140	150	0.	*	4	0240	225	0.	*	5	0340	300	0.
				*					*					*				

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PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	99.67-HR
1850.	13.67	(CFS)	965.	335.	112.	81.
		(INCHES)	.482	.669	.669	.669
		(AC-FT)	479.	664.	664.	664.

CUMULATIVE AREA = 18.61 SQ MI

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          *            *
236 KK    *     ROABC  *
          *            *
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ROUTE TOTAL FLOW FROM WEST OF PRICE ROAD THROUGH REGIONAL BASIN B
MAX PUMPING RATE OF 150 cfs OUTFLOW TO BASIN H AT PRICE/PECOS (1390x995)

239 KO OUTPUT CONTROL VARIABLES

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

HYDROGRAPH ROUTING DATA

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240 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       ELEV  TYPE OF INITIAL CONDITION
                    RSVRIC        .00  INITIAL CONDITION
                         X        .00 WORKING R AND D COEFFICIENT

241 SV            STORAGE         .0       1.6       3.3      30.3     533.0     638.6

242 SE          ELEVATION      24.20     24.30     24.40     26.20     50.20     54.20

243 SQ          DISCHARGE         0.       60.      150.      150.      150.      150.

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HYDROGRAPH AT STATION ROABC

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	24.2	*	2		0920	101	150.	399.3	43.8	*	3		1840	201	1.	.0	24.2
1		0020	2	0.	.0	24.2	*	2		0940	102	150.	395.2	43.6	*	3		1900	202	0.	.0	24.2
1		0040	3	0.	.0	24.2	*	2		1000	103	150.	391.1	43.4	*	3		1920	203	0.	.0	24.2
1		0100	4	0.	.0	24.2	*	2		1020	104	150.	387.0	43.2	*	3		1940	204	0.	.0	24.2
1		0120	5	0.	.0	24.2	*	2		1040	105	150.	382.9	43.0	*	3		2000	205	0.	.0	24.2
1		0140	6	0.	.0	24.2	*	2		1100	106	150.	378.8	42.8	*	3		2020	206	0.	.0	24.2
1		0200	7	0.	.0	24.2	*	2		1120	107	150.	374.7	42.6	*	3		2040	207	0.	.0	24.2
1		0220	8	0.	.0	24.2	*	2		1140	108	150.	370.6	42.4	*	3		2100	208	0.	.0	24.2
1		0240	9	0.	.0	24.2	*	2		1200	109	150.	366.5	42.3	*	3		2120	209	0.	.0	24.2
1		0300	10	0.	.0	24.2	*	2		1220	110	150.	362.4	42.1	*	3		2140	210	0.	.0	24.2
1		0320	11	0.	.0	24.2	*	2		1240	111	150.	358.3	41.9	*	3		2200	211	0.	.0	24.2
1		0340	12	0.	.0	24.2	*	2		1300	112	150.	354.2	41.7	*	3		2220	212	0.	.0	24.2
1		0400	13	0.	.0	24.2	*	2		1320	113	150.	350.1	41.5	*	3		2240	213	0.	.0	24.2
1		0420	14	0.	.0	24.2	*	2		1340	114	150.	345.9	41.3	*	3		2300	214	0.	.0	24.2
1		0440	15	0.	.0	24.2	*	2		1400	115	150.	341.8	41.1	*	3		2320	215	0.	.0	24.2
1		0500	16	0.	.0	24.2	*	2		1420	116	150.	337.7	40.9	*	3		2340	216	0.	.0	24.2
1		0520	17	0.	.0	24.2	*	2		1440	117	150.	333.6	40.7	*	4		0000	217	0.	.0	24.2
1		0540	18	0.	.0	24.2	*	2		1500	118	150.	329.5	40.5	*	4		0020	218	0.	.0	24.2
1		0600	19	0.	.0	24.2	*	2		1520	119	150.	325.3	40.3	*	4		0040	219	0.	.0	24.2
1		0620	20	0.	.0	24.2	*	2		1540	120	150.	321.2	40.1	*	4		0100	220	0.	.0	24.2
1		0640	21	0.	.0	24.2	*	2		1600	121	150.	317.1	39.9	*	4		0120	221	0.	.0	24.2
1		0700	22	0.	.0	24.2	*	2		1620	122	150.	313.0	39.7	*	4		0140	222	0.	.0	24.2
1		0720	23	0.	.0	24.2	*	2		1640	123	150.	308.8	39.5	*	4		0200	223	0.	.0	24.2
1		0740	24	0.	.0	24.2	*	2		1700	124	150.	304.7	39.3	*	4		0220	224	0.	.0	24.2
1		0800	25	0.	.0	24.2	*	2		1720	125	150.	300.6	39.1	*	4		0240	225	0.	.0	24.2
1		0820	26	0.	.0	24.2	*	2		1740	126	150.	296.4	38.9	*	4		0300	226	0.	.0	24.2
1		0840	27	0.	.0	24.2	*	2		1800	127	150.	292.3	38.7	*	4		0320	227	0.	.0	24.2
1		0900	28	0.	.0	24.2	*	2		1820	128	150.	288.2	38.5	*	4		0340	228	0.	.0	24.2
1		0920	29	0.	.0	24.2	*	2		1840	129	150.	284.1	38.3	*	4		0400	229	0.	.0	24.2
1		0940	30	0.	.0	24.2	*	2		1900	130	150.	279.9	38.1	*	4		0420	230	0.	.0	24.2
1		1000	31	0.	.0	24.2	*	2		1920	131	150.	275.8	37.9	*	4		0440	231	0.	.0	24.2
1		1020	32	1.	.0	24.2	*	2		1940	132	150.	271.7	37.7	*	4		0500	232	0.	.0	24.2
1		1040	33	1.	.0	24.2	*	2		2000	133	150.	267.5	37.5	*	4		0520	233	0.	.0	24.2
1		1100	34	2.	.1	24.2	*	2		2020	134	150.	263.4	37.3	*	4		0540	234	0.	.0	24.2
1		1120	35	3.	.1	24.2	*	2		2040	135	150.	259.3	37.1	*	4		0600	235	0.	.0	24.2
1		1140	36	19.	.5	24.2	*	2		2100	136	150.	255.2	36.9	*	4		0620	236	0.	.0	24.2
1		1200	37	41.	1.1	24.3	*	2		2120	137	150.	251.0	36.7	*	4		0640	237	0.	.0	24.2
1		1220	38	150.	8.6	24.8	*	2		2140	138	150.	246.9	36.5	*	4		0700	238	0.	.0	24.2

1	1240	39	150.	22.6	25.7	*	2	2200	139	150.	242.8	36.3	*	4	0720	239	0.	.0	24.2
1	1300	40	150.	43.7	26.8	*	2	2220	140	150.	238.6	36.1	*	4	0740	240	0.	.0	24.2
1	1320	41	150.	80.7	28.6	*	2	2240	141	150.	234.5	35.9	*	4	0800	241	0.	.0	24.2
1	1340	42	150.	126.7	30.8	*	2	2300	142	150.	230.4	35.8	*	4	0820	242	0.	.0	24.2
1	1400	43	150.	170.6	32.9	*	2	2320	143	150.	226.2	35.6	*	4	0840	243	0.	.0	24.2
1	1420	44	150.	209.0	34.7	*	2	2340	144	150.	222.1	35.4	*	4	0900	244	0.	.0	24.2
1	1440	45	150.	242.0	36.3	*	3	0000	145	150.	218.0	35.2	*	4	0920	245	0.	.0	24.2
1	1500	46	150.	271.7	37.7	*	3	0020	146	150.	213.8	35.0	*	4	0940	246	0.	.0	24.2
1	1520	47	150.	299.2	39.0	*	3	0040	147	150.	209.7	34.8	*	4	1000	247	0.	.0	24.2
1	1540	48	150.	322.7	40.2	*	3	0100	148	150.	205.6	34.6	*	4	1020	248	0.	.0	24.2
1	1600	49	150.	341.9	41.1	*	3	0120	149	150.	201.5	34.4	*	4	1040	249	0.	.0	24.2
1	1620	50	150.	357.6	41.8	*	3	0140	150	150.	197.3	34.2	*	4	1100	250	0.	.0	24.2
1	1640	51	150.	370.7	42.5	*	3	0200	151	150.	193.2	34.0	*	4	1120	251	0.	.0	24.2
1	1700	52	150.	381.8	43.0	*	3	0220	152	150.	189.1	33.8	*	4	1140	252	0.	.0	24.2
1	1720	53	150.	391.2	43.4	*	3	0240	153	150.	184.9	33.6	*	4	1200	253	0.	.0	24.2
1	1740	54	150.	399.7	43.8	*	3	0300	154	150.	180.8	33.4	*	4	1220	254	0.	.0	24.2
1	1800	55	150.	406.9	44.2	*	3	0320	155	150.	176.7	33.2	*	4	1240	255	0.	.0	24.2
1	1820	56	150.	412.6	44.5	*	3	0340	156	150.	172.5	33.0	*	4	1300	256	0.	.0	24.2
1	1840	57	150.	417.6	44.7	*	3	0400	157	150.	168.4	32.8	*	4	1320	257	0.	.0	24.2
1	1900	58	150.	422.1	44.9	*	3	0420	158	150.	164.3	32.6	*	4	1340	258	0.	.0	24.2
1	1920	59	150.	426.2	45.1	*	3	0440	159	150.	160.1	32.4	*	4	1400	259	0.	.0	24.2
1	1940	60	150.	430.2	45.3	*	3	0500	160	150.	156.0	32.2	*	4	1420	260	0.	.0	24.2
1	2000	61	150.	434.0	45.5	*	3	0520	161	150.	151.9	32.0	*	4	1440	261	0.	.0	24.2
1	2020	62	150.	437.5	45.6	*	3	0540	162	150.	147.7	31.8	*	4	1500	262	0.	.0	24.2
1	2040	63	150.	441.0	45.8	*	3	0600	163	150.	143.6	31.6	*	4	1520	263	0.	.0	24.2
1	2100	64	150.	444.3	46.0	*	3	0620	164	150.	139.5	31.4	*	4	1540	264	0.	.0	24.2
1	2120	65	150.	447.5	46.1	*	3	0640	165	150.	135.4	31.2	*	4	1600	265	0.	.0	24.2
1	2140	66	150.	450.7	46.3	*	3	0700	166	150.	131.2	31.0	*	4	1620	266	0.	.0	24.2
1	2200	67	150.	453.7	46.4	*	3	0720	167	150.	127.1	30.8	*	4	1640	267	0.	.0	24.2
1	2220	68	150.	457.2	46.6	*	3	0740	168	150.	123.0	30.6	*	4	1700	268	0.	.0	24.2
1	2240	69	150.	460.4	46.7	*	3	0800	169	150.	118.8	30.4	*	4	1720	269	0.	.0	24.2
1	2300	70	150.	462.9	46.9	*	3	0820	170	150.	114.7	30.2	*	4	1740	270	0.	.0	24.2
1	2320	71	150.	465.3	47.0	*	3	0840	171	150.	110.6	30.0	*	4	1800	271	0.	.0	24.2
1	2340	72	150.	467.5	47.1	*	3	0900	172	150.	106.4	29.8	*	4	1820	272	0.	.0	24.2
2	0000	73	150.	469.5	47.2	*	3	0920	173	150.	102.3	29.6	*	4	1840	273	0.	.0	24.2
2	0020	74	150.	471.4	47.3	*	3	0940	174	150.	98.2	29.4	*	4	1900	274	0.	.0	24.2
2	0040	75	150.	472.8	47.3	*	3	1000	175	150.	94.0	29.2	*	4	1920	275	0.	.0	24.2
2	0100	76	150.	473.8	47.4	*	3	1020	176	150.	89.9	29.0	*	4	1940	276	0.	.0	24.2
2	0120	77	150.	474.2	47.4	*	3	1040	177	150.	85.8	28.8	*	4	2000	277	0.	.0	24.2
2	0140	78	150.	473.9	47.4	*	3	1100	178	150.	81.6	28.7	*	4	2020	278	0.	.0	24.2
2	0200	79	150.	473.1	47.3	*	3	1120	179	150.	77.5	28.5	*	4	2040	279	0.	.0	24.2
2	0220	80	150.	471.9	47.3	*	3	1140	180	150.	73.4	28.3	*	4	2100	280	0.	.0	24.2
2	0240	81	150.	470.2	47.2	*	3	1200	181	150.	69.2	28.1	*	4	2120	281	0.	.0	24.2
2	0300	82	150.	468.2	47.1	*	3	1220	182	150.	65.1	27.9	*	4	2140	282	0.	.0	24.2
2	0320	83	150.	465.9	47.0	*	3	1240	183	150.	61.0	27.7	*	4	2200	283	0.	.0	24.2
2	0340	84	150.	463.2	46.9	*	3	1300	184	150.	56.8	27.5	*	4	2220	284	0.	.0	24.2
2	0400	85	150.	460.3	46.7	*	3	1320	185	150.	52.7	27.3	*	4	2240	285	0.	.0	24.2
2	0420	86	150.	457.1	46.6	*	3	1340	186	150.	48.6	27.1	*	4	2300	286	0.	.0	24.2
2	0440	87	150.	453.7	46.4	*	3	1400	187	150.	44.4	26.9	*	4	2320	287	0.	.0	24.2
2	0500	88	150.	450.2	46.2	*	3	1420	188	150.	40.3	26.7	*	4	2340	288	0.	.0	24.2
2	0520	89	150.	446.6	46.1	*	3	1440	189	150.	36.2	26.5	*	5	0000	289	0.	.0	24.2
2	0540	90	150.	442.9	45.9	*	3	1500	190	150.	32.1	26.3	*	5	0020	290	0.	.0	24.2
2	0600	91	150.	439.1	45.7	*	3	1520	191	150.	27.9	26.0	*	5	0040	291	0.	.0	24.2
2	0620	92	150.	435.3	45.5	*	3	1540	192	150.	23.8	25.8	*	5	0100	292	0.	.0	24.2
2	0640	93	150.	431.4	45.3	*	3	1600	193	150.	19.7	25.5	*	5	0120	293	0.	.0	24.2
2	0700	94	150.	427.4	45.2	*	3	1620	194	150.	15.5	25.2	*	5	0140	294	0.	.0	24.2
2	0720	95	150.	423.5	45.0	*	3	1640	195	150.	11.4	24.9	*	5	0200	295	0.	.0	24.2
2	0740	96	150.	419.5	44.8	*	3	1700	196	150.	7.3	24.7	*	5	0220	296	0.	.0	24.2
2	0800	97	150.	415.5	44.6	*	3	1720	197	145.	3.2	24.4	*	5	0240	297	0.	.0	24.2
2	0820	98	150.	411.4	44.4	*	3	1740	198	30.	.8	24.2	*	5	0300	298	0.	.0	24.2

```
2     0840  99     150.    407.4    44.2 *  3     1800 199       9.       .3    24.2 *  5     0320 299       0.       .0    24.2
2     0900 100     150.    403.3    44.0 *  3     1820 200       3.       .1    24.2 *  5     0340 300       0.       .0    24.2
                                          *                                                  *
*****************************************************************************************************************************

 PEAK FLOW     TIME                                MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                    6-HR        24-HR        72-HR      99.67-HR
    150.      12.33        (CFS)       150.         150.         112.         81.
                        (INCHES)      .075         .300         .669        .669
                         (AC-FT)       74.         298.         664.        664.

 PEAK STORAGE  TIME                                MAXIMUM AVERAGE STORAGE
   (AC-FT)     (HR)                    6-HR        24-HR        72-HR      99.67-HR
    474.      25.33                    468.         416.         204.        147.

 PEAK STAGE    TIME                                MAXIMUM AVERAGE STAGE
   (FEET)      (HR)                    6-HR        24-HR        72-HR      99.67-HR
    47.39     25.33                   47.09        44.62        34.34       31.53

                        CUMULATIVE AREA =   18.61 SQ MI



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


            **************
            *            *
 245 KK     *      ADJB  *
            *            *
            **************
                                ADJUST REGIONAL BASIN B HYDROGRAPH for REDUCTION IN PEAK PUMPING AT MAX
                                SUBTRACT OUT THE ORDINATES ADDED INTO BASIN B IN ADJPKB ABOVE.  THIS
                                WILL ADJUST THE OUTFLOW HYDROGRAPH TO ACCOUNT FOR PEAK OUTFLOW
                                REDUCTION DUE TO THE CARRIAGE LANE OUTFALL CAPACITY DURING THE
                                PEAK FLOWS CONDITIONS.

 244 IN          TIME DATA FOR INPUT TIME SERIES
                       JXMIN          20  TIME INTERVAL IN MINUTES
                      JXDATE      1    0  STARTING DATE
                      JXTIME           0  STARTING TIME

              SUBBASIN RUNOFF DATA

 251 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .01  SUBBASIN AREA

                                                                  ***

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

                        HYDROGRAPH AT STATION     ADJB

 PEAK FLOW     TIME                                MAXIMUM AVERAGE FLOW
   (CFS)       (HR)                    6-HR        24-HR        72-HR      99.67-HR
      0.        .33        (CFS)         0.           0.           0.          -3.
                        (INCHES)      .000         .000         .000      -51.653
                         (AC-FT)        0.           0.           0.         -28.
```

CUMULATIVE AREA = .01 SQ MI

*** ***

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          **************
          *            *
282 KK    *     CADJB  *
          *            *
          **************
```

COMBINE BASIN ADJUSTMENT FLOWS TO BASIN E
THIS HYDROGRAPH IS SIMULAR TO WHAT ACTUAL REGULATED OUTFLOW
HYDROGRAPH WOULD LOOK LIKE FOR REGULATED OUTFLOW CONDITIONS.

286 KO OUTPUT CONTROL VARIABLES

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

287 HC HYDROGRAPH COMBINATION

ICOMP	2	NUMBER OF HYDROGRAPHS TO COMBINE

***

****

HYDROGRAPH AT STATION CADJB
SUM OF 2 HYDROGRAPHS

****

DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	*	2		0100	76	150.	*	3		0200	151	150.	*	4		0300	226	0.
1		0020	2	0.	*	2		0120	77	150.	*	3		0220	152	150.	*	4		0320	227	0.
1		0040	3	0.	*	2		0140	78	150.	*	3		0240	153	150.	*	4		0340	228	0.
1		0100	4	0.	*	2		0200	79	150.	*	3		0300	154	150.	*	4		0400	229	0.
1		0120	5	0.	*	2		0220	80	150.	*	3		0320	155	150.	*	4		0420	230	0.
1		0140	6	0.	*	2		0240	81	150.	*	3		0340	156	150.	*	4		0440	231	0.
1		0200	7	0.	*	2		0300	82	150.	*	3		0400	157	150.	*	4		0500	232	0.
1		0220	8	0.	*	2		0320	83	150.	*	3		0420	158	150.	*	4		0520	233	0.
1		0240	9	0.	*	2		0340	84	150.	*	3		0440	159	150.	*	4		0540	234	0.
1		0300	10	0.	*	2		0400	85	150.	*	3		0500	160	150.	*	4		0600	235	0.
1		0320	11	0.	*	2		0420	86	150.	*	3		0520	161	150.	*	4		0620	236	0.
1		0340	12	0.	*	2		0440	87	150.	*	3		0540	162	150.	*	4		0640	237	0.
1		0400	13	0.	*	2		0500	88	150.	*	3		0600	163	150.	*	4		0700	238	0.
1		0420	14	0.	*	2		0520	89	150.	*	3		0620	164	150.	*	4		0720	239	0.
1		0440	15	0.	*	2		0540	90	150.	*	3		0640	165	150.	*	4		0740	240	0.
1		0500	16	0.	*	2		0600	91	150.	*	3		0700	166	150.	*	4		0800	241	0.
1		0520	17	0.	*	2		0620	92	150.	*	3		0720	167	150.	*	4		0820	242	0.
1		0540	18	0.	*	2		0640	93	150.	*	3		0740	168	150.	*	4		0840	243	0.
1		0600	19	0.	*	2		0700	94	150.	*	3		0800	169	150.	*	4		0900	244	0.
1		0620	20	0.	*	2		0720	95	150.	*	3		0820	170	150.	*	4		0920	245	0.
1		0640	21	0.	*	2		0740	96	150.	*	3		0840	171	150.	*	4		0940	246	0.
1		0700	22	0.	*	2		0800	97	150.	*	3		0900	172	150.	*	4		1000	247	0.
1		0720	23	0.	*	2		0820	98	150.	*	3		0920	173	150.	*	4		1020	248	0.
1		0740	24	0.	*	2		0840	99	150.	*	3		0940	174	150.	*	4		1040	249	0.

1	0800	25	0.	*	2	0900	100	150.	*	3	1000	175	150.	*	4	1100	250	0.
1	0820	26	0.	*	2	0920	101	150.	*	3	1020	176	150.	*	4	1120	251	0.
1	0840	27	0.	*	2	0940	102	150.	*	3	1040	177	150.	*	4	1140	252	0.
1	0900	28	0.	*	2	1000	103	150.	*	3	1100	178	150.	*	4	1200	253	0.
1	0920	29	0.	*	2	1020	104	150.	*	3	1120	179	150.	*	4	1220	254	0.
1	0940	30	0.	*	2	1040	105	150.	*	3	1140	180	150.	*	4	1240	255	0.
1	1000	31	0.	*	2	1100	106	150.	*	3	1200	181	150.	*	4	1300	256	0.
1	1020	32	1.	*	2	1120	107	150.	*	3	1220	182	150.	*	4	1320	257	0.
1	1040	33	1.	*	2	1140	108	150.	*	3	1240	183	150.	*	4	1340	258	0.
1	1100	34	2.	*	2	1200	109	150.	*	3	1300	184	150.	*	4	1400	259	0.
1	1120	35	3.	*	2	1220	110	150.	*	3	1320	185	150.	*	4	1420	260	0.
1	1140	36	19.	*	2	1240	111	150.	*	3	1340	186	150.	*	4	1440	261	0.
1	1200	37	41.	*	2	1300	112	150.	*	3	1400	187	150.	*	4	1500	262	0.
1	1220	38	50.	*	2	1320	113	150.	*	3	1420	188	150.	*	4	1520	263	0.
1	1240	39	50.	*	2	1340	114	150.	*	3	1440	189	150.	*	4	1540	264	0.
1	1300	40	50.	*	2	1400	115	150.	*	3	1500	190	150.	*	4	1600	265	0.
1	1320	41	50.	*	2	1420	116	150.	*	3	1520	191	150.	*	4	1620	266	0.
1	1340	42	50.	*	2	1440	117	150.	*	3	1540	192	150.	*	4	1640	267	0.
1	1400	43	50.	*	2	1500	118	150.	*	3	1600	193	150.	*	4	1700	268	0.
1	1420	44	50.	*	2	1520	119	150.	*	3	1620	194	150.	*	4	1720	269	0.
1	1440	45	50.	*	2	1540	120	150.	*	3	1640	195	150.	*	4	1740	270	0.
1	1500	46	50.	*	2	1600	121	150.	*	3	1700	196	150.	*	4	1800	271	0.
1	1520	47	83.	*	2	1620	122	150.	*	3	1720	197	145.	*	4	1820	272	0.
1	1540	48	117.	*	2	1640	123	150.	*	3	1740	198	30.	*	4	1840	273	0.
1	1600	49	150.	*	2	1700	124	150.	*	3	1800	199	9.	*	4	1900	274	0.
1	1620	50	150.	*	2	1720	125	150.	*	3	1820	200	3.	*	4	1920	275	0.
1	1640	51	150.	*	2	1740	126	150.	*	3	1840	201	1.	*	4	1940	276	0.
1	1700	52	150.	*	2	1800	127	150.	*	3	1900	202	0.	*	4	2000	277	0.
1	1720	53	150.	*	2	1820	128	150.	*	3	1920	203	0.	*	4	2020	278	0.
1	1740	54	150.	*	2	1840	129	150.	*	3	1940	204	0.	*	4	2040	279	0.
1	1800	55	150.	*	2	1900	130	150.	*	3	2000	205	0.	*	4	2100	280	0.
1	1820	56	150.	*	2	1920	131	150.	*	3	2020	206	0.	*	4	2120	281	0.
1	1840	57	150.	*	2	1940	132	150.	*	3	2040	207	0.	*	4	2140	282	0.
1	1900	58	150.	*	2	2000	133	150.	*	3	2100	208	0.	*	4	2200	283	0.
1	1920	59	150.	*	2	2020	134	150.	*	3	2120	209	0.	*	4	2220	284	0.
1	1940	60	150.	*	2	2040	135	150.	*	3	2140	210	0.	*	4	2240	285	0.
1	2000	61	150.	*	2	2100	136	150.	*	3	2200	211	0.	*	4	2300	286	0.
1	2020	62	150.	*	2	2120	137	150.	*	3	2220	212	0.	*	4	2320	287	0.
1	2040	63	150.	*	2	2140	138	150.	*	3	2240	213	0.	*	4	2340	288	0.
1	2100	64	150.	*	2	2200	139	150.	*	3	2300	214	0.	*	5	0000	289	0.
1	2120	65	150.	*	2	2220	140	150.	*	3	2320	215	0.	*	5	0020	290	0.
1	2140	66	150.	*	2	2240	141	150.	*	3	2340	216	0.	*	5	0040	291	0.
1	2200	67	150.	*	2	2300	142	150.	*	4	0000	217	0.	*	5	0100	292	0.
1	2220	68	150.	*	2	2320	143	150.	*	4	0020	218	0.	*	5	0120	293	0.
1	2240	69	150.	*	2	2340	144	150.	*	4	0040	219	0.	*	5	0140	294	0.
1	2300	70	150.	*	3	0000	145	150.	*	4	0100	220	0.	*	5	0200	295	0.
1	2320	71	150.	*	3	0020	146	150.	*	4	0120	221	0.	*	5	0220	296	0.
1	2340	72	150.	*	3	0040	147	150.	*	4	0140	222	0.	*	5	0240	297	0.
2	0000	73	150.	*	3	0100	148	150.	*	4	0200	223	0.	*	5	0300	298	0.
2	0020	74	150.	*	3	0120	149	150.	*	4	0220	224	0.	*	5	0320	299	0.
2	0040	75	150.	*	3	0140	150	150.	*	4	0240	225	0.	*	5	0340	300	0.
				*					*					*				

****

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	99.67-HR
150.	16.00	(CFS)	150.	150.	107.	77.
		(INCHES)	.075	.300	.641	.641
		(AC-FT)	74.	298.	637.	637.

```
                    CUMULATIVE AREA =   18.62 SQ MI


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


          **************
          *            *
289 KK    *      BASH  *
          *            *
          **************
                              OFFSITE INFLOW INTO BASIN H AT PRICE AND PECOS INTERCHANGE FROM EAST

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

288 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN          12  TIME INTERVAL IN MINUTES
                     JXDATE      1    0  STARTING DATE
                     JXTIME           0  STARTING TIME

             SUBBASIN RUNOFF DATA

292 BA          SUBBASIN CHARACTERISTICS
                      TAREA        6.76  SUBBASIN AREA

                                                          ***

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

                       HYDROGRAPH AT STATION     BASH

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     99.67-HR
   753.      13.67        (CFS)     367.        284.        123.         89.
                        (INCHES)    .505       1.561       2.032       2.032
                         (AC-FT)    182.        563.        733.        733.

                       CUMULATIVE AREA =    6.76 SQ MI


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


          **************
          *            *
325 KK    *    INTERC  *     HANGE INFLOW
          *            *
          **************
                              ONSITE DRAINAGE/STORAGE ANALYSIS -50 YEAR 24 HOUR STORM
                              USE OUTFLOW HYDROGRAPH FROM THE PRICE/SANTAN INTERCHANGE

324 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN           5  TIME INTERVAL IN MINUTES
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                    JXDATE      1    0  STARTING DATE
                    JXTIME           0  STARTING TIME

            SUBBASIN RUNOFF DATA

328 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .16  SUBBASIN AREA

                                                          ***

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

                       HYDROGRAPH AT STATION   INTERC

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     99.67-HR
   200.      12.33       (CFS)       36.         10.          3.           2.
                       (INCHES)    2.066       2.324       2.324        2.324
                        (AC-FT)       18.         20.         20.          20.

                        CUMULATIVE AREA =     .16 SQ MI
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          **************
          *            *
359 KK    *    CINTER  *     CHANGE
          *            *
          **************
                            COMBINE ONSITE FLOWS TO BASIN H. USE ONSITE FROM PUMP STATION AT ELLIOT

361 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***

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

                       HYDROGRAPH AT STATION   CINTER

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     99.67-HR
   793.      13.67       (CFS)      382.        291.        126.          91.
                       (INCHES)     .514       1.565       2.039        2.039
                        (AC-FT)      190.        577.        752.         752.

                        CUMULATIVE AREA =    6.92 SQ MI
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          **************
          *            *
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362 KK      *     CBASH  *
            *            *
            **************
                                COMBINE PUMPOUT FROM BASIN B WITH INFLOW FROM EAST INTO BASIN H
                                BASIN OUTFLOW IS 88 FROM EAST BASIN AND 767 FROM OFFSITE

365 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

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

                        HYDROGRAPH AT STATION    CBASH

PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                    6-HR        24-HR        72-HR      99.67-HR
   843.     13.67        (CFS)        505.         427.         233.         169.
                       (INCHES)       .184         .622        1.020        1.020
                        (AC-FT)       251.         847.        1389.        1389.

                        CUMULATIVE AREA =   25.54 SQ MI


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


            **************
            *            *
367 KK      *      BASG  *
            *            *
            **************
                                INFLOW INTO PRICE BASIN G FROM EAST

366 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN          12  TIME INTERVAL IN MINUTES
                     JXDATE      1    0  STARTING DATE
                     JXTIME           0  STARTING TIME

               SUBBASIN RUNOFF DATA

369 BA          SUBBASIN CHARACTERISTICS
                      TAREA        4.37  SUBBASIN AREA

                                                                  ***

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

                        HYDROGRAPH AT STATION     BASG

PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                    6-HR        24-HR        72-HR      99.67-HR
   954.     14.00        (CFS)        341.         110.          37.          27.
                       (INCHES)       .725         .939         .940         .940
                        (AC-FT)       169.         219.         219.         219.

                        CUMULATIVE AREA =    4.37 SQ MI
```

*** ***

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          **************
          *            *
401 KK    *     RBASG  *
          *            *
          **************
                          ROUTE OFFSITE FLOW INTO BASIN H FROM EAST OF REGIONAL BASIN G
                          48 INCH GRAVITY LINE OUTFLOW TO BASIN H

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

             HYDROGRAPH ROUTING DATA

405 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC         .00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

406 SV            STORAGE          .0        .9     177.0     233.0

407 SE          ELEVATION       67.30     67.40     83.30     87.30

408 SQ          DISCHARGE          0.       52.       52.       52.

                                                      ***
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****

HYDROGRAPH AT STATION RBASG

****

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	67.3	*	2		0920	101	52.	128.6	78.9	*	3		1840	201	0.	.0	67.3
1		0020	2	0.	.0	67.3	*	2		0940	102	52.	127.2	78.8	*	3		1900	202	0.	.0	67.3
1		0040	3	0.	.0	67.3	*	2		1000	103	52.	125.8	78.7	*	3		1920	203	0.	.0	67.3
1		0100	4	0.	.0	67.3	*	2		1020	104	52.	124.3	78.5	*	3		1940	204	0.	.0	67.3
1		0120	5	0.	.0	67.3	*	2		1040	105	52.	122.9	78.4	*	3		2000	205	0.	.0	67.3
1		0140	6	0.	.0	67.3	*	2		1100	106	52.	121.5	78.3	*	3		2020	206	0.	.0	67.3
1		0200	7	0.	.0	67.3	*	2		1120	107	52.	120.0	78.2	*	3		2040	207	0.	.0	67.3
1		0220	8	0.	.0	67.3	*	2		1140	108	52.	118.6	78.0	*	3		2100	208	0.	.0	67.3
1		0240	9	0.	.0	67.3	*	2		1200	109	52.	117.2	77.9	*	3		2120	209	0.	.0	67.3
1		0300	10	0.	.0	67.3	*	2		1220	110	52.	115.8	77.8	*	3		2140	210	0.	.0	67.3
1		0320	11	0.	.0	67.3	*	2		1240	111	52.	114.3	77.6	*	3		2200	211	0.	.0	67.3
1		0340	12	0.	.0	67.3	*	2		1300	112	52.	112.9	77.5	*	3		2220	212	0.	.0	67.3
1		0400	13	0.	.0	67.3	*	2		1320	113	52.	111.5	77.4	*	3		2240	213	0.	.0	67.3
1		0420	14	0.	.0	67.3	*	2		1340	114	52.	110.0	77.3	*	3		2300	214	0.	.0	67.3
1		0440	15	0.	.0	67.3	*	2		1400	115	52.	108.6	77.1	*	3		2320	215	0.	.0	67.3
1		0500	16	0.	.0	67.3	*	2		1420	116	52.	107.2	77.0	*	3		2340	216	0.	.0	67.3
1		0520	17	0.	.0	67.3	*	2		1440	117	52.	105.8	76.9	*	4		0000	217	0.	.0	67.3

1	0540	18	0.	.0	67.3	*	2	1500	118	52.	104.3	76.7	*	4	0020	218	0.	.0	67.3
1	0600	19	0.	.0	67.3	*	2	1520	119	52.	102.9	76.6	*	4	0040	219	0.	.0	67.3
1	0620	20	0.	.0	67.3	*	2	1540	120	52.	101.5	76.5	*	4	0100	220	0.	.0	67.3
1	0640	21	0.	.0	67.3	*	2	1600	121	52.	100.0	76.4	*	4	0120	221	0.	.0	67.3
1	0700	22	0.	.0	67.3	*	2	1620	122	52.	98.6	76.2	*	4	0140	222	0.	.0	67.3
1	0720	23	0.	.0	67.3	*	2	1640	123	52.	97.2	76.1	*	4	0200	223	0.	.0	67.3
1	0740	24	0.	.0	67.3	*	2	1700	124	52.	95.7	76.0	*	4	0220	224	0.	.0	67.3
1	0800	25	0.	.0	67.3	*	2	1720	125	52.	94.3	75.8	*	4	0240	225	0.	.0	67.3
1	0820	26	0.	.0	67.3	*	2	1740	126	52.	92.9	75.7	*	4	0300	226	0.	.0	67.3
1	0840	27	0.	.0	67.3	*	2	1800	127	52.	91.4	75.6	*	4	0320	227	0.	.0	67.3
1	0900	28	0.	.0	67.3	*	2	1820	128	52.	90.0	75.4	*	4	0340	228	0.	.0	67.3
1	0920	29	0.	.0	67.3	*	2	1840	129	52.	88.6	75.3	*	4	0400	229	0.	.0	67.3
1	0940	30	0.	.0	67.3	*	2	1900	130	52.	87.1	75.2	*	4	0420	230	0.	.0	67.3
1	1000	31	0.	.0	67.3	*	2	1920	131	52.	85.7	75.1	*	4	0440	231	0.	.0	67.3
1	1020	32	0.	.0	67.3	*	2	1940	132	52.	84.3	74.9	*	4	0500	232	0.	.0	67.3
1	1040	33	0.	.0	67.3	*	2	2000	133	52.	82.8	74.8	*	4	0520	233	0.	.0	67.3
1	1100	34	0.	.0	67.3	*	2	2020	134	52.	81.4	74.7	*	4	0540	234	0.	.0	67.3
1	1120	35	0.	.0	67.3	*	2	2040	135	52.	80.0	74.5	*	4	0600	235	0.	.0	67.3
1	1140	36	0.	.0	67.3	*	2	2100	136	52.	78.5	74.4	*	4	0620	236	0.	.0	67.3
1	1200	37	2.	.0	67.3	*	2	2120	137	52.	77.1	74.3	*	4	0640	237	0.	.0	67.3
1	1220	38	25.	.4	67.3	*	2	2140	138	52.	75.7	74.2	*	4	0700	238	0.	.0	67.3
1	1240	39	52.	2.1	67.5	*	2	2200	139	52.	74.2	74.0	*	4	0720	239	0.	.0	67.3
1	1300	40	52.	5.9	67.8	*	2	2220	140	52.	72.8	73.9	*	4	0740	240	0.	.0	67.3
1	1320	41	52.	10.5	68.3	*	2	2240	141	52.	71.4	73.8	*	4	0800	241	0.	.0	67.3
1	1340	42	52.	15.4	68.7	*	2	2300	142	52.	70.0	73.6	*	4	0820	242	0.	.0	67.3
1	1400	43	52.	30.6	70.1	*	2	2320	143	52.	68.5	73.5	*	4	0840	243	0.	.0	67.3
1	1420	44	52.	54.2	72.2	*	2	2340	144	52.	67.1	73.4	*	4	0900	244	0.	.0	67.3
1	1440	45	52.	74.6	74.1	*	3	0000	145	52.	65.7	73.2	*	4	0920	245	0.	.0	67.3
1	1500	46	52.	90.7	75.5	*	3	0020	146	52.	64.2	73.1	*	4	0940	246	0.	.0	67.3
1	1520	47	52.	103.2	76.6	*	3	0040	147	52.	62.8	73.0	*	4	1000	247	0.	.0	67.3
1	1540	48	52.	112.8	77.5	*	3	0100	148	52.	61.4	72.9	*	4	1020	248	0.	.0	67.3
1	1600	49	52.	120.4	78.2	*	3	0120	149	52.	59.9	72.7	*	4	1040	249	0.	.0	67.3
1	1620	50	52.	126.3	78.7	*	3	0140	150	52.	58.5	72.6	*	4	1100	250	0.	.0	67.3
1	1640	51	52.	131.1	79.2	*	3	0200	151	52.	57.1	72.5	*	4	1120	251	0.	.0	67.3
1	1700	52	52.	135.0	79.5	*	3	0220	152	52.	55.6	72.3	*	4	1140	252	0.	.0	67.3
1	1720	53	52.	138.0	79.8	*	3	0240	153	52.	54.2	72.2	*	4	1200	253	0.	.0	67.3
1	1740	54	52.	140.4	80.0	*	3	0300	154	52.	52.8	72.1	*	4	1220	254	0.	.0	67.3
1	1800	55	52.	142.4	80.2	*	3	0320	155	52.	51.3	72.0	*	4	1240	255	0.	.0	67.3
1	1820	56	52.	144.1	80.3	*	3	0340	156	52.	49.9	71.8	*	4	1300	256	0.	.0	67.3
1	1840	57	52.	145.4	80.4	*	3	0400	157	52.	48.5	71.7	*	4	1320	257	0.	.0	67.3
1	1900	58	52.	146.6	80.6	*	3	0420	158	52.	47.0	71.6	*	4	1340	258	0.	.0	67.3
1	1920	59	52.	147.6	80.6	*	3	0440	159	52.	45.6	71.4	*	4	1400	259	0.	.0	67.3
1	1940	60	52.	148.5	80.7	*	3	0500	160	52.	44.2	71.3	*	4	1420	260	0.	.0	67.3
1	2000	61	52.	149.3	80.8	*	3	0520	161	52.	42.7	71.2	*	4	1440	261	0.	.0	67.3
1	2020	62	52.	150.1	80.9	*	3	0540	162	52.	41.3	71.0	*	4	1500	262	0.	.0	67.3
1	2040	63	52.	150.9	80.9	*	3	0600	163	52.	39.9	70.9	*	4	1520	263	0.	.0	67.3
1	2100	64	52.	151.6	81.0	*	3	0620	164	52.	38.4	70.8	*	4	1540	264	0.	.0	67.3
1	2120	65	52.	152.2	81.1	*	3	0640	165	52.	37.0	70.7	*	4	1600	265	0.	.0	67.3
1	2140	66	52.	152.9	81.1	*	3	0700	166	52.	35.6	70.5	*	4	1620	266	0.	.0	67.3
1	2200	67	52.	153.4	81.2	*	3	0720	167	52.	34.1	70.4	*	4	1640	267	0.	.0	67.3
1	2220	68	52.	154.0	81.2	*	3	0740	168	52.	32.7	70.3	*	4	1700	268	0.	.0	67.3
1	2240	69	52.	154.4	81.3	*	3	0800	169	52.	31.3	70.1	*	4	1720	269	0.	.0	67.3
1	2300	70	52.	154.8	81.3	*	3	0820	170	52.	29.8	70.0	*	4	1740	270	0.	.0	67.3
1	2320	71	52.	155.2	81.3	*	3	0840	171	52.	28.4	69.9	*	4	1800	271	0.	.0	67.3
1	2340	72	52.	155.5	81.4	*	3	0900	172	52.	27.0	69.8	*	4	1820	272	0.	.0	67.3
2	0000	73	52.	155.8	81.4	*	3	0920	173	52.	25.5	69.6	*	4	1840	273	0.	.0	67.3
2	0020	74	52.	156.0	81.4	*	3	0940	174	52.	24.1	69.5	*	4	1900	274	0.	.0	67.3
2	0040	75	52.	156.1	81.4	*	3	1000	175	52.	22.7	69.4	*	4	1920	275	0.	.0	67.3
2	0100	76	52.	156.2	81.4	*	3	1020	176	52.	21.2	69.2	*	4	1940	276	0.	.0	67.3
2	0120	77	52.	156.1	81.4	*	3	1040	177	52.	19.8	69.1	*	4	2000	277	0.	.0	67.3

2	0140	78	52.	155.9	81.4	*	3	1100	178	52.	18.4	69.0	*	4	2020	278	0.	.0	67.3
2	0200	79	52.	155.5	81.4	*	3	1120	179	52.	17.0	68.8	*	4	2040	279	0.	.0	67.3
2	0220	80	52.	155.0	81.3	*	3	1140	180	52.	15.5	68.7	*	4	2100	280	0.	.0	67.3
2	0240	81	52.	154.3	81.2	*	3	1200	181	52.	14.1	68.6	*	4	2120	281	0.	.0	67.3
2	0300	82	52.	153.4	81.2	*	3	1220	182	52.	12.7	68.5	*	4	2140	282	0.	.0	67.3
2	0320	83	52.	152.5	81.1	*	3	1240	183	52.	11.2	68.3	*	4	2200	283	0.	.0	67.3
2	0340	84	52.	151.4	81.0	*	3	1300	184	52.	9.8	68.2	*	4	2220	284	0.	.0	67.3
2	0400	85	52.	150.3	80.9	*	3	1320	185	52.	8.4	68.1	*	4	2240	285	0.	.0	67.3
2	0420	86	52.	149.1	80.8	*	3	1340	186	52.	6.9	67.9	*	4	2300	286	0.	.0	67.3
2	0440	87	52.	147.9	80.7	*	3	1400	187	52.	5.5	67.8	*	4	2320	287	0.	.0	67.3
2	0500	88	52.	146.6	80.6	*	3	1420	188	52.	4.1	67.7	*	4	2340	288	0.	.0	67.3
2	0520	89	52.	145.3	80.4	*	3	1440	189	52.	2.6	67.6	*	5	0000	289	0.	.0	67.3
2	0540	90	52.	143.9	80.3	*	3	1500	190	52.	1.2	67.4	*	5	0020	290	0.	.0	67.3
2	0600	91	52.	142.6	80.2	*	3	1520	191	15.	.3	67.3	*	5	0040	291	0.	.0	67.3
2	0620	92	52.	141.2	80.1	*	3	1540	192	2.	.0	67.3	*	5	0100	292	0.	.0	67.3
2	0640	93	52.	139.8	79.9	*	3	1600	193	0.	.0	67.3	*	5	0120	293	0.	.0	67.3
2	0700	94	52.	138.5	79.8	*	3	1620	194	0.	.0	67.3	*	5	0140	294	0.	.0	67.3
2	0720	95	52.	137.1	79.7	*	3	1640	195	0.	.0	67.3	*	5	0200	295	0.	.0	67.3
2	0740	96	52.	135.7	79.6	*	3	1700	196	0.	.0	67.3	*	5	0220	296	0.	.0	67.3
2	0800	97	52.	134.3	79.4	*	3	1720	197	0.	.0	67.3	*	5	0240	297	0.	.0	67.3
2	0820	98	52.	132.8	79.3	*	3	1740	198	0.	.0	67.3	*	5	0300	298	0.	.0	67.3
2	0840	99	52.	131.4	79.2	*	3	1800	199	0.	.0	67.3	*	5	0320	299	0.	.0	67.3
2	0900	100	52.	130.0	79.1	*	3	1820	200	0.	.0	67.3	*	5	0340	300	0.	.0	67.3
						*							*						

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PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	99.67-HR
52.	12.67	(CFS)	52.	52.	37.	27.
		(INCHES)	.111	.443	.940	.940
		(AC-FT)	26.	103.	219.	219.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	99.67-HR
156.	25.00	155.	138.	65.	47.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	99.67-HR
81.42	25.00	81.30	79.76	73.14	71.52

CUMULATIVE AREA = 4.37 SQ MI

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              *            *
409 KK        *     CBASG  *
              *            *
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COMBINE PUMPOUT FROM BASIN B AND INFLOW FROM EAST INTO BASIN H
AND BASIN G OUTFLOW.

412 KO OUTPUT CONTROL VARIABLES

IPRNT	3	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

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413 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***

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

                       HYDROGRAPH AT STATION    CBASG

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     99.67-HR
   895.     13.67        (CFS)      557.        479.        270.        195.
                       (INCHES)     .173        .595       1.008       1.008
                        (AC-FT)     276.        949.       1608.       1608.

                       CUMULATIVE AREA =   29.91 SQ MI


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          **************
          *            *
415 KK    *      ADJH  *
          *            *
          **************
                            ADJUST REGIONAL BASIN H VOLUME FOR REDUCTION IN PEAK PUMPING AT MAX HEAD
                            ADD IN HYDROGRAPH ORDINATES THAT CORRESPONDS TO THE PUMPING RATE
                            REDUCTIONS DURING THE PEAK FLOW PERIOD IN THE PRICE TUNNEL.
                            ADDING IN ORDINATES IS REQUIRED TO ACCOUNT FOR THE VOLUME OUTFLOW
                            REDUCTION WHEN THE RATE IN DECREASED.  HEC-1 ONLY HAS THE ABLILTY
                            TO TURN ON AND OFF PUMPS FOR WATER SURFACE ELEVATIONS AND CANNOT
                            REDUCE PUMP FLOWS TO ACCOUNT FOR CHANGES IN THE DOWNSTREAM CAPACITIES.

414 IN          TIME DATA FOR INPUT TIME SERIES
                     JXMIN          20  TIME INTERVAL IN MINUTES
                    JXDATE      1    0  STARTING DATE
                    JXTIME           0  STARTING TIME

             SUBBASIN RUNOFF DATA

423 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .01  SUBBASIN AREA

                                                          ***

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

                       HYDROGRAPH AT STATION     ADJH

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     99.67-HR
   250.     12.67        (CFS)      127.         32.         11.          8.
                       (INCHES)  117.924     117.924     117.924     117.924
                        (AC-FT)     63.         63.         63.         63.

                       CUMULATIVE AREA =     .01 SQ MI
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
454 KK    *     CADJH  *
          *            *
          **************
                              COMBINE BASIN ADJUSTMENT FLOWS TO BASIN H

456 HC          HYDROGRAPH COMBINATION
                      ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

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

                        HYDROGRAPH AT STATION    CADJH

PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                    6-HR       24-HR       72-HR      99.67-HR
   1145.     13.67        (CFS)       657.        510.        281.         203.
                        (INCHES)      .204        .634       1.047        1.047
                         (AC-FT)      326.       1012.       1671.        1671.

                        CUMULATIVE AREA =   29.92 SQ MI


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

          **************
          *            *
457 KK    *     RBASH  *
          *            *
          **************
                              ROUTE TOTAL FLOW FROM WEST OF PRICE ROAD AND BASINS G AND H THROUGH
                              REGIONAL BASIN H. PUMPED OUTFLOW TO BASIN E AT 375 CFS.

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

              HYDROGRAPH ROUTING DATA

461 RS          STORAGE ROUTING
                      NSTPS           1  NUMBER OF SUBREACHES
                       ITYP        ELEV  TYPE OF INITIAL CONDITION
                     RSVRIC         .00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

462 SV            STORAGE          .0       2.1       4.2       6.3       8.3      10.6      11.9     211.3     389.0     473.4
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463 SE	ELEVATION	52.40	52.60	52.70	52.85	53.03	53.20	53.30	68.40	78.40	82.40
464 SQ	DISCHARGE	0.	75.	150.	225.	300.	375.	375.	375.	375.	375.

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HYDROGRAPH AT STATION RBASH

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	52.4	*	2		0920	101	375.	285.3	72.6	*	3		1840	201	25.	.7	52.5
1		0020	2	0.	.0	52.4	*	2		0940	102	375.	284.5	72.5	*	3		1900	202	9.	.3	52.4
1		0040	3	0.	.0	52.4	*	2		1000	103	375.	283.7	72.5	*	3		1920	203	3.	.1	52.4
1		0100	4	0.	.0	52.4	*	2		1020	104	375.	282.9	72.4	*	3		1940	204	1.	.0	52.4
1		0120	5	0.	.0	52.4	*	2		1040	105	375.	281.9	72.4	*	3		2000	205	0.	.0	52.4
1		0140	6	0.	.0	52.4	*	2		1100	106	375.	280.9	72.3	*	3		2020	206	0.	.0	52.4
1		0200	7	0.	.0	52.4	*	2		1120	107	375.	279.9	72.3	*	3		2040	207	0.	.0	52.4
1		0220	8	0.	.0	52.4	*	2		1140	108	375.	278.7	72.2	*	3		2100	208	0.	.0	52.4
1		0240	9	0.	.0	52.4	*	2		1200	109	375.	277.5	72.1	*	3		2120	209	0.	.0	52.4
1		0300	10	0.	.0	52.4	*	2		1220	110	375.	276.3	72.1	*	3		2140	210	0.	.0	52.4
1		0320	11	0.	.0	52.4	*	2		1240	111	375.	274.9	72.0	*	3		2200	211	0.	.0	52.4
1		0340	12	0.	.0	52.4	*	2		1300	112	375.	273.5	71.9	*	3		2220	212	0.	.0	52.4
1		0400	13	0.	.0	52.4	*	2		1320	113	375.	272.1	71.8	*	3		2240	213	0.	.0	52.4
1		0420	14	0.	.0	52.4	*	2		1340	114	375.	270.6	71.7	*	3		2300	214	0.	.0	52.4
1		0440	15	0.	.0	52.4	*	2		1400	115	375.	269.1	71.7	*	3		2320	215	0.	.0	52.4
1		0500	16	0.	.0	52.4	*	2		1420	116	375.	267.6	71.6	*	3		2340	216	0.	.0	52.4
1		0520	17	0.	.0	52.4	*	2		1440	117	375.	266.1	71.5	*	4		0000	217	0.	.0	52.4
1		0540	18	0.	.0	52.4	*	2		1500	118	375.	264.5	71.4	*	4		0020	218	0.	.0	52.4
1		0600	19	0.	.0	52.4	*	2		1520	119	375.	263.0	71.3	*	4		0040	219	0.	.0	52.4
1		0620	20	0.	.0	52.4	*	2		1540	120	375.	261.5	71.2	*	4		0100	220	0.	.0	52.4
1		0640	21	0.	.0	52.4	*	2		1600	121	375.	260.0	71.1	*	4		0120	221	0.	.0	52.4
1		0700	22	0.	.0	52.4	*	2		1620	122	375.	258.4	71.1	*	4		0140	222	0.	.0	52.4
1		0720	23	0.	.0	52.4	*	2		1640	123	375.	256.9	71.0	*	4		0200	223	0.	.0	52.4
1		0740	24	0.	.0	52.4	*	2		1700	124	375.	255.4	70.9	*	4		0220	224	0.	.0	52.4
1		0800	25	0.	.0	52.4	*	2		1720	125	375.	253.8	70.8	*	4		0240	225	0.	.0	52.4
1		0820	26	0.	.0	52.4	*	2		1740	126	375.	252.3	70.7	*	4		0300	226	0.	.0	52.4
1		0840	27	0.	.0	52.4	*	2		1800	127	375.	250.7	70.6	*	4		0320	227	0.	.0	52.4
1		0900	28	0.	.0	52.4	*	2		1820	128	375.	249.2	70.5	*	4		0340	228	0.	.0	52.4
1		0920	29	0.	.0	52.4	*	2		1840	129	375.	247.6	70.4	*	4		0400	229	0.	.0	52.4
1		0940	30	0.	.0	52.4	*	2		1900	130	375.	246.1	70.4	*	4		0420	230	0.	.0	52.4
1		1000	31	0.	.0	52.4	*	2		1920	131	375.	244.5	70.3	*	4		0440	231	0.	.0	52.4
1		1020	32	1.	.0	52.4	*	2		1940	132	375.	242.9	70.2	*	4		0500	232	0.	.0	52.4
1		1040	33	2.	.1	52.4	*	2		2000	133	375.	241.4	70.1	*	4		0520	233	0.	.0	52.4
1		1100	34	3.	.1	52.4	*	2		2020	134	375.	239.8	70.0	*	4		0540	234	0.	.0	52.4
1		1120	35	18.	.5	52.4	*	2		2040	135	375.	238.2	69.9	*	4		0600	235	0.	.0	52.4
1		1140	36	31.	.9	52.5	*	2		2100	136	375.	236.7	69.8	*	4		0620	236	0.	.0	52.4
1		1200	37	79.	2.2	52.6	*	2		2120	137	375.	235.1	69.7	*	4		0640	237	0.	.0	52.4
1		1220	38	211.	5.9	52.8	*	2		2140	138	375.	233.5	69.6	*	4		0700	238	0.	.0	52.4
1		1240	39	375.	13.3	53.4	*	2		2200	139	375.	231.9	69.6	*	4		0720	239	0.	.0	52.4
1		1300	40	375.	23.7	54.2	*	2		2220	140	375.	230.3	69.5	*	4		0740	240	0.	.0	52.4
1		1320	41	375.	37.8	55.3	*	2		2240	141	375.	228.7	69.4	*	4		0800	241	0.	.0	52.4
1		1340	42	375.	57.2	56.7	*	2		2300	142	375.	227.1	69.3	*	4		0820	242	0.	.0	52.4
1		1400	43	375.	76.4	58.2	*	2		2320	143	375.	225.5	69.2	*	4		0840	243	0.	.0	52.4

1	1420	44	375.	92.2	59.4	*	2	2340	144	375.	223.9	69.1	*	4	0900	244	0.	.0	52.4
1	1440	45	375.	105.6	60.4	*	3	0000	145	375.	222.3	69.0	*	4	0920	245	0.	.0	52.4
1	1500	46	375.	117.0	61.3	*	3	0020	146	375.	220.7	68.9	*	4	0940	246	0.	.0	52.4
1	1520	47	375.	125.7	61.9	*	3	0040	147	375.	219.0	68.8	*	4	1000	247	0.	.0	52.4
1	1540	48	375.	131.9	62.4	*	3	0100	148	375.	216.6	68.7	*	4	1020	248	0.	.0	52.4
1	1600	49	375.	135.7	62.7	*	3	0120	149	375.	213.4	68.5	*	4	1040	249	0.	.0	52.4
1	1620	50	375.	138.2	62.9	*	3	0140	150	375.	210.2	68.3	*	4	1100	250	0.	.0	52.4
1	1640	51	375.	139.9	63.0	*	3	0200	151	375.	207.0	68.1	*	4	1120	251	0.	.0	52.4
1	1700	52	375.	141.2	63.1	*	3	0220	152	375.	203.8	67.8	*	4	1140	252	0.	.0	52.4
1	1720	53	375.	141.9	63.1	*	3	0240	153	375.	200.6	67.6	*	4	1200	253	0.	.0	52.4
1	1740	54	375.	143.1	63.2	*	3	0300	154	375.	197.4	67.3	*	4	1220	254	0.	.0	52.4
1	1800	55	375.	145.2	63.4	*	3	0320	155	375.	194.1	67.1	*	4	1240	255	0.	.0	52.4
1	1820	56	375.	147.8	63.6	*	3	0340	156	375.	190.9	66.9	*	4	1300	256	0.	.0	52.4
1	1840	57	375.	150.6	63.8	*	3	0400	157	375.	187.6	66.6	*	4	1320	257	0.	.0	52.4
1	1900	58	375.	153.7	64.0	*	3	0420	158	375.	184.4	66.4	*	4	1340	258	0.	.0	52.4
1	1920	59	375.	157.1	64.3	*	3	0440	159	375.	181.1	66.1	*	4	1400	259	0.	.0	52.4
1	1940	60	375.	160.6	64.6	*	3	0500	160	375.	177.8	65.9	*	4	1420	260	0.	.0	52.4
1	2000	61	375.	164.2	64.8	*	3	0520	161	375.	174.5	65.6	*	4	1440	261	0.	.0	52.4
1	2020	62	375.	167.9	65.1	*	3	0540	162	375.	171.2	65.4	*	4	1500	262	0.	.0	52.4
1	2040	63	375.	171.8	65.4	*	3	0600	163	375.	167.9	65.1	*	4	1520	263	0.	.0	52.4
1	2100	64	375.	176.0	65.7	*	3	0620	164	375.	164.5	64.9	*	4	1540	264	0.	.0	52.4
1	2120	65	375.	180.3	66.1	*	3	0640	165	375.	161.2	64.6	*	4	1600	265	0.	.0	52.4
1	2140	66	375.	185.0	66.4	*	3	0700	166	375.	157.9	64.4	*	4	1620	266	0.	.0	52.4
1	2200	67	375.	189.8	66.8	*	3	0720	167	375.	154.5	64.1	*	4	1640	267	0.	.0	52.4
1	2220	68	375.	194.8	67.2	*	3	0740	168	375.	151.1	63.8	*	4	1700	268	0.	.0	52.4
1	2240	69	375.	200.0	67.5	*	3	0800	169	375.	147.8	63.6	*	4	1720	269	0.	.0	52.4
1	2300	70	375.	205.4	67.9	*	3	0820	170	375.	144.4	63.3	*	4	1740	270	0.	.0	52.4
1	2320	71	375.	210.8	68.4	*	3	0840	171	375.	141.0	63.1	*	4	1800	271	0.	.0	52.4
1	2340	72	375.	216.9	68.7	*	3	0900	172	375.	137.6	62.8	*	4	1820	272	0.	.0	52.4
2	0000	73	375.	223.0	69.1	*	3	0920	173	375.	134.2	62.6	*	4	1840	273	0.	.0	52.4
2	0020	74	375.	228.5	69.4	*	3	0940	174	375.	130.8	62.3	*	4	1900	274	0.	.0	52.4
2	0040	75	375.	234.1	69.7	*	3	1000	175	375.	127.3	62.0	*	4	1920	275	0.	.0	52.4
2	0100	76	375.	239.4	70.0	*	3	1020	176	375.	123.9	61.8	*	4	1940	276	0.	.0	52.4
2	0120	77	375.	244.5	70.3	*	3	1040	177	375.	120.4	61.5	*	4	2000	277	0.	.0	52.4
2	0140	78	375.	249.3	70.5	*	3	1100	178	375.	116.9	61.3	*	4	2020	278	0.	.0	52.4
2	0200	79	375.	253.9	70.8	*	3	1120	179	375.	113.4	61.0	*	4	2040	279	0.	.0	52.4
2	0220	80	375.	258.2	71.0	*	3	1140	180	375.	109.9	60.7	*	4	2100	280	0.	.0	52.4
2	0240	81	375.	262.2	71.3	*	3	1200	181	375.	105.8	60.4	*	4	2120	281	0.	.0	52.4
2	0300	82	375.	266.0	71.5	*	3	1220	182	375.	101.0	60.1	*	4	2140	282	0.	.0	52.4
2	0320	83	375.	269.5	71.7	*	3	1240	183	375.	96.3	59.7	*	4	2200	283	0.	.0	52.4
2	0340	84	375.	272.8	71.9	*	3	1300	184	375.	91.5	59.3	*	4	2220	284	0.	.0	52.4
2	0400	85	375.	275.7	72.0	*	3	1320	185	375.	86.7	59.0	*	4	2240	285	0.	.0	52.4
2	0420	86	375.	278.3	72.2	*	3	1340	186	375.	82.0	58.6	*	4	2300	286	0.	.0	52.4
2	0440	87	375.	280.6	72.3	*	3	1400	187	375.	77.2	58.2	*	4	2320	287	0.	.0	52.4
2	0500	88	375.	282.6	72.4	*	3	1420	188	375.	72.4	57.9	*	4	2340	288	0.	.0	52.4
2	0520	89	375.	284.2	72.5	*	3	1440	189	375.	67.7	57.5	*	5	0000	289	0.	.0	52.4
2	0540	90	375.	285.6	72.6	*	3	1500	190	375.	62.9	57.2	*	5	0020	290	0.	.0	52.4
2	0600	91	375.	286.6	72.6	*	3	1520	191	375.	57.6	56.8	*	5	0040	291	0.	.0	52.4
2	0620	92	375.	287.4	72.7	*	3	1540	192	375.	51.7	56.3	*	5	0100	292	0.	.0	52.4
2	0640	93	375.	287.9	72.7	*	3	1600	193	375.	45.5	55.8	*	5	0120	293	0.	.0	52.4
2	0700	94	375.	288.1	72.7	*	3	1620	194	375.	39.3	55.4	*	5	0140	294	0.	.0	52.4
2	0720	95	375.	288.1	72.7	*	3	1640	195	375.	33.1	54.9	*	5	0200	295	0.	.0	52.4
2	0740	96	375.	287.9	72.7	*	3	1700	196	375.	26.9	54.4	*	5	0220	296	0.	.0	52.4
2	0800	97	375.	287.5	72.7	*	3	1720	197	375.	20.6	54.0	*	5	0240	297	0.	.0	52.4
2	0820	98	375.	287.1	72.7	*	3	1740	198	375.	12.7	53.4	*	5	0300	298	0.	.0	52.4
2	0840	99	375.	286.5	72.6	*	3	1800	199	194.	5.4	52.8	*	5	0320	299	0.	.0	52.4
2	0900	100	375.	285.9	72.6	*	3	1820	200	70.	2.0	52.6	*	5	0340	300	0.	.0	52.4
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PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	99.67-HR
375.	12.67	(CFS)	375.	375.	281.	203.
		(INCHES)	.117	.466	1.047	1.047
		(AC-FT)	186.	744.	1671.	1671.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	99.67-HR
288.	31.33	286.	262.	143.	103.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	99.67-HR
72.72	31.33	72.59	71.25	62.90	59.98

CUMULATIVE AREA = 29.92 SQ MI

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              *            *
466 KK        *     ADJVH  *
              *            *
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ADJUST REGIONAL BASIN H HYDROGRAPH for REDUCTION IN PEAK PUMPING AT MAX SUBTRACT OUT THE ORDINATES ADDED INTO BASIN H IN ADJH ABOVE. THIS WILL ADJUST THE OUTFLOW HYDROGRAPH TO ACCOUNT FOR PEAK OUTFLOW REDUCTION DUE TO THE CARRIAGE LANE OUTFALL CAPACITY DURING THE PEAK FLOWS CONDITIONS.

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

465 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN         20  TIME INTERVAL IN MINUTES
                     JXDATE      1    0  STARTING DATE
                     JXTIME           0  STARTING TIME

             SUBBASIN RUNOFF DATA

473 BA          SUBBASIN CHARACTERISTICS
                      TAREA        .01  SUBBASIN AREA
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HYDROGRAPH AT STATION ADJVH

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	99.67-HR
0.	.33	(CFS)	0.	0.	0.	-8.
		(INCHES)	.000	.000	.000	-116.632
		(AC-FT)	0.	0.	0.	-62.

CUMULATIVE AREA = .01 SQ MI

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              *            *
504 KK        *     CADJH  *
              *            *
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COMBINE BASIN ADJUSTMENT FLOWS TO BASIN H

506 KO OUTPUT CONTROL VARIABLES

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

507 HC HYDROGRAPH COMBINATION

ICOMP	2	NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION CADJH
SUM OF 2 HYDROGRAPHS

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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	*	2		0100	76	375.	*	3		0200	151	375.	*	4		0300	226	0.
1		0020	2	0.	*	2		0120	77	375.	*	3		0220	152	375.	*	4		0320	227	0.
1		0040	3	0.	*	2		0140	78	375.	*	3		0240	153	375.	*	4		0340	228	0.
1		0100	4	0.	*	2		0200	79	375.	*	3		0300	154	375.	*	4		0400	229	0.
1		0120	5	0.	*	2		0220	80	375.	*	3		0320	155	375.	*	4		0420	230	0.
1		0140	6	0.	*	2		0240	81	375.	*	3		0340	156	375.	*	4		0440	231	0.
1		0200	7	0.	*	2		0300	82	375.	*	3		0400	157	375.	*	4		0500	232	0.
1		0220	8	0.	*	2		0320	83	375.	*	3		0420	158	375.	*	4		0520	233	0.
1		0240	9	0.	*	2		0340	84	375.	*	3		0440	159	375.	*	4		0540	234	0.
1		0300	10	0.	*	2		0400	85	375.	*	3		0500	160	375.	*	4		0600	235	0.
1		0320	11	0.	*	2		0420	86	375.	*	3		0520	161	375.	*	4		0620	236	0.
1		0340	12	0.	*	2		0440	87	375.	*	3		0540	162	375.	*	4		0640	237	0.
1		0400	13	0.	*	2		0500	88	375.	*	3		0600	163	375.	*	4		0700	238	0.
1		0420	14	0.	*	2		0520	89	375.	*	3		0620	164	375.	*	4		0720	239	0.
1		0440	15	0.	*	2		0540	90	375.	*	3		0640	165	375.	*	4		0740	240	0.
1		0500	16	0.	*	2		0600	91	375.	*	3		0700	166	375.	*	4		0800	241	0.
1		0520	17	0.	*	2		0620	92	375.	*	3		0720	167	375.	*	4		0820	242	0.
1		0540	18	0.	*	2		0640	93	375.	*	3		0740	168	375.	*	4		0840	243	0.
1		0600	19	0.	*	2		0700	94	375.	*	3		0800	169	375.	*	4		0900	244	0.
1		0620	20	0.	*	2		0720	95	375.	*	3		0820	170	375.	*	4		0920	245	0.
1		0640	21	0.	*	2		0740	96	375.	*	3		0840	171	375.	*	4		0940	246	0.
1		0700	22	0.	*	2		0800	97	375.	*	3		0900	172	375.	*	4		1000	247	0.
1		0720	23	0.	*	2		0820	98	375.	*	3		0920	173	375.	*	4		1020	248	0.
1		0740	24	0.	*	2		0840	99	375.	*	3		0940	174	375.	*	4		1040	249	0.
1		0800	25	0.	*	2		0900	100	375.	*	3		1000	175	375.	*	4		1100	250	0.
1		0820	26	0.	*	2		0920	101	375.	*	3		1020	176	375.	*	4		1120	251	0.

1	0840	27	0.	*	2	0940	102	375.	*	3	1040	177	375.	*	4	1140	252	0.
1	0900	28	0.	*	2	1000	103	375.	*	3	1100	178	375.	*	4	1200	253	0.
1	0920	29	0.	*	2	1020	104	375.	*	3	1120	179	375.	*	4	1220	254	0.
1	0940	30	0.	*	2	1040	105	375.	*	3	1140	180	375.	*	4	1240	255	0.
1	1000	31	0.	*	2	1100	106	375.	*	3	1200	181	375.	*	4	1300	256	0.
1	1020	32	1.	*	2	1120	107	375.	*	3	1220	182	375.	*	4	1320	257	0.
1	1040	33	2.	*	2	1140	108	375.	*	3	1240	183	375.	*	4	1340	258	0.
1	1100	34	3.	*	2	1200	109	375.	*	3	1300	184	375.	*	4	1400	259	0.
1	1120	35	18.	*	2	1220	110	375.	*	3	1320	185	375.	*	4	1420	260	0.
1	1140	36	31.	*	2	1240	111	375.	*	3	1340	186	375.	*	4	1440	261	0.
1	1200	37	79.	*	2	1300	112	375.	*	3	1400	187	375.	*	4	1500	262	0.
1	1220	38	178.	*	2	1320	113	375.	*	3	1420	188	375.	*	4	1520	263	0.
1	1240	39	125.	*	2	1340	114	375.	*	3	1440	189	375.	*	4	1540	264	0.
1	1300	40	125.	*	2	1400	115	375.	*	3	1500	190	375.	*	4	1600	265	0.
1	1320	41	125.	*	2	1420	116	375.	*	3	1520	191	375.	*	4	1620	266	0.
1	1340	42	125.	*	2	1440	117	375.	*	3	1540	192	375.	*	4	1640	267	0.
1	1400	43	125.	*	2	1500	118	375.	*	3	1600	193	375.	*	4	1700	268	0.
1	1420	44	125.	*	2	1520	119	375.	*	3	1620	194	375.	*	4	1720	269	0.
1	1440	45	125.	*	2	1540	120	375.	*	3	1640	195	375.	*	4	1740	270	0.
1	1500	46	125.	*	2	1600	121	375.	*	3	1700	196	375.	*	4	1800	271	0.
1	1520	47	208.	*	2	1620	122	375.	*	3	1720	197	375.	*	4	1820	272	0.
1	1540	48	317.	*	2	1640	123	375.	*	3	1740	198	375.	*	4	1840	273	0.
1	1600	49	375.	*	2	1700	124	375.	*	3	1800	199	194.	*	4	1900	274	0.
1	1620	50	375.	*	2	1720	125	375.	*	3	1820	200	70.	*	4	1920	275	0.
1	1640	51	375.	*	2	1740	126	375.	*	3	1840	201	25.	*	4	1940	276	0.
1	1700	52	375.	*	2	1800	127	375.	*	3	1900	202	9.	*	4	2000	277	0.
1	1720	53	375.	*	2	1820	128	375.	*	3	1920	203	3.	*	4	2020	278	0.
1	1740	54	375.	*	2	1840	129	375.	*	3	1940	204	1.	*	4	2040	279	0.
1	1800	55	375.	*	2	1900	130	375.	*	3	2000	205	0.	*	4	2100	280	0.
1	1820	56	375.	*	2	1920	131	375.	*	3	2020	206	0.	*	4	2120	281	0.
1	1840	57	375.	*	2	1940	132	375.	*	3	2040	207	0.	*	4	2140	282	0.
1	1900	58	375.	*	2	2000	133	375.	*	3	2100	208	0.	*	4	2200	283	0.
1	1920	59	375.	*	2	2020	134	375.	*	3	2120	209	0.	*	4	2220	284	0.
1	1940	60	375.	*	2	2040	135	375.	*	3	2140	210	0.	*	4	2240	285	0.
1	2000	61	375.	*	2	2100	136	375.	*	3	2200	211	0.	*	4	2300	286	0.
1	2020	62	375.	*	2	2120	137	375.	*	3	2220	212	0.	*	4	2320	287	0.
1	2040	63	375.	*	2	2140	138	375.	*	3	2240	213	0.	*	4	2340	288	0.
1	2100	64	375.	*	2	2200	139	375.	*	3	2300	214	0.	*	5	0000	289	0.
1	2120	65	375.	*	2	2220	140	375.	*	3	2320	215	0.	*	5	0020	290	0.
1	2140	66	375.	*	2	2240	141	375.	*	3	2340	216	0.	*	5	0040	291	0.
1	2200	67	375.	*	2	2300	142	375.	*	4	0000	217	0.	*	5	0100	292	0.
1	2220	68	375.	*	2	2320	143	375.	*	4	0020	218	0.	*	5	0120	293	0.
1	2240	69	375.	*	2	2340	144	375.	*	4	0040	219	0.	*	5	0140	294	0.
1	2300	70	375.	*	3	0000	145	375.	*	4	0100	220	0.	*	5	0200	295	0.
1	2320	71	375.	*	3	0020	146	375.	*	4	0120	221	0.	*	5	0220	296	0.
1	2340	72	375.	*	3	0040	147	375.	*	4	0140	222	0.	*	5	0240	297	0.
2	0000	73	375.	*	3	0100	148	375.	*	4	0200	223	0.	*	5	0300	298	0.
2	0020	74	375.	*	3	0120	149	375.	*	4	0220	224	0.	*	5	0320	299	0.
2	0040	75	375.	*	3	0140	150	375.	*	4	0240	225	0.	*	5	0340	300	0.
				*					*					*				

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PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	99.67-HR
375.	16.00	(CFS)	375.	375.	270.	195.
		(INCHES)	.116	.466	1.008	1.008
		(AC-FT)	186.	744.	1609.	1609.

CUMULATIVE AREA = 29.93 SQ MI

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          **************
          *            *
509 KK    *      BASF  *
          *            *
          **************
                          INFLOW INTO REGIONAL BASIN F    FROM EAST

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

508 IN          TIME DATA FOR INPUT TIME SERIES
                     JXMIN           5  TIME INTERVAL IN MINUTES
                    JXDATE      1    0  STARTING DATE
                    JXTIME           0  STARTING TIME

             SUBBASIN RUNOFF DATA

512 BA          SUBBASIN CHARACTERISTICS
                     TAREA        1.10  SUBBASIN AREA

                                                        ***

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

                       HYDROGRAPH AT STATION     BASF

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     99.67-HR
   136.      12.67        (CFS)     48.         16.          5.           4.
                        (INCHES)   .402        .550        .550         .550
                         (AC-FT)    24.         32.         32.          32.

                       CUMULATIVE AREA =    1.10 SQ MI
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          **************
          *            *
544 KK    *     CBASF  *
          *            *
          **************
                          COMBINE PUMPOUT FROM BASIN H AND INFLOW FROM EAST INTO BASIN F
                          AT BASIN E. ASSUME NO ATTENUATION FROM BASIN F.

547 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

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

                    HYDROGRAPH AT STATION    CBASF

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                 6-HR       24-HR       72-HR     99.67-HR
   400.      16.00       (CFS)     394.        381.        276.        199.
                       (INCHES)    .118        .457        .991        .991
                        (AC-FT)    196.        756.       1641.       1641.

                    CUMULATIVE AREA =   31.03 SQ MI


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


          **************
          *            *
549 KK    *      BASE  *
          *            *
          **************
                         OFFSITE INFLOW HYDROGRAPH INTO REGIONAL BASIN E  FROM EAST

548 IN          TIME DATA FOR INPUT TIME SERIES
                     JXMIN          12  TIME INTERVAL IN MINUTES
                    JXDATE      1    0  STARTING DATE
                    JXTIME           0  STARTING TIME

            SUBBASIN RUNOFF DATA

551 BA          SUBBASIN CHARACTERISTICS
                     TAREA        6.33  SUBBASIN AREA

                                                          ***

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

                    HYDROGRAPH AT STATION     BASE

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                 6-HR       24-HR       72-HR     99.67-HR
   292.      15.00       (CFS)     179.         82.         32.         23.
                       (INCHES)    .263        .479        .559        .559
                        (AC-FT)     89.        162.        189.        189.

                    CUMULATIVE AREA =    6.33 SQ MI


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


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          *            *
583 KK    *     CBASE  *
          *            *
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**************
                    COMBINE PUMPOUT FROM BASIN H AND INFLOW FROM EAST INTO BASIN E AND
                    BASIN F OUTFLOW AT BASIN E.

586 HC        HYDROGRAPH COMBINATION
                   ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***

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

                    HYDROGRAPH AT STATION    CBASE

PEAK FLOW    TIME                          MAXIMUM AVERAGE FLOW
  (CFS)      (HR)                 6-HR       24-HR       72-HR     99.67-HR
   624.     16.00       (CFS)     531.        444.        307.        222.
                      (INCHES)    .132        .442        .918        .918
                       (AC-FT)    263.        881.       1830.       1830.

                     CUMULATIVE AREA =   37.36 SQ MI


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


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          *            *
588 KK    *    WARNER  *
          *            *
          **************
                    ONSITE DRAINAGE/STORAGE ANALYSIS  50 YEAR 24 HOUR STORM
                    DRAINAGE AREA - CHANDLER TO WARNER ONSITE PUMP STATION -
                    PUMP STATION CAPACITY IS 200 CFS.

587 IN        TIME DATA FOR INPUT TIME SERIES
                   JXMIN          5  TIME INTERVAL IN MINUTES
                  JXDATE     1    0  STARTING DATE
                  JXTIME          0  STARTING TIME

            SUBBASIN RUNOFF DATA

592 BA        SUBBASIN CHARACTERISTICS
                   TAREA        .13  SUBBASIN AREA

                                                          ***

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

                    HYDROGRAPH AT STATION   WARNER

PEAK FLOW    TIME                          MAXIMUM AVERAGE FLOW
  (CFS)      (HR)                 6-HR       24-HR       72-HR     99.67-HR
   200.     12.33       (CFS)      27.          7.          2.          2.
                      (INCHES)   1.907       2.066       2.066       2.066
                       (AC-FT)    13.         14.         14.         14.

                     CUMULATIVE AREA =     .13 SQ MI
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          *            *
623 KK    *    CWARNR  *
          *            *
          **************
                              COMBINE PUMPOUT FROM ONSITE BASIN AT WARNER ROAD AND INFLOW TO BASIN E

625 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                                  ***

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

                       HYDROGRAPH AT STATION   CWARNR

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     99.67-HR
   624.      16.00        (CFS)     533.        446.        310.        224.
                        (INCHES)    .132        .442        .922        .922
                         (AC-FT)    264.        884.       1844.       1844.

                        CUMULATIVE AREA =   37.49 SQ MI


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          *            *
627 KK    *    ELLIOT  *
          *            *
          **************
                              ONSITE DRAINAGE/STORAGE ANALYSIS  50 YEAR 24 HOUR STORM
                              PUMP STATION CAPACITY IS 200 CFS.
                              DRAINAGE AREA - GUADELUPE TO ELLIOT ONSITE PUMP STATION

626 IN          TIME DATA FOR INPUT TIME SERIES
                     JXMIN           5  TIME INTERVAL IN MINUTES
                    JXDATE      1    0  STARTING DATE
                    JXTIME           0  STARTING TIME

             SUBBASIN RUNOFF DATA

631 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .16  SUBBASIN AREA

                                                                  ***

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

                       HYDROGRAPH AT STATION   ELLIOT
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PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	99.67-HR
200.	12.33	(CFS)	49.	12.	4.	3.
		(INCHES)	2.841	2.841	2.841	2.841
		(AC-FT)	24.	24.	24.	24.

CUMULATIVE AREA = .16 SQ MI

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*            *
*    CELIOT  *
*            *
**************
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666 KK

COMBINE ONSITE FLOWS TO BASIN E FROM PUMP STATION AT ELLIOT

668 HC HYDROGRAPH COMBINATION

ICOMP 2 NUMBER OF HYDROGRAPHS TO COMBINE

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HYDROGRAPH AT STATION CELIOT

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	99.67-HR
784.	12.67	(CFS)	536.	455.	314.	227.
		(INCHES)	.132	.450	.930	.930
		(AC-FT)	266.	903.	1868.	1868.

CUMULATIVE AREA = 37.65 SQ MI

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*            *
*    ADJPEK  *
*            *
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670 KK

ADJUST REGIONAL BASIN E VOLUME FOR REDUCTION IN PEAK PUMPING AT MAX HEAD
ADD IN HYDROGRAPH ORDINATES THAT CORRESPONDS TO THE PUMPING RATE
REDUCTIONS DURING THE PEAK FLOW PERIOD IN THE PRICE TUNNEL.
ADDING IN ORDINATES IS REQUIRED TO ACCOUNT FOR THE VOLUME OUTFLOW
REDUCTION WHEN THE RATE IN DECREASED. HEC-1 ONLY HAS THE ABLILTY
TO TURN ON AND OFF PUMPS FOR WATER SURFACE ELEVATIONS AND CANNOT
REDUCE PUMP FLOWS TO ACCOUNT FOR CHANGES IN THE DOWNSTREAM CAPACITIES.

669 IN TIME DATA FOR INPUT TIME SERIES

JXMIN 20 TIME INTERVAL IN MINUTES

```
                JXDATE      1    0  STARTING DATE
                JXTIME           0  STARTING TIME

          SUBBASIN RUNOFF DATA

678 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .01  SUBBASIN AREA

                                                          ***

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

                     HYDROGRAPH AT STATION   ADJPEK

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     99.67-HR
   300.      12.67       (CFS)      157.         39.         13.           9.
                       (INCHES)  145.558     145.558     145.558      145.558
                        (AC-FT)       78.         78.         78.          78.

                      CUMULATIVE AREA =     .01 SQ MI


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


          **************
          *            *
709 KK    *      CADJ  *
          *            *
          **************
                                COMBINE BASIN ADJUSTMENT FLOWS TO BASIN E

711 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***

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

                     HYDROGRAPH AT STATION     CADJ

PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                  6-HR       24-HR       72-HR     99.67-HR
  1084.       12.67       (CFS)      679.        495.        327.         236.
                       (INCHES)     .168        .488        .969         .969
                        (AC-FT)      337.        981.       1946.        1946.

                      CUMULATIVE AREA =   37.66 SQ MI


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712 KK * RBASE *
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ROUTE TOTAL FLOW FROM BASIN F AND EAST THROUGH REGIONAL BASIN E
MAX PUMPING RATE OF 450 CFS OUTFLOW TO CARRIAGE LANE OUTFALL (568X850)

715 KO OUTPUT CONTROL VARIABLES

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

HYDROGRAPH ROUTING DATA

716 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	ELEV	TYPE OF INITIAL CONDITION
RSVRIC	.00	INITIAL CONDITION
X	.00	WORKING R AND D COEFFICIENT

717 SV	STORAGE	.0	.5	4.4	6.1	8.3	9.9	10.5	111.5	213.0	261.8
718 SE	ELEVATION	57.20	57.60	58.00	58.30	58.70	59.00	59.10	73.20	83.20	87.20
719 SQ	DISCHARGE	0.	75.	150.	225.	300.	375.	450.	450.	450.	450.

***

*** WARNING *** MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR OUTFLOWS BETWEEN 0. TO 450.
THE ROUTED HYDROGRAPH SHOULD BE EXAMINED FOR OSCILLATIONS OR OUTFLOWS GREATER THAN PEAK INFLOWS.
THIS CAN BE CORRECTED BY DECREASING THE TIME INTERVAL OR INCREASING STORAGE (USE A LONGER REACH.)

****

HYDROGRAPH AT STATION RBASE

****

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	57.2	*	2		0920	101	450.	110.9	73.1	*	3		1840	201	112.	2.4	57.8
1		0020	2	0.	.0	57.2	*	2		0940	102	450.	109.3	72.9	*	3		1900	202	66.	.5	57.5
1		0040	3	0.	.0	57.2	*	2		1000	103	450.	107.7	72.7	*	3		1920	203	0.	.0	57.2
1		0100	4	0.	.0	57.2	*	2		1020	104	450.	106.1	72.5	*	3		1940	204	3.	.0	57.2
1		0120	5	0.	.0	57.2	*	2		1040	105	450.	104.5	72.2	*	3		2000	205	0.	.0	57.2
1		0140	6	0.	.0	57.2	*	2		1100	106	450.	102.9	72.0	*	3		2020	206	0.	.0	57.2
1		0200	7	0.	.0	57.2	*	2		1120	107	450.	101.3	71.8	*	3		2040	207	0.	.0	57.2
1		0220	8	0.	.0	57.2	*	2		1140	108	450.	99.7	71.6	*	3		2100	208	0.	.0	57.2
1		0240	9	0.	.0	57.2	*	2		1200	109	450.	98.1	71.3	*	3		2120	209	0.	.0	57.2
1		0300	10	0.	.0	57.2	*	2		1220	110	450.	96.5	71.1	*	3		2140	210	0.	.0	57.2
1		0320	11	0.	.0	57.2	*	2		1240	111	450.	94.9	70.9	*	3		2200	211	0.	.0	57.2
1		0340	12	0.	.0	57.2	*	2		1300	112	450.	93.2	70.7	*	3		2220	212	0.	.0	57.2
1		0400	13	0.	.0	57.2	*	2		1320	113	450.	91.6	70.4	*	3		2240	213	0.	.0	57.2
1		0420	14	0.	.0	57.2	*	2		1340	114	450.	90.0	70.2	*	3		2300	214	0.	.0	57.2
1		0440	15	0.	.0	57.2	*	2		1400	115	450.	88.4	70.0	*	3		2320	215	0.	.0	57.2
1		0500	16	0.	.0	57.2	*	2		1420	116	450.	86.8	69.7	*	3		2340	216	0.	.0	57.2
1		0520	17	0.	.0	57.2	*	2		1440	117	450.	85.1	69.5	*	4		0000	217	0.	.0	57.2
1		0540	18	0.	.0	57.2	*	2		1500	118	450.	83.5	69.3	*	4		0020	218	0.	.0	57.2

1	0600	19	0.	.0	57.2	*	2	1520	119	450.	81.9	69.1	*	4	0040	219	0.	.0	57.2
1	0620	20	0.	.0	57.2	*	2	1540	120	450.	80.3	68.8	*	4	0100	220	0.	.0	57.2
1	0640	21	0.	.0	57.2	*	2	1600	121	450.	78.6	68.6	*	4	0120	221	0.	.0	57.2
1	0700	22	0.	.0	57.2	*	2	1620	122	450.	77.0	68.4	*	4	0140	222	0.	.0	57.2
1	0720	23	0.	.0	57.2	*	2	1640	123	450.	75.4	68.2	*	4	0200	223	0.	.0	57.2
1	0740	24	0.	.0	57.2	*	2	1700	124	450.	73.7	67.9	*	4	0220	224	0.	.0	57.2
1	0800	25	0.	.0	57.2	*	2	1720	125	450.	72.1	67.7	*	4	0240	225	0.	.0	57.2
1	0820	26	0.	.0	57.2	*	2	1740	126	450.	70.4	67.5	*	4	0300	226	0.	.0	57.2
1	0840	27	0.	.0	57.2	*	2	1800	127	450.	68.8	67.2	*	4	0320	227	0.	.0	57.2
1	0900	28	0.	.0	57.2	*	2	1820	128	450.	67.2	67.0	*	4	0340	228	0.	.0	57.2
1	0920	29	0.	.0	57.2	*	2	1840	129	450.	65.5	66.8	*	4	0400	229	0.	.0	57.2
1	0940	30	0.	.0	57.2	*	2	1900	130	450.	63.9	66.6	*	4	0420	230	0.	.0	57.2
1	1000	31	0.	.0	57.2	*	2	1920	131	450.	62.2	66.3	*	4	0440	231	0.	.0	57.2
1	1020	32	1.	.0	57.2	*	2	1940	132	450.	60.6	66.1	*	4	0500	232	0.	.0	57.2
1	1040	33	2.	.0	57.2	*	2	2000	133	450.	58.9	65.9	*	4	0520	233	0.	.0	57.2
1	1100	34	3.	.0	57.2	*	2	2020	134	450.	57.3	65.6	*	4	0540	234	0.	.0	57.2
1	1120	35	13.	.1	57.3	*	2	2040	135	450.	55.6	65.4	*	4	0600	235	0.	.0	57.2
1	1140	36	28.	.2	57.4	*	2	2100	136	450.	54.0	65.2	*	4	0620	236	0.	.0	57.2
1	1200	37	105.	2.1	57.8	*	2	2120	137	450.	52.3	64.9	*	4	0640	237	0.	.0	57.2
1	1220	38	345.	9.3	58.9	*	2	2140	138	450.	50.6	64.7	*	4	0700	238	0.	.0	57.2
1	1240	39	450.	23.3	60.9	*	2	2200	139	450.	49.0	64.5	*	4	0720	239	0.	.0	57.2
1	1300	40	450.	36.9	62.8	*	2	2220	140	450.	47.3	64.2	*	4	0740	240	0.	.0	57.2
1	1320	41	450.	46.5	64.1	*	2	2240	141	450.	45.6	64.0	*	4	0800	241	0.	.0	57.2
1	1340	42	450.	53.8	65.1	*	2	2300	142	450.	44.0	63.8	*	4	0820	242	0.	.0	57.2
1	1400	43	450.	59.0	65.9	*	2	2320	143	450.	42.3	63.5	*	4	0840	243	0.	.0	57.2
1	1420	44	450.	65.3	66.7	*	2	2340	144	450.	40.6	63.3	*	4	0900	244	0.	.0	57.2
1	1440	45	450.	72.4	67.7	*	3	0000	145	450.	39.0	63.1	*	4	0920	245	0.	.0	57.2
1	1500	46	450.	80.7	68.9	*	3	0020	146	450.	37.3	62.8	*	4	0940	246	0.	.0	57.2
1	1520	47	450.	89.3	70.1	*	3	0040	147	450.	35.6	62.6	*	4	1000	247	0.	.0	57.2
1	1540	48	450.	96.4	71.1	*	3	0100	148	450.	33.9	62.4	*	4	1020	248	0.	.0	57.2
1	1600	49	450.	102.1	71.9	*	3	0120	149	450.	32.3	62.1	*	4	1040	249	0.	.0	57.2
1	1620	50	450.	106.6	72.5	*	3	0140	150	450.	30.6	61.9	*	4	1100	250	0.	.0	57.2
1	1640	51	450.	111.1	73.1	*	3	0200	151	450.	28.9	61.7	*	4	1120	251	0.	.0	57.2
1	1700	52	450.	115.0	73.5	*	3	0220	152	450.	27.2	61.4	*	4	1140	252	0.	.0	57.2
1	1720	53	450.	117.9	73.8	*	3	0240	153	450.	25.5	61.2	*	4	1200	253	0.	.0	57.2
1	1740	54	450.	120.3	74.1	*	3	0300	154	450.	23.8	61.0	*	4	1220	254	0.	.0	57.2
1	1800	55	450.	122.4	74.3	*	3	0320	155	450.	22.1	60.7	*	4	1240	255	0.	.0	57.2
1	1820	56	450.	124.2	74.4	*	3	0340	156	450.	20.4	60.5	*	4	1300	256	0.	.0	57.2
1	1840	57	450.	125.8	74.6	*	3	0400	157	450.	18.7	60.2	*	4	1320	257	0.	.0	57.2
1	1900	58	450.	127.4	74.8	*	3	0420	158	450.	17.0	60.0	*	4	1340	258	0.	.0	57.2
1	1920	59	450.	129.4	75.0	*	3	0440	159	450.	15.3	59.8	*	4	1400	259	0.	.0	57.2
1	1940	60	450.	131.3	75.1	*	3	0500	160	450.	13.5	59.5	*	4	1420	260	0.	.0	57.2
1	2000	61	450.	132.5	75.3	*	3	0520	161	450.	11.8	59.3	*	4	1440	261	0.	.0	57.2
1	2020	62	450.	133.6	75.4	*	3	0540	162	431.	10.3	59.1	*	4	1500	262	0.	.0	57.2
1	2040	63	450.	134.8	75.5	*	3	0600	163	376.	9.9	59.0	*	4	1520	263	0.	.0	57.2
1	2100	64	450.	135.8	75.6	*	3	0620	164	390.	10.0	59.0	*	4	1540	264	0.	.0	57.2
1	2120	65	450.	136.9	75.7	*	3	0640	165	386.	10.0	59.0	*	4	1600	265	0.	.0	57.2
1	2140	66	450.	137.9	75.8	*	3	0700	166	387.	10.0	59.0	*	4	1620	266	0.	.0	57.2
1	2200	67	450.	138.9	75.9	*	3	0720	167	386.	10.0	59.0	*	4	1640	267	0.	.0	57.2
1	2220	68	450.	139.8	76.0	*	3	0740	168	386.	10.0	59.0	*	4	1700	268	0.	.0	57.2
1	2240	69	450.	140.6	76.1	*	3	0800	169	386.	10.0	59.0	*	4	1720	269	0.	.0	57.2
1	2300	70	450.	141.4	76.1	*	3	0820	170	386.	10.0	59.0	*	4	1740	270	0.	.0	57.2
1	2320	71	450.	142.1	76.2	*	3	0840	171	386.	10.0	59.0	*	4	1800	271	0.	.0	57.2
1	2340	72	450.	142.8	76.3	*	3	0900	172	386.	10.0	59.0	*	4	1820	272	0.	.0	57.2
2	0000	73	450.	143.5	76.3	*	3	0920	173	386.	10.0	59.0	*	4	1840	273	0.	.0	57.2
2	0020	74	450.	143.9	76.4	*	3	0940	174	386.	10.0	59.0	*	4	1900	274	0.	.0	57.2
2	0040	75	450.	144.0	76.4	*	3	1000	175	386.	10.0	59.0	*	4	1920	275	0.	.0	57.2
2	0100	76	450.	143.8	76.4	*	3	1020	176	385.	10.0	59.0	*	4	1940	276	0.	.0	57.2
2	0120	77	450.	143.4	76.3	*	3	1040	177	385.	10.0	59.0	*	4	2000	277	0.	.0	57.2
2	0140	78	450.	142.8	76.3	*	3	1100	178	385.	10.0	59.0	*	4	2020	278	0.	.0	57.2

2	0200	79	450.	142.2	76.2	*	3	1120	179	385.	10.0	59.0	*	4	2040	279	0.	.0	57.2
2	0220	80	450.	141.5	76.2	*	3	1140	180	385.	10.0	59.0	*	4	2100	280	0.	.0	57.2
2	0240	81	450.	140.7	76.1	*	3	1200	181	379.	9.9	59.0	*	4	2120	281	0.	.0	57.2
2	0300	82	450.	139.6	76.0	*	3	1220	182	374.	9.9	59.0	*	4	2140	282	0.	.0	57.2
2	0320	83	450.	138.5	75.9	*	3	1240	183	375.	9.9	59.0	*	4	2200	283	0.	.0	57.2
2	0340	84	450.	137.2	75.7	*	3	1300	184	375.	9.9	59.0	*	4	2220	284	0.	.0	57.2
2	0400	85	450.	135.8	75.6	*	3	1320	185	375.	9.9	59.0	*	4	2240	285	0.	.0	57.2
2	0420	86	450.	134.4	75.5	*	3	1340	186	375.	9.9	59.0	*	4	2300	286	0.	.0	57.2
2	0440	87	450.	132.9	75.3	*	3	1400	187	375.	9.9	59.0	*	4	2320	287	0.	.0	57.2
2	0500	88	450.	131.4	75.2	*	3	1420	188	375.	9.9	59.0	*	4	2340	288	0.	.0	57.2
2	0520	89	450.	129.9	75.0	*	3	1440	189	375.	9.9	59.0	*	5	0000	289	0.	.0	57.2
2	0540	90	450.	128.3	74.9	*	3	1500	190	375.	9.9	59.0	*	5	0020	290	0.	.0	57.2
2	0600	91	450.	126.8	74.7	*	3	1520	191	375.	9.9	59.0	*	5	0040	291	0.	.0	57.2
2	0620	92	450.	125.2	74.6	*	3	1540	192	375.	9.9	59.0	*	5	0100	292	0.	.0	57.2
2	0640	93	450.	123.6	74.4	*	3	1600	193	375.	9.9	59.0	*	5	0120	293	0.	.0	57.2
2	0700	94	450.	122.1	74.2	*	3	1620	194	375.	9.9	59.0	*	5	0140	294	0.	.0	57.2
2	0720	95	450.	120.5	74.1	*	3	1640	195	375.	9.9	59.0	*	5	0200	295	0.	.0	57.2
2	0740	96	450.	118.9	73.9	*	3	1700	196	375.	9.9	59.0	*	5	0220	296	0.	.0	57.2
2	0800	97	450.	117.3	73.8	*	3	1720	197	375.	9.9	59.0	*	5	0240	297	0.	.0	57.2
2	0820	98	450.	115.7	73.6	*	3	1740	198	375.	9.9	59.0	*	5	0300	298	0.	.0	57.2
2	0840	99	450.	114.1	73.5	*	3	1800	199	304.	8.4	58.7	*	5	0320	299	0.	.0	57.2
2	0900	100	450.	112.5	73.3	*	3	1820	200	188.	5.3	58.2	*	5	0340	300	0.	.0	57.2
						*							*						

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PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	99.67-HR
450.	12.67	(CFS)	450.	450.	327.	236.
		(INCHES)	.111	.444	.969	.969
		(AC-FT)	223.	893.	1946.	1946.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	99.67-HR
144.	24.67	142.	121.	54.	39.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	99.67-HR
76.40	24.67	76.16	73.96	64.82	62.71

CUMULATIVE AREA = 37.66 SQ MI

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              **************
              *            *
721 KK        *   ADJOUT   *
              *            *
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ADJUST REGIONAL BASIN E HYDROGRAPH for REDUCTION IN PEAK PUMPING AT MAX SUBTRACT OUT THE ORDINATES ADDED INTO BASIN E IN ADJPEK ABOVE. THIS WILL ADJUST THE OUTFLOW HYDROGRAPH TO ACCOUNT FOR PEAK OUTFLOW REDUCTION DUE TO THE CARRIAGE LANE OUTFALL CAPACITY DURING THE PEAK FLOWS CONDITIONS.

720 IN TIME DATA FOR INPUT TIME SERIES

JXMIN 20 TIME INTERVAL IN MINUTES

```
                JXDATE      1    0  STARTING DATE
                JXTIME           0  STARTING TIME

          SUBBASIN RUNOFF DATA

727 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .01  SUBBASIN AREA

                                                          ***

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

                     HYDROGRAPH AT STATION   ADJOUT

PEAK FLOW     TIME                              MAXIMUM AVERAGE FLOW
  (CFS)       (HR)                    6-HR       24-HR       72-HR     99.67-HR
     0.        .33        (CFS)        0.          0.          0.          -9.
                        (INCHES)      .000        .000        .000     -145.558
                         (AC-FT)        0.          0.          0.         -78.

                      CUMULATIVE AREA =     .01 SQ MI


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


          **************
          *            *
758 KK    *    CADOUT  *
          *            *
          **************
                          COMBINE BASIN ADJUSTMENT FLOWS FROM BASIN E

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

761 HC          HYDROGRAPH COMBINATION
                     ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                          ***

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                                    HYDROGRAPH AT STATION   CADOUT
                                         SUM OF  2 HYDROGRAPHS

*****************************************************************************************************************************
                                 *                                 *                                 *
  DA MON HRMN  ORD      FLOW     *  DA MON HRMN  ORD      FLOW     *  DA MON HRMN  ORD      FLOW     *  DA MON HRMN  ORD      FLOW
                                 *                                 *                                 *
   1    0000    1        0.      *   2    0100   76      450.     *   3    0200  151      450.     *   4    0300  226        0.
   1    0020    2        0.      *   2    0120   77      450.     *   3    0220  152      450.     *   4    0320  227        0.
   1    0040    3        0.      *   2    0140   78      450.     *   3    0240  153      450.     *   4    0340  228        0.
   1    0100    4        0.      *   2    0200   79      450.     *   3    0300  154      450.     *   4    0400  229        0.
   1    0120    5        0.      *   2    0220   80      450.     *   3    0320  155      450.     *   4    0420  230        0.
   1    0140    6        0.      *   2    0240   81      450.     *   3    0340  156      450.     *   4    0440  231        0.
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1	0200	7	0.	*	2	0300	82	450.	*	3	0400	157	450.	*	4	0500	232	0.
1	0220	8	0.	*	2	0320	83	450.	*	3	0420	158	450.	*	4	0520	233	0.
1	0240	9	0.	*	2	0340	84	450.	*	3	0440	159	450.	*	4	0540	234	0.
1	0300	10	0.	*	2	0400	85	450.	*	3	0500	160	450.	*	4	0600	235	0.
1	0320	11	0.	*	2	0420	86	450.	*	3	0520	161	450.	*	4	0620	236	0.
1	0340	12	0.	*	2	0440	87	450.	*	3	0540	162	431.	*	4	0640	237	0.
1	0400	13	0.	*	2	0500	88	450.	*	3	0600	163	376.	*	4	0700	238	0.
1	0420	14	0.	*	2	0520	89	450.	*	3	0620	164	390.	*	4	0720	239	0.
1	0440	15	0.	*	2	0540	90	450.	*	3	0640	165	386.	*	4	0740	240	0.
1	0500	16	0.	*	2	0600	91	450.	*	3	0700	166	387.	*	4	0800	241	0.
1	0520	17	0.	*	2	0620	92	450.	*	3	0720	167	386.	*	4	0820	242	0.
1	0540	18	0.	*	2	0640	93	450.	*	3	0740	168	386.	*	4	0840	243	0.
1	0600	19	0.	*	2	0700	94	450.	*	3	0800	169	386.	*	4	0900	244	0.
1	0620	20	0.	*	2	0720	95	450.	*	3	0820	170	386.	*	4	0920	245	0.
1	0640	21	0.	*	2	0740	96	450.	*	3	0840	171	386.	*	4	0940	246	0.
1	0700	22	0.	*	2	0800	97	450.	*	3	0900	172	386.	*	4	1000	247	0.
1	0720	23	0.	*	2	0820	98	450.	*	3	0920	173	386.	*	4	1020	248	0.
1	0740	24	0.	*	2	0840	99	450.	*	3	0940	174	386.	*	4	1040	249	0.
1	0800	25	0.	*	2	0900	100	450.	*	3	1000	175	386.	*	4	1100	250	0.
1	0820	26	0.	*	2	0920	101	450.	*	3	1020	176	385.	*	4	1120	251	0.
1	0840	27	0.	*	2	0940	102	450.	*	3	1040	177	385.	*	4	1140	252	0.
1	0900	28	0.	*	2	1000	103	450.	*	3	1100	178	385.	*	4	1200	253	0.
1	0920	29	0.	*	2	1020	104	450.	*	3	1120	179	385.	*	4	1220	254	0.
1	0940	30	0.	*	2	1040	105	450.	*	3	1140	180	385.	*	4	1240	255	0.
1	1000	31	0.	*	2	1100	106	450.	*	3	1200	181	379.	*	4	1300	256	0.
1	1020	32	1.	*	2	1120	107	450.	*	3	1220	182	374.	*	4	1320	257	0.
1	1040	33	2.	*	2	1140	108	450.	*	3	1240	183	375.	*	4	1340	258	0.
1	1100	34	3.	*	2	1200	109	450.	*	3	1300	184	375.	*	4	1400	259	0.
1	1120	35	13.	*	2	1220	110	450.	*	3	1320	185	375.	*	4	1420	260	0.
1	1140	36	28.	*	2	1240	111	450.	*	3	1340	186	375.	*	4	1440	261	0.
1	1200	37	105.	*	2	1300	112	450.	*	3	1400	187	375.	*	4	1500	262	0.
1	1220	38	227.	*	2	1320	113	450.	*	3	1420	188	375.	*	4	1520	263	0.
1	1240	39	150.	*	2	1340	114	450.	*	3	1440	189	375.	*	4	1540	264	0.
1	1300	40	150.	*	2	1400	115	450.	*	3	1500	190	375.	*	4	1600	265	0.
1	1320	41	150.	*	2	1420	116	450.	*	3	1520	191	375.	*	4	1620	266	0.
1	1340	42	150.	*	2	1440	117	450.	*	3	1540	192	375.	*	4	1640	267	0.
1	1400	43	150.	*	2	1500	118	450.	*	3	1600	193	375.	*	4	1700	268	0.
1	1420	44	150.	*	2	1520	119	450.	*	3	1620	194	375.	*	4	1720	269	0.
1	1440	45	150.	*	2	1540	120	450.	*	3	1640	195	375.	*	4	1740	270	0.
1	1500	46	150.	*	2	1600	121	450.	*	3	1700	196	375.	*	4	1800	271	0.
1	1520	47	250.	*	2	1620	122	450.	*	3	1720	197	375.	*	4	1820	272	0.
1	1540	48	350.	*	2	1640	123	450.	*	3	1740	198	375.	*	4	1840	273	0.
1	1600	49	450.	*	2	1700	124	450.	*	3	1800	199	304.	*	4	1900	274	0.
1	1620	50	450.	*	2	1720	125	450.	*	3	1820	200	188.	*	4	1920	275	0.
1	1640	51	450.	*	2	1740	126	450.	*	3	1840	201	112.	*	4	1940	276	0.
1	1700	52	450.	*	2	1800	127	450.	*	3	1900	202	66.	*	4	2000	277	0.
1	1720	53	450.	*	2	1820	128	450.	*	3	1920	203	0.	*	4	2020	278	0.
1	1740	54	450.	*	2	1840	129	450.	*	3	1940	204	3.	*	4	2040	279	0.
1	1800	55	450.	*	2	1900	130	450.	*	3	2000	205	0.	*	4	2100	280	0.
1	1820	56	450.	*	2	1920	131	450.	*	3	2020	206	0.	*	4	2120	281	0.
1	1840	57	450.	*	2	1940	132	450.	*	3	2040	207	0.	*	4	2140	282	0.
1	1900	58	450.	*	2	2000	133	450.	*	3	2100	208	0.	*	4	2200	283	0.
1	1920	59	450.	*	2	2020	134	450.	*	3	2120	209	0.	*	4	2220	284	0.
1	1940	60	450.	*	2	2040	135	450.	*	3	2140	210	0.	*	4	2240	285	0.
1	2000	61	450.	*	2	2100	136	450.	*	3	2200	211	0.	*	4	2300	286	0.
1	2020	62	450.	*	2	2120	137	450.	*	3	2220	212	0.	*	4	2320	287	0.
1	2040	63	450.	*	2	2140	138	450.	*	3	2240	213	0.	*	4	2340	288	0.
1	2100	64	450.	*	2	2200	139	450.	*	3	2300	214	0.	*	5	0000	289	0.
1	2120	65	450.	*	2	2220	140	450.	*	3	2320	215	0.	*	5	0020	290	0.
1	2140	66	450.	*	2	2240	141	450.	*	3	2340	216	0.	*	5	0040	291	0.

1	2200	67	450.	*	2	2300	142	450.	*	4	0000	217	0.	*	5	0100	292	0.
1	2220	68	450.	*	2	2320	143	450.	*	4	0020	218	0.	*	5	0120	293	0.
1	2240	69	450.	*	2	2340	144	450.	*	4	0040	219	0.	*	5	0140	294	0.
1	2300	70	450.	*	3	0000	145	450.	*	4	0100	220	0.	*	5	0200	295	0.
1	2320	71	450.	*	3	0020	146	450.	*	4	0120	221	0.	*	5	0220	296	0.
1	2340	72	450.	*	3	0040	147	450.	*	4	0140	222	0.	*	5	0240	297	0.
2	0000	73	450.	*	3	0100	148	450.	*	4	0200	223	0.	*	5	0300	298	0.
2	0020	74	450.	*	3	0120	149	450.	*	4	0220	224	0.	*	5	0320	299	0.
2	0040	75	450.	*	3	0140	150	450.	*	4	0240	225	0.	*	5	0340	300	0.
				*					*					*				

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PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	99.67-HR
450.	16.00	(CFS)	450.	450.	314.	227.
		(INCHES)	.111	.444	.930	.930
		(AC-FT)	223.	893.	1868.	1868.

CUMULATIVE AREA = 37.67 SQ MI

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	OUTLTA	374.	13.33	142.	44.	15.	1.83		
HYDROGRAPH AT	OUTLTB	770.	15.00	531.	197.	66.	13.81		
2 COMBINED AT	COMBAB	1115.	13.67	672.	241.	80.	15.64		
HYDROGRAPH AT	OUTLTC	626.	13.67	217.	68.	23.	2.74		
2 COMBINED AT	COMABC	1741.	13.67	887.	309.	103.	18.38		
HYDROGRAPH AT	KYRENE	216.	12.33	26.	7.	2.	.11		
2 COMBINED AT	CKYREN	1750.	13.67	902.	316.	105.	18.49		
HYDROGRAPH AT	MCCLIN	200.	12.33	16.	5.	2.	.11		
2 COMBINED AT	CMCCLI	1750.	13.67	912.	321.	107.	18.60		
HYDROGRAPH AT	ADJPKB	100.	12.33	56.	14.	5.	.01		
2 COMBINED AT	CADJB	1850.	13.67	965.	335.	112.	18.61		
ROUTED TO	ROABC	150.	12.33	150.	150.	112.	18.61	47.39	25.33
HYDROGRAPH AT	ADJB	0.	.33	0.	0.	0.	.01		
2 COMBINED AT	CADJB	150.	16.00	150.	150.	107.	18.62		
HYDROGRAPH AT	BASH	753.	13.67	367.	284.	123.	6.76		
HYDROGRAPH AT	INTERC	200.	12.33	36.	10.	3.	.16		
2 COMBINED AT	CINTER	793.	13.67	382.	291.	126.	6.92		
2 COMBINED AT	CBASH	843.	13.67	505.	427.	233.	25.54		
HYDROGRAPH AT	BASG	954.	14.00	341.	110.	37.	4.37		
ROUTED TO	RBASG	52.	12.67	52.	52.	37.	4.37	81.42	25.00
2 COMBINED AT	CBASG	895.	13.67	557.	479.	270.	29.91		
HYDROGRAPH AT	ADJH	250.	12.67	127.	32.	11.	.01		
2 COMBINED AT	CADJH	1145.	13.67	657.	510.	281.	29.92		
ROUTED TO	RBASH	375.	12.67	375.	375.	281.	29.92	72.72	31.33
HYDROGRAPH AT	ADJVH	0.	.33	0.	0.	0.	.01		
2 COMBINED AT	CADJH	375.	16.00	375.	375.	270.	29.93		

HYDROGRAPH AT	BASF	136.	12.67	48.	16.	5.	1.10		
2 COMBINED AT	CBASF	400.	16.00	394.	381.	276.	31.03		
HYDROGRAPH AT	BASE	292.	15.00	179.	82.	32.	6.33		
2 COMBINED AT	CBASE	624.	16.00	531.	444.	307.	37.36		
HYDROGRAPH AT	WARNER	200.	12.33	27.	7.	2.	.13		
2 COMBINED AT	CWARNR	624.	16.00	533.	446.	310.	37.49		
HYDROGRAPH AT	ELLIOT	200.	12.33	49.	12.	4.	.16		
2 COMBINED AT	CELIOT	784.	12.67	536.	455.	314.	37.65		
HYDROGRAPH AT	ADJPEK	300.	12.67	157.	39.	13.	.01		
2 COMBINED AT	CADJ	1084.	12.67	679.	495.	327.	37.66		
ROUTED TO	RBASE	450.	12.67	450.	450.	327.	37.66	76.40	24.67
HYDROGRAPH AT	ADJOUT	0.	.33	0.	0.	0.	.01		
2 COMBINED AT	CADOUT	450.	16.00	450.	450.	314.	37.67		

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

APPENDIX IV

A. Freeway Management System Design Guide Pump Stations

B. Telemetry Locations for Price GEC Drainage System and Outer Loop Pump Station Locations

APPENDIX IV.A

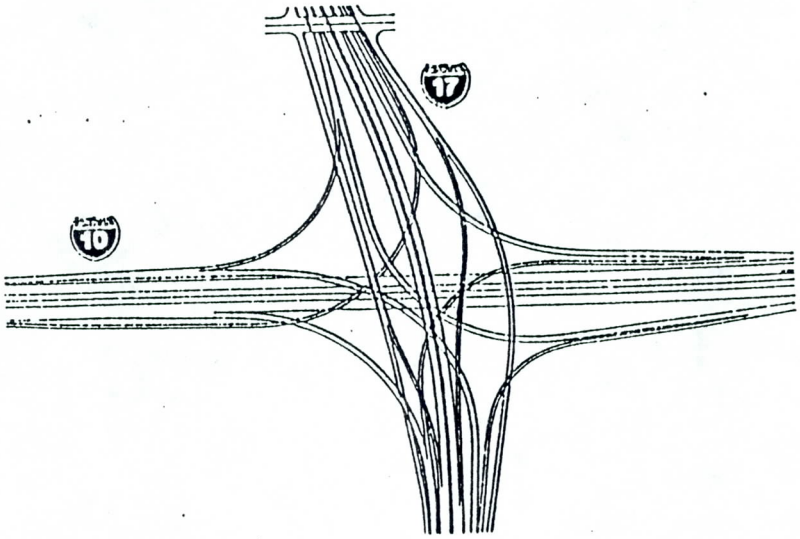
Freeway Management System Design Guide (Pump Stations)

Arizona Department of Transportation

Freeway Management System

Phoenix, Arizona

Design Guide



Prepared By:

Kimley-Horn

Kimley – Horn and Associates, Inc.
In Association With:

COMPUTRAN®

Computran Systems Corporation

October 1989

Design of foundation and support will be a function of the sign selected.

The sign controller cabinet is to be placed such that maintenance access is not hampered. The sign controller is to be located such that the sign face can be read from the sign controller to facilitate sign maintenance. A service vehicle should be able to park in the immediate vicinity of the sign and its controller without blocking traffic.

4. Required Conduit Runs:

Conduit is to connect the sign controller cabinet to the sign, electrical power supply, and communications conduit. All underground conduit is to be Schedule 40 PVC. Any required risers are to be rigid metal conduit. All underground conduit is to be buried to a minimum of 30 inches. The radius of any bends in the conduit is to be a minimum of 18 inches. A 0.25 inch pull cord is to be provided in all conduits as part of the conduit installation.

The conduit from the electrical power source to the sign controller cabinet is to be 2-inches in diameter. The conduit from the communication trunk conduit to the cabinet is to be 3-inches in diameter. Intermediate pull boxes are to be located to provide a maximum run length of 500 feet between pull boxes. Three 3-inch conduits are to run from the sign to the sign controller cabinet. A rigid metal conduit vertical riser is to be provided from the sign structure foundation to the sign housing.

5.3.10 Drainage System

The designer may encounter existing or proposed pump stations in the design section. A monitoring and reporting station for the pump station will inform the central control center of pump failures. To interconnect the monitoring features of the pump station with the control center, the designer is to provide for the following elements:

1. Monitoring Equipment at Pump Station:
   Existing sensors within an existing pump station are to be used if possible. The Management Consultant can provide standard pump station plans and

specifications that incorporate the following monitoring sensors for a storm drain pump station that the designer is to adapt to his project.

Feature	No. of Sensors
A. Water level to start	1 per station
B. Pump Running	1 per station
C. Engine failures	6 per pump
1) Oil pressure	
2) Water temperature	
3) Water flow (City water in Superchargers)	
4) Overspeed (High Limit)	
5) Crank failure	
6) Low voltage	
D. Pump failure	1 per pump
E. Fire detection	2 minimum per station
F. Gaseous fumes	
1) Explosive fumes (High limit)	1 per station
2) Explosive fumes (Low limit)	1 per station
G. Security	1 per entry location
H. Fuel level (Percent filled between 10 and 80 percent in increments of 10 percent)	1 per tank
I. Electric power failure	1 per station
J. Communication failure	1 per station

2. Conduit to controller:

When designing the conduit path, the designer is to select the shortest reasonably economic path between the pump station and the nearest pull box in the communication conduit system. Conduit containing fiber optic cable or low DC voltage cable may also route the communications cable through pavement crossings or long runs to the pump station.

The pump station end of the conduit is to be terminated inside the pump station. The other end of the conduit is to tie into the nearest pullbox along the communications conduit system.

A. Size: The conduit placed for the lateral run between the pump house and the pull box is to be rigid metal conduit 2 inches in diameter to accommodate a 25 twisted-pair shielded cable.

B. Explosion-proofing Conduit: Due to the potential presence of combustible gases in the pump house, an explosion-proof treatment is to be applied at the pump house end of the conduit. Threaded rigid metal conduit with cap and sealer is to be employed to achieve the explosion-proofing. A 0.25 inch pull cord should be left in the conduit to facilitate installation of the cable.

APPENDIX IV.B

Telemetry Locations for Price GEC Drainage System and Outer Loop Pump Station Locations

HDR

March 21, 1990

Mr. George E. Wallace, P.E.
Corridor Engineer
Urban Highways Section
Arizona Department of Transportation
205 S. 17th Ave., Rm. 216E
Phoenix, Arizona 85007

RE: Price Road GEC

1. Phase I (General Plan) Locations of Potential Telemetry Locations on Price/Santan Segments - "Preliminary"

2. Agua Fria/Pima Freeway Pump Station Locations (from DCCO), attached

Dear George:

Enclosed please find a "preliminary" listing of potential locations which may require telemetry monitoring, ultimately, within the identified sections of the Outer Loop Freeways.

As a result of a meeting with Kimley/Horn at their offices on January 24, 1990, your Steve Martin requested HDR coordinate with DeLeuw Cather to obtain such a preliminary listing. This data, by copy, then would be provided to Kimley/Horn for their information, use and file. The listing will no doubt require subsequent updating and/or additions thereto. The intent is to alert Kimley/Horn of the various drainage elements which may require ultimate monitoring, so they can plan to provide the proper infrastructure (conduit, pull boxes, etc.) to integrate such drainage monitoring requirements with the Freeway Management System (FMS). The attached list from DeLeuw Cather, dated 3-13-90 with copy to Ray Jordan and Rolly Simeon, appears to list only pump station locations. We will be visiting with Stan Polasik to ascertain if there are additional locations where monitoring may be appropriate on the Agua Fria/Pima Freeway segments.

HDR Engineering, Inc.

Suite 205
5353 N. 16th Street
Phoenix, Arizona
85016-3226

Telephone
602 264-0731

We will endeavor to keep the list updated periodically as better information is available and the design advances.

Very Truly Yours,

HDR ENGINEERING, INC.

F.E. Heaston

F.E. Heaston, P.E.
Project Manager

FEH/jm

cc: Ray Jordan w/attachment (ADOT)
Steve Martin w/attachment (ADOT)
Henry Wall (Kimley/Horn)
Jerry Zovne, HDR File

PRICE EXPRESSWAY (BASELINE RD. TO PECOS RD.)
SANTAN FREEWAY (56TH ST. TO DOBSON RD.)

LOCATIONS OF POTENTIAL TELEMETRY MONITORING

	NAME	APPROX. LOCATION	GENERAL PLAN STA./OFFSET (a)	REMARKS
1.	CLO Head Structure	East Side EFR, near Exist. Carriage Ln. Detention Basin	3164+00±,200'LT.	Inlet Structure Carriage Outfall Sewer
2.	Elliot Rd. Pump Sta.	N.E. Quadrant of Price Expwy. & Elliot Rd.	3190+00±,250'LT.	On-Site Pump Sta.
3.	Detention Basin "E"	East Side Price Expwy. So. of Conference Dr. Ext.	3218+00±,200'LT.	Off-Site Pump Sta. Det. Basin "E"
4.	Warner Rd. Pump Sta.	N.E. Quadrant of Price Expwy. & Warner Rd.	3242+00±,230'LT.	On-Site Pump Sta.
5.	Detention Basin "F"	East Side Price Expwy. (Highland St. to Calle Del Norte)	3259+00± to 327+00± (Varies ≈ 250'LT.)	Det. Basin "F" (Gravity Drains North to Det. Basin "F") E
6.	Detention Basin "G"	East Side of Price Expwy. (Approx. 700'-1300' North of Chandler Blvd.)	3338+00± to 3344+00± (Varies ≈ 275'LT.)	Det. Basin "G" (Gravity Drains South to Det. Basin "H")
7.	Detention Basin "H"	N.E. of Price/Santan Systems Interchange	3391+00±,340'LT.	Off-Site Pump Sta. Det. Basin "H"

NAME	APPROX. LOCATION	GENERAL PLAN STA./OFFSET (b)	REMARKS
8. Price/Pecos Pump Sta.	North of Ramp "C", East of NB Price Rd. in Price/Santan T.I.	1516+50±,325'LT.	On-Site Pump Sta.
9. McClintock Dr. Pump Sta.	N.E. Quadrant of McClintock Dr. & Santan Frwy.	1461+00±,600'LT.	On-Site Pump Sta.
10. Kyrene Rd. Pump Sta.	N.E. Quadrant of Kyrene Rd. & Santan Frwy.	1354+00±,500'LT.	On-Site Pump Sta.
11. Det. Basin "B" Pump Sta.	Approx. 1/2 mi. West of Kyrene Rd., No. of Santan Frwy.	1338+00±,350'LT.	Off-Site Pump Sta. Det. Basin "B"
12. Dobson Pump Sta. (Future)	North Side of Santan Frwy. & N.E. Corner Dobson Rd.	1573+00±,275'LT.	On-Site Pump Sta.

Footnote: (a) Price Expressway Stationing, Page 1 of 2
(b) Santan Freeway Stationing, Page 2 of 2

LETTER OF TRANSMITTAL

DeLEUW
CATHER

De Leuw, Cather & Company
One Gateway Center 426 N. 44th Street Suite 252
Phoenix, Arizona 85008 (602) 244-9096

DATE 3/13/90	JOB NO. 0373100

ATTENTION Woody Heston

RE: Agua Fria/Pima Freeway
Pump Station Locations

DR-D2-7-24

TO HDR
5353 N. 16th Street, Ste. 205
Phoenix, AZ 85016

COPIES	DATE	NO.	DESCRIPTION
1			List of Pump Station Locations

THESE ARE TRANSMITTED as checked below:

- ☐ For approval
- ☒ For your use
- ☒ As requested
- ☐ For review and comment
- ☐ For your information
- ☐ _____

REMARKS:

HDR ENGINEERING, INC.
PRICE EXPRESSWAY G.C.

DATE	DOCUMENT NO.
3-16-90	10822

FILE CATEGORY	REV SUBJECT
1 Proposal	General A
2 Contract; C.O.'s	Drainage B
3 Invoicing (ADOT)	DRAINAGE C
4 Administrative	Utility D
5 Subconsultant's	Traffic E
6 Other Correspondence	Landscape F
7 Meet. Minutes	Geotechnical G
8 Prod. Document's	Qual. Control H
9 Tech. Reports	Management I
10 Maps; Other	
11 Vendor Invoices	So. Mtn. Fwy. X
12 Off. Operations	

cc: R. Simeon w/attachment
R. Jordan w/attachment

SIGNED: Stan Polarski

If Enclosures are not as noted, kindly notify us at once.

AGUA FRIA AND PIMA FREEWAYS

PUMP STATION LOCATIONS

NAME	LOCATION	STATION	APPROXIMATE OFFSET
Grand Avenue & 91st Avenue-Peoria	500 feet south of Grand Avenue near 91st Avenue on east side of freeway	619+00	350 Right
University Drive-Tempe	200 feet south of University Drive east of freeway	2928+00	350 Left
Broadway Road-Tempe	250 feet south of Broadway Road east of freeway	2982+00	300 Left
Southern Avenue-Tempe	300 feet north of Southern Avenue east of freeway	3029+00	250 Left
Manhatton Drive-Tempe	450 feet north of SR360 east of Pima Freeway	3054+00	150 Left
Existing Price Road-Tempe	Existing Station 300 feet south of SR360 east of Price Road	3062+00	350 Right
Baseline Road-Mesa	250 feet north of Baseline Road east of freeway	3083+00	250 Left