

CITY OF ALBUQUERQUE



December 16, 2011

Verlyn A. Miller, P.E.
Miller Engineering Consultants
3500 Comanche Rd NE Bldg F
Albuquerque, NM 87107

Re: The Bosque Center, Grading and Drainage Plan
Engineer's Stamp Dated 11-23-11 (D13/D009)

Dear Mr. Miller,

Based upon the information provided in your submittal dated 11-23-11, the above referenced plan is approved for Site Plan for Building Permit action by the DRB.

However, the plan cannot be approved for Building Permit until the following comments area addressed:

- AMAFCA approval is required. ✓
- The plan appears to meet the sedimentation goals of the North Coors DMP; however, it should be stated. ✓
- Provide the Volume Required, Volume Provided and WSE for each Water Harvesting Area on the Grading Plan. These values are part of the Certification.
- I couldn't find the Pond 2 routing in the AHYMO output. Please direct or provide.
- Please provide the AHYMO Summary Table.
- The Q Max numbers in the AHYMO output do not match the numbers in the Hydrology table.
- ~~The Peak Discharge Rate from Water Harvesting Area 1 in the AHYMO is 1.19 CFS. The rating curve for these pipes shows 1.05 cfs at an elevation of 96.~~
- Seems a small berm is required on the east side of Water Harvesting Area 5 (not at spillway) to ensure the spillway is the low point.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Curtis Cherne, P.E.
Principal Engineer, Planning Dept.
Development and Building Services

C: e-mail

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(Rev. 01/06)

PROJECT TITLE: The Bosque Center ZONE MAP/DRG. FILE # D-13/1009
 DRB#: _____ EPC#: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: Tract A-1, Spiritual Renewal Center Section 19, Township 11 North, Range 3 East, NMPM, City of Albuquerque
 CITY ADDRESS: _____

ENGINEERING FIRM: Miller Engineering Consultants
 ADDRESS: 3500 Comanche NE Bldg. F
 CITY, STATE: Albuquerque NM

CONTACT: Verlyn Miller / JOHN JACQUEZ
 PHONE: 505-888-7500
 ZIP CODE: 87107

OWNER: Episcopal Diocese of Rio Grande
 ADDRESS: 6400 Coors Boulevard NW
 CITY, STATE: Albuquerque NM

CONTACT: _____
 PHONE: 505-872-2351
 ZIP CODE: 87107

ARCHITECT: Gregory T. Hicks & Assoc.
 ADDRESS: 110 second St. SW Suite 204
 CITY, STATE: Albuquerque NM

CONTACT: MARIO ATENCIO
 PHONE: 505-243-7492
 ZIP CODE: 87102

SURVEYOR: Terra Land Surveys, LLC
 ADDRESS: P.O. Box 2532 Corrales NM
 CITY, STATE: Albuquerque NM

CONTACT: CHRIS MEDINA
 PHONE: 505-792-0513
 ZIP CODE: 87048

PROFESSIONAL LICENSED SURVEYOR SIGNATURE

LICENSE NO.

DATE

CONTRACTOR: _____
 ADDRESS: _____
 CITY, STATE: _____

CONTACT: _____
 PHONE: _____
 ZIP CODE: _____

TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
☒ DRAINAGE PLAN 1st SUBMITTAL
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL G & D PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERT (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT
☐ ENGINEER/ARCHITECT CERT (TCL)
☐ ENGINEER/ARCHITECT (DRB SITE PLAN)
☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SIA/FINANCIAL GUARANTEE RELEASE
☐ PRELIMINARY PLAT APPROVAL
☒ S. DEV. PLAN FOR SUB'D APPROVAL
☒ S. DEV. FOR BLDG. PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☒ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY (PERM)
☐ CERTIFICATE OF OCCUPANCY (TEMP)
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL
☐ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

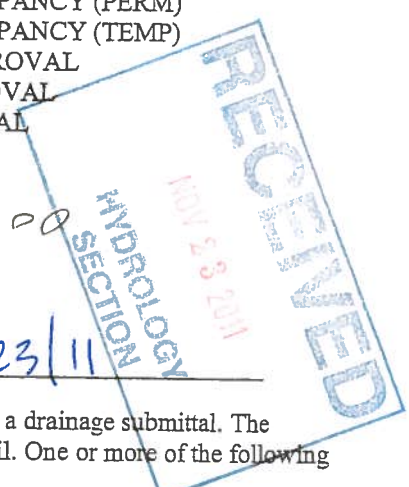
- ☒ YES (WITH CURTIS CHERNE)
☐ NO
☐ COPY PROVIDED

\$50.00

SUBMITTED BY: JOHN JACQUEZ DATE: 1/23/11

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope to the proposed development define the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

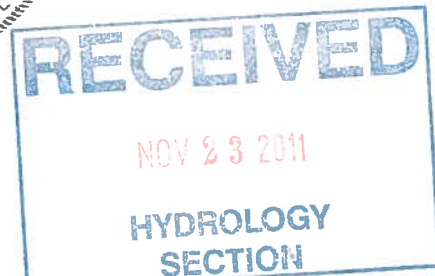
1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report:** Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.



THE BOSQUE CENTER
Episcopal Diocese of the Rio Grande
6400 Coors Boulevard NW
Albuquerque, New Mexico

Supplemental Drainage Calculations

November 23, 2011



Prepared By:



MILLER ENGINEERING CONSULTANTS

Engineers • Planners

3500 Comanche NE, Bldg. F
Albuquerque, New Mexico 87107
Phone: (505) 888-7500
Fax: (505) 888-3800

HYDROLOGY

Precipitation Zone 1 - 100-year Storm										P(360) = 2.20		in		P(1440) = 2.66 in	
Basin	Basin Area (Ac)	Land Treatment Factors				Ew (in)	V(100-6) (af)	V(100-24) (af)	Q(100) (cfs)						
		A	B	C	D										
Existing Conditions															
A	0.39	0.05	0.00	0.15	0.19	1.40	0.045	0.053	1.33						
B	2.48	1.59	0.00	0.65	0.24	0.73	0.151	0.161	4.97						
C	0.86	0.60	0.01	0.06	0.19	0.82	0.059	0.066	1.80						
D	0.89	0.54	0.00	0.20	0.15	0.82	0.061	0.067	1.93						
Total	4.62							10.01							
Proposed Conditions															
A	0.39	0.00	0.00	0.14	0.25	1.62	0.053	0.062	1.49						
B	2.48	1.59	0.00	0.65	0.24	0.73	0.151	0.161	4.97						
C	0.86	0.52	0.00	0.13	0.21	0.90	0.064	0.072	1.96						
D	0.89	0.00	0.00	0.38	0.51	1.55	0.115	0.135	3.32						
Total	4.62							11.74							

Precipitation Zone 1 - 10-year Storm										P(360) =	1.47 in	P(1440) =	1.78 in
Basin	Basin Area (Ac)	Land Treatment Factors				Ew (in)	V(10-6) (af)	V(10-24) (af)	Q(10) (cfs)				
		A	B	C	D								
Existing Conditions													
A	0.39	0.05	0.00	0.15	0.19	0.78	0.025	0.030	0.78				
B	2.48	1.59	0.00	0.65	0.24	0.29	0.059	0.065	2.04				
C	0.86	0.60	0.01	0.06	0.19	0.36	0.026	0.031	0.79				
D	0.89	0.54	0.00	0.20	0.15	0.36	0.026	0.030	0.86				
Total	4.62								4.48				
Proposed Conditions													
A	0.39	0.00	0.00	0.14	0.25	0.95	0.031	0.037	0.93				
B	2.48	1.59	0.00	0.65	0.24	0.29	0.059	0.065	2.04				
C	0.86	0.52	0.00	0.13	0.21	0.42	0.030	0.035	0.93				
D	0.89	0.00	0.00	0.38	0.51	0.90	0.067	0.080	2.04				
Total	4.62								5.94				

1.46 cfs in Akyau
1.80 in Akyau
3.31 in Akyau

add

AHYMO PROGRAM (AHYMO_97) - - Version: 1997.02b
RUN DATE (MON/DAY/YR) = 11/23/2011
START TIME (HR:MIN:SEC) = 10:22:27 USER NO.= AHYMO-I-9702aD2000N25-AH
INPUT FILE = bosque.dat

*S*****
*S***** THE BOSQUE CENTER *****
*S***** NOVEMBER 2011 *****
*S***** PROJECT HYDROLOGY *****
*S***** 100-YEAR, 24-HOUR STORM *****
*S***** RAINFALL TYPE 2 - ZONE 1 *****
*S*****

START 0.00

*S*****
RAINFALL TYPE=2 RAIN QUARTER=0.0 RAIN ONE=1.87
RAIN SIX=2.20 RAIN DAY=2.66 DT=0.05

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT
1.40 HR.

DT = .050000 HOURS END TIME = 24.000000 HOURS

.0000	.0025	.0050	.0076	.0103	.0131	.0160
.0190	.0222	.0254	.0289	.0324	.0362	.0401
.0443	.0487	.0534	.0584	.0637	.0695	.0758
.0837	.0924	.1176	.1773	.2798	.4384	.6668
.9790	1.2253	1.3366	1.4295	1.5109	1.5836	1.6495
1.7096	1.7648	1.8156	1.8624	1.9057	1.9458	1.9548
1.9631	1.9708	1.9780	1.9848	1.9912	1.9973	2.0031
2.0087	2.0140	2.0191	2.0240	2.0287	2.0333	2.0377
2.0420	2.0462	2.0502	2.0542	2.0580	2.0617	2.0653
2.0689	2.0724	2.0757	2.0791	2.0823	2.0855	2.0886
2.0916	2.0946	2.0976	2.1005	2.1033	2.1061	2.1088
2.1115	2.1142	2.1168	2.1193	2.1219	2.1244	2.1268
2.1293	2.1316	2.1340	2.1363	2.1386	2.1409	2.1431
2.1453	2.1475	2.1497	2.1518	2.1539	2.1560	2.1580
2.1601	2.1621	2.1641	2.1660	2.1680	2.1699	2.1718
2.1737	2.1756	2.1774	2.1793	2.1811	2.1829	2.1847
2.1864	2.1882	2.1899	2.1916	2.1933	2.1950	2.1967
2.1984	2.2000	2.2020	2.2039	2.2059	2.2078	2.2097
2.2117	2.2136	2.2155	2.2174	2.2193	2.2212	2.2231
2.2249	2.2268	2.2287	2.2305	2.2324	2.2342	2.2361
2.2379	2.2398	2.2416	2.2434	2.2452	2.2470	2.2488
2.2506	2.2524	2.2542	2.2559	2.2577	2.2595	2.2612
2.2630	2.2647	2.2665	2.2682	2.2700	2.2717	2.2734
2.2751	2.2768	2.2785	2.2802	2.2819	2.2836	2.2853
2.2870	2.2887	2.2903	2.2920	2.2937	2.2953	2.2970
2.2986	2.3002	2.3019	2.3035	2.3051	2.3068	2.3084
2.3100	2.3116	2.3132	2.3148	2.3164	2.3180	2.3196
2.3212	2.3227	2.3243	2.3259	2.3274	2.3290	2.3305
2.3321	2.3336	2.3352	2.3367	2.3383	2.3398	2.3413
2.3428	2.3444	2.3459	2.3474	2.3489	2.3504	2.3519
2.3534	2.3549	2.3563	2.3578	2.3593	2.3608	2.3622
2.3637	2.3652	2.3666	2.3681	2.3695	2.3710	2.3724
2.3739	2.3753	2.3767	2.3782	2.3796	2.3810	2.3824
2.3839	2.3853	2.3867	2.3881	2.3895	2.3909	2.3923
2.3937	2.3951	2.3965	2.3978	2.3992	2.4006	2.4020

2.4033 2.4047 2.4061 2.4074 2.4088 2.4101 2.4115
 2.4128 2.4142 2.4155 2.4168 2.4182 2.4195 2.4208
 2.4222 2.4235 2.4248 2.4261 2.4274 2.4287 2.4300
 2.4314 2.4327 2.4340 2.4352 2.4365 2.4378 2.4391
 2.4404 2.4417 2.4430 2.4442 2.4455 2.4468 2.4480
 2.4493 2.4506 2.4518 2.4531 2.4543 2.4556 2.4568
 2.4581 2.4593 2.4606 2.4618 2.4630 2.4643 2.4655
 2.4667 2.4680 2.4692 2.4704 2.4716 2.4728 2.4740
 2.4753 2.4765 2.4777 2.4789 2.4801 2.4813 2.4825
 2.4837 2.4849 2.4860 2.4872 2.4884 2.4896 2.4908
 2.4919 2.4931 2.4943 2.4955 2.4966 2.4978 2.4990
 2.5001 2.5013 2.5024 2.5036 2.5047 2.5059 2.5070
 2.5082 2.5093 2.5105 2.5116 2.5127 2.5139 2.5150
 2.5161 2.5172 2.5184 2.5195 2.5206 2.5217 2.5229
 2.5240 2.5251 2.5262 2.5273 2.5284 2.5295 2.5306
 2.5317 2.5328 2.5339 2.5350 2.5361 2.5372 2.5383
 2.5394 2.5404 2.5415 2.5426 2.5437 2.5448 2.5458
 2.5469 2.5480 2.5490 2.5501 2.5512 2.5522 2.5533
 2.5544 2.5554 2.5565 2.5575 2.5586 2.5596 2.5607
 2.5617 2.5628 2.5638 2.5649 2.5659 2.5669 2.5680
 2.5690 2.5700 2.5711 2.5721 2.5731 2.5741 2.5752
 2.5762 2.5772 2.5782 2.5792 2.5803 2.5813 2.5823
 2.5833 2.5843 2.5853 2.5863 2.5873 2.5883 2.5893
 2.5903 2.5913 2.5923 2.5933 2.5943 2.5953 2.5963
 2.5973 2.5982 2.5992 2.6002 2.6012 2.6022 2.6031
 2.6041 2.6051 2.6061 2.6070 2.6080 2.6090 2.6099
 2.6109 2.6119 2.6128 2.6138 2.6148 2.6157 2.6167
 2.6176 2.6186 2.6195 2.6205 2.6214 2.6224 2.6233
 2.6243 2.6252 2.6261 2.6271 2.6280 2.6290 2.6299
 2.6308 2.6318 2.6327 2.6336 2.6346 2.6355 2.6364
 2.6373 2.6383 2.6392 2.6401 2.6410 2.6419 2.6428
 2.6438 2.6447 2.6456 2.6465 2.6474 2.6483 2.6492
 2.6501 2.6510 2.6519 2.6528 2.6537 2.6546 2.6555
 2.6564 2.6573 2.6582 2.6591 2.6600

*S*****

S PROPOSED FULLY DEVELOPED CONDITIONS *****

*S*****

S BASIN D *****

COMPUTE NM HYD ID=1 HYD NO=101.0 DA=0.0014 SQ MI

PER A=0.0 PER B=0.0 PER C=42.7 PER D=57.3

TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420

UNIT PEAK = 3.1671 CFS UNIT VOLUME = .9959 B = 526.28 P60 = 1.8700

AREA = .000802 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .105867HR TP = .133300HR K/TP RATIO = .794199 SHAPE CONSTANT, N = 4.514851

UNIT PEAK = 1.7407 CFS UNIT VOLUME = .9952 B = 388.14 P60 = 1.8700

AREA = .000598 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
.050000

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 101.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	5.000	.0	10.000	.0	15.000	.0	20.000	.0
.500	.0	5.500	.0	10.500	.0	15.500	.0	20.500	.0
1.000	.0	6.000	.0	11.000	.0	16.000	.0	21.000	.0
1.500	3.3	6.500	.0	11.500	.0	16.500	.0	21.500	.0
2.000	.7	7.000	.0	12.000	.0	17.000	.0	22.000	.0
2.500	.1	7.500	.0	12.500	.0	17.500	.0	22.500	.0
3.000	.0	8.000	.0	13.000	.0	18.000	.0	23.000	.0
3.500	.0	8.500	.0	13.500	.0	18.500	.0	23.500	.0
4.000	.0	9.000	.0	14.000	.0	19.000	.0	24.000	.0
4.500	.0	9.500	.0	14.500	.0	19.500	.0		

RUNOFF VOLUME = 1.81485 INCHES = .1355 ACRE-FEET

PEAK DISCHARGE RATE = 3.31 CFS AT 1.500 HOURS BASIN AREA = .0014 SQ. MI.

S ROUTE THROUGH HARVEST AREA 1 ***** 3-8" OUTFLOW PIPES *****

ROUTE RESERVOIR ID=20 HYD=102.0 INFLOW ID=1 CODE=20

OUTFLOW STORAGE DEPTH

0.00	0.00	4995.1
0.30	0.043	4995.5
3.00	0.097	4996.0

* * * * *

TIME	INFLOW	ELEV	VOLUME	OUTFLOW
(HRS)	(CFS)	(FEET)	(AC-FT)	(CFS)

.00	.00	4995.10	.000	.00
1.00	.00	4995.10	.000	.00
2.00	.68	4995.63	.057	.99
3.00	.02	4995.41	.034	.24
4.00	.01	4995.29	.020	.14
5.00	.01	4995.21	.012	.08
6.00	.02	4995.17	.008	.05
7.00	.02	4995.15	.006	.04
8.00	.02	4995.14	.004	.03
9.00	.02	4995.13	.003	.02
10.00	.02	4995.13	.003	.02
11.00	.02	4995.13	.003	.02
12.00	.01	4995.12	.002	.02
13.00	.01	4995.12	.002	.02
14.00	.01	4995.12	.002	.01
15.00	.01	4995.12	.002	.01
16.00	.01	4995.12	.002	.01
17.00	.01	4995.12	.002	.01

18.00	.01	4995.12	.002	.01
19.00	.01	4995.12	.002	.01
20.00	.01	4995.12	.002	.01
21.00	.01	4995.11	.002	.01
22.00	.01	4995.11	.001	.01
23.00	.01	4995.11	.001	.01
24.00	.01	4995.11	.001	.01
25.00	.00	4995.11	.001	.01
26.00	.00	4995.10	.000	.00

PEAK DISCHARGE = 1.186 CFS - PEAK OCCURS AT HOUR 1.75
 MAXIMUM WATER SURFACE ELEVATION = 4995.664
 MAXIMUM STORAGE = .0607 AC-FT INCREMENTAL TIME = .050000HRS

PRINT HYD ID=20 CODE=10

PARTIAL HYDROGRAPH 102.00

TIME		FLOW		TIME		FLOW		TIME		FLOW		TIME	
HRS		CFS		HRS		CFS		HRS		CFS		HRS	
.000		.0		6.000		.1		12.000		.0		18.000	
.500		.0		6.500		.0		12.500		.0		18.500	
1.000		.0		7.000		.0		13.000		.0		19.000	
1.500		.2		7.500		.0		13.500		.0		19.500	
2.000		1.0		8.000		.0		14.000		.0		20.000	
2.500		.3		8.500		.0		14.500		.0		20.500	
3.000		.2		9.000		.0		15.000		.0		21.000	
3.500		.2		9.500		.0		15.500		.0		21.500	
4.000		.1		10.000		.0		16.000		.0		22.000	
4.500		.1		10.500		.0		16.500		.0		22.500	
5.000		.1		11.000		.0		17.000		.0		23.000	
5.500		.1		11.500		.0		17.500		.0		23.500	

RUNOFF VOLUME = 1.81398 INCHES = .1354 ACRE-FEET
 PEAK DISCHARGE RATE = 1.19 CFS AT 1.750 HOURS BASIN AREA = .0014 SQ. MI.

S BASIN A *****

COMPUTE NM HYD ID=2 HYD NO=103.0 DA=0.0006 SQ MI
 PER A=0.0 PER B=0.0 PER C=36.0 PER D=64.0
 TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420

UNIT PEAK = 1.5161 CFS UNIT VOLUME = .9928 B = 526.28 P60 = 1.8700
 AREA = .000384 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .105867HR TP = .133300HR K/TP RATIO = .794199 SHAPE CONSTANT, N = 4.514851

UNIT PEAK = .62895 CFS UNIT VOLUME = .9821 B = 388.14 P60 = 1.8700
 AREA = .000216 SQ MI IA = .35000 INCHES INF = .83000 INCHES PER HOUR

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=2 CODE=10

PARTIAL HYDROGRAPH 103.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS
.000	.0	5.000	.0	10.000	.0	15.000	.0	20.000
.500	.0	5.500	.0	10.500	.0	15.500	.0	20.500
1.000	.0	6.000	.0	11.000	.0	16.000	.0	21.000
1.500	1.5	6.500	.0	11.500	.0	16.500	.0	21.500
2.000	.3	7.000	.0	12.000	.0	17.000	.0	22.000
2.500	.0	7.500	.0	12.500	.0	17.500	.0	22.500
3.000	.0	8.000	.0	13.000	.0	18.000	.0	23.000
3.500	.0	8.500	.0	13.500	.0	18.500	.0	23.500
4.000	.0	9.000	.0	14.000	.0	19.000	.0	24.000
4.500	.0	9.500	.0	14.500	.0	19.500	.0	

RUNOFF VOLUME = 1.91094 INCHES = .0611 ACRE-FEET

PEAK DISCHARGE RATE = 1.46 CFS AT 1.500 HOURS BASIN AREA = .0006 SQ. MI.

*S**ADD OUTLET FROM HARVEST AREA 1 AND BASIN A *****

ADD HYD ID=3 HYD NO=103.1 ID I=20 ID II=2

PRINT HYD ID=3 CODE=10

PARTIAL HYDROGRAPH 103.10

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS
.000	.0	6.000	.1	12.000	.0	18.000	.0	24.000
.500	.0	6.500	.1	12.500	.0	18.500	.0	24.500
1.000	.0	7.000	.0	13.000	.0	19.000	.0	25.000
1.500	1.7	7.500	.0	13.500	.0	19.500	.0	25.500
2.000	1.3	8.000	.0	14.000	.0	20.000	.0	26.000
2.500	.3	8.500	.0	14.500	.0	20.500	.0	26.500
3.000	.2	9.000	.0	15.000	.0	21.000	.0	27.000
3.500	.2	9.500	.0	15.500	.0	21.500	.0	27.500
4.000	.1	10.000	.0	16.000	.0	22.000	.0	28.000
4.500	.1	10.500	.0	16.500	.0	22.500	.0	
5.000	.1	11.000	.0	17.000	.0	23.000	.0	
5.500	.1	11.500	.0	17.500	.0	23.500	.0	

RUNOFF VOLUME = 1.84208 INCHES = .1965 ACRE-FEET

PEAK DISCHARGE RATE = 1.82 CFS AT 1.650 HOURS BASIN AREA = .0020 SQ. MI.

1.180 + 1.46 = 2.64

S BASIN C *****

COMPUTE NM HYD ID=4 HYD NO=104.0 DA=0.0013 SQ MI

PER A=60.0 PER B=0.0 PER C=15.0 PER D=25.0

TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420

UNIT PEAK = 1.2831 CFS UNIT VOLUME = .9911 B = 526.28 P60 = 1.8700
AREA = .000325 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .152120HR TP = .133300HR K/TP RATIO = 1.141188 SHAPE CONSTANT, N = 3.102909

UNIT PEAK = 2.1219 CFS UNIT VOLUME = .9934 B = 290.11 P60 = 1.8700
AREA = .000975 SQ MI IA = .59000 INCHES INF = 1.50200 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=4 CODE=10

PARTIAL HYDROGRAPH 104.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HR	CFS	HR	CFS	HR	CFS	HR	CFS	HR	CFS
.000	.0	5.000	.0	10.000	.0	15.000	.0	20.000	.0
.500	.0	5.500	.0	10.500	.0	15.500	.0	20.500	.0
1.000	.0	6.000	.0	11.000	.0	16.000	.0	21.000	.0
1.500	1.9	6.500	.0	11.500	.0	16.500	.0	21.500	.0
2.000	.3	7.000	.0	12.000	.0	17.000	.0	22.000	.0
2.500	.1	7.500	.0	12.500	.0	17.500	.0	22.500	.0
3.000	.0	8.000	.0	13.000	.0	18.000	.0	23.000	.0
3.500	.0	8.500	.0	13.500	.0	18.500	.0	23.500	.0
4.000	.0	9.000	.0	14.000	.0	19.000	.0	24.000	.0
4.500	.0	9.500	.0	14.500	.0	19.500	.0		

RUNOFF VOLUME = .99692 INCHES = .0691 ACRE-FEET
PEAK DISCHARGE RATE = 1.86 CFS AT 1.500 HOURS BASIN AREA = .0013 SQ. MI.

*S**ADD OUTLET FROM HARVEST AREA 1 AND BASIN A AND BASIN C *****

ADD HYD ID=5 HYD NO=105.0 ID I=3 ID II=4

PRINT HYD ID=5 CODE=10

PARTIAL HYDROGRAPH 105.00

TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HR	CFS	HR	CFS	HR	CFS	HR	CFS	HR	CFS
.000	.0	6.000	.1	12.000	.0	18.000	.0	24.000	.0
.500	.0	6.500	.1	12.500	.0	18.500	.0	24.500	.0
1.000	.0	7.000	.1	13.000	.0	19.000	.0	25.000	.0
1.500	3.6	7.500	.1	13.500	.0	19.500	.0	25.500	.0
2.000	1.6	8.000	.0	14.000	.0	20.000	.0	26.000	.0
2.500	.4	8.500	.0	14.500	.0	20.500	.0	26.500	.0
3.000	.3	9.000	.0	15.000	.0	21.000	.0	27.000	.0

3.500	.2	9.500	.0	15.500	.0	21.500	.0	27.500	.0
4.000	.2	10.000	.0	16.000	.0	22.000	.0	28.000	.0
4.500	.1	10.500	.0	16.500	.0	22.500	.0		
5.000	.1	11.000	.0	17.000	.0	23.000	.0		
5.500	.1	11.500	.0	17.500	.0	23.500	.0		

RUNOFF VOLUME = 1.50906 INCHES = .2656 ACRE-FEET
 PEAK DISCHARGE RATE = 3.56 CFS AT 1.500 HOURS BASIN AREA = .0033 SQ. MI.

S ROUTE THROUGH HARVEST AREA 4 ***** 16" OUTFLOW PIPE *****

ROUTE RESERVOIR ID=19 HYD=106.0 INFLOW ID=5 CODE=20

OUTFLOW STORAGE DEPTH

0.00	0.00	4992.5
0.60	0.004	4993.0
2.90	0.012	4993.5
4.20	0.044	4994.0

TIME	INFLOW	ELEV	VOLUME	OUTFLOW
(HRS)	(CFS)	(FEET)	(AC-FT)	(CFS)

.00	.00	4992.50	.000	.00
1.00	.00	4992.50	.000	.00
2.00	1.62	4993.25	.008	1.74
3.00	.27	4992.73	.002	.28
4.00	.15	4992.63	.001	.16
5.00	.10	4992.58	.001	.10
6.00	.07	4992.56	.000	.07
7.00	.06	4992.55	.000	.06
8.00	.05	4992.54	.000	.05
9.00	.04	4992.53	.000	.04
10.00	.04	4992.53	.000	.04
11.00	.03	4992.53	.000	.03
12.00	.03	4992.52	.000	.03
13.00	.03	4992.52	.000	.03
14.00	.03	4992.52	.000	.03
15.00	.02	4992.52	.000	.03
16.00	.02	4992.52	.000	.02
17.00	.02	4992.52	.000	.02
18.00	.02	4992.52	.000	.02
19.00	.02	4992.52	.000	.02
20.00	.02	4992.52	.000	.02
21.00	.02	4992.52	.000	.02
22.00	.02	4992.52	.000	.02
23.00	.02	4992.52	.000	.02
24.00	.02	4992.52	.000	.02
25.00	.01	4992.51	.000	.01
26.00	.00	4992.50	.000	.00

PEAK DISCHARGE = 3.045 CFS - PEAK OCCURS AT HOUR 1.60
 MAXIMUM WATER SURFACE ELEVATION = 4993.556
 MAXIMUM STORAGE = .0156 AC-FT INCREMENTAL TIME= .050000HRS

PRINT HYD ID=19 CODE=10

PARTIAL HYDROGRAPH 106.00

TIME FLOW	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	6.000	.1	12.000	.0	18.000	.0	24.000	.0
.500	.0	6.500	.1	12.500	.0	18.500	.0	24.500	.0
1.000	.0	7.000	.1	13.000	.0	19.000	.0	25.000	.0
1.500	2.9	7.500	.1	13.500	.0	19.500	.0	25.500	.0
2.000	1.7	8.000	.0	14.000	.0	20.000	.0	26.000	.0
2.500	.5	8.500	.0	14.500	.0	20.500	.0	26.500	.0
3.000	.3	9.000	.0	15.000	.0	21.000	.0	27.000	.0
3.500	.2	9.500	.0	15.500	.0	21.500	.0	27.500	.0
4.000	.2	10.000	.0	16.000	.0	22.000	.0	28.000	.0
4.500	.1	10.500	.0	16.500	.0	22.500	.0		
5.000	.1	11.000	.0	17.000	.0	23.000	.0		
5.500	.1	11.500	.0	17.500	.0	23.500	.0		

RUNOFF VOLUME = 1.50906 INCHES = .2656 ACRE-FEET
 PEAK DISCHARGE RATE = 3.04 CFS AT 1.600 HOURS BASIN AREA = .0033 SQ. MI.

S BASIN B *****

COMPUTE NM HYD ID=6 HYD NO=107.0 DA=0.0039 SQ MI
 PER A=64.0 PER B=0.0 PER C=26.0 PER D=10.0
 TP=-0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 1.5397 CFS UNIT VOLUME = .9928 B = 526.28 P60 = 1.8700
 AREA = .000390 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .146981HR TP = .133300HR K/TP RATIO = 1.102634 SHAPE CONSTANT, N = 3.206118
 UNIT PEAK = 7.8525 CFS UNIT VOLUME = .9982 B = 298.22 P60 = 1.8700
 AREA = .003510 SQ MI IA = .56333 INCHES INF = 1.42733 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

PRINT HYD ID=6 CODE=10

PARTIAL HYDROGRAPH 107.00

TIME FLOW	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW	TIME	FLOW
HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS	HRS	CFS
.000	.0	5.000	.0	10.000	.0	15.000	.0	20.000	.0
.500	.0	5.500	.0	10.500	.0	15.500	.0	20.500	.0
1.000	.0	6.000	.0	11.000	.0	16.000	.0	21.000	.0
1.500	4.8	6.500	.0	11.500	.0	16.500	.0	21.500	.0
2.000	.6	7.000	.0	12.000	.0	17.000	.0	22.000	.0

2.500	.1	7.500	.0	12.500	.0	17.500	.0	22.500	.0
3.000	.0	8.000	.0	13.000	.0	18.000	.0	23.000	.0
3.500	.0	8.500	.0	13.500	.0	18.500	.0	23.500	.0
4.000	.0	9.000	.0	14.000	.0	19.000	.0	24.000	.0
4.500	.0	9.500	.0	14.500	.0	19.500	.0		

RUNOFF VOLUME = .74649 INCHES = .1553 ACRE-FEET
 PEAK DISCHARGE RATE = 4.81 CFS AT 1.500 HOURS BASIN AREA = .0039 SQ. MI.

*S**ADD OUTLET FROM HARVEST AREA 4 AND BASIN B *****

ADD HYD ID=7 HYD NO=108.0 ID I=19 ID II=6

PRINT HYD ID=7 CODE=10

PARTIAL HYDROGRAPH 108.00

TIME		FLOW		TIME		FLOW		TIME		FLOW	
HRS		CFS		HRS		CFS		HRS		CFS	
.000	.0	6.000	.1	12.000	.0	18.000	.0	24.000	.0		
.500	.0	6.500	.1	12.500	.0	18.500	.0	24.500	.0		
1.000	.0	7.000	.1	13.000	.0	19.000	.0	25.000	.0		
1.500	7.7	7.500	.1	13.500	.0	19.500	.0	25.500	.0		
2.000	2.3	8.000	.1	14.000	.0	20.000	.0	26.000	.0		
2.500	.6	8.500	.1	14.500	.0	20.500	.0	26.500	.0		
3.000	.3	9.000	.0	15.000	.0	21.000	.0	27.000	.0		
3.500	.2	9.500	.0	15.500	.0	21.500	.0	27.500	.0		
4.000	.2	10.000	.0	16.000	.0	22.000	.0	28.000	.0		
4.500	.1	10.500	.0	16.500	.0	22.500	.0				
5.000	.1	11.000	.0	17.000	.0	23.000	.0				
5.500	.1	11.500	.0	17.500	.0	23.500	.0				

RUNOFF VOLUME = 1.09595 INCHES = .4208 ACRE-FEET
 PEAK DISCHARGE RATE = 7.72 CFS AT 1.500 HOURS BASIN AREA = .0072 SQ. MI.

S ROUTE THROUGH HARVEST AREA 5 *****

*S***NO OUTFLOW PIPE***SPILLWAY CREST ELEVATION TO DITCH IS 4993.0*****

ROUTE RESERVOIR ID=18 HYD=109.0 INFLOW ID=7 CODE=20

OUTFLOW STORAGE DEPTH

0	0.00	4992.0
0.10	0.33	4993.0
85.0	1.30	4994.0

* * * * *

TIME	INFLOW	ELEV	VOLUME	OUTFLOW
(HRS)	(CFS)	(FEET)	(AC-FT)	(CFS)

.00	.00	4992.00	.000	.00
1.00	.00	4992.00	.000	.00
2.00	2.34	4992.77	.254	.08
3.00	.33	4992.96	.318	.10
4.00	.16	4993.00	.329	.10

5.00	.11	4993.00	.330	.11
6.00	.08	4993.00	.329	.10
7.00	.07	4992.99	.327	.10
8.00	.06	4992.98	.324	.10
9.00	.05	4992.97	.320	.10
10.00	.04	4992.96	.316	.10
11.00	.04	4992.94	.311	.09
12.00	.04	4992.93	.307	.09
13.00	.03	4992.92	.302	.09
14.00	.03	4992.90	.297	.09
15.00	.03	4992.89	.293	.09
16.00	.03	4992.87	.288	.09
17.00	.03	4992.86	.283	.09
18.00	.03	4992.84	.278	.08
19.00	.03	4992.83	.274	.08
20.00	.03	4992.82	.269	.08
21.00	.02	4992.80	.265	.08
22.00	.02	4992.79	.260	.08
23.00	.02	4992.77	.255	.08
24.00	.02	4992.76	.251	.08
25.00	.01	4992.74	.246	.07
26.00	.00	4992.73	.240	.07
27.00	.00	4992.71	.234	.07
28.00	.00	4992.69	.229	.07
29.00	.00	4992.68	.223	.07

Q_{max} at Spillway

PEAK DISCHARGE = 136 CFS - PEAK OCCURS AT HOUR 4.40
 MAXIMUM WATER SURFACE ELEVATION = 4993.000
 MAXIMUM STORAGE = .3304 AC-FT INCREMENTAL TIME = .050000HRS

PRINT HYD ID=18 CODE=10

PARTIAL HYDROGRAPH 109.00

TIME		FLOW		TIME		FLOW		TIME		FLOW		TIME		FLOW	
HRS		CFS		HRS		CFS		HRS		CFS		HRS		CFS	
.000		.0		6.000		.1		12.000		.1		18.000		.1	
.500		.0		6.500		.1		12.500		.1		18.500		.1	
1.000		.0		7.000		.1		13.000		.1		19.000		.1	
1.500		.0		7.500		.1		13.500		.1		19.500		.1	
2.000		.1		8.000		.1		14.000		.1		20.000		.1	
2.500		.1		8.500		.1		14.500		.1		20.500		.1	
3.000		.1		9.000		.1		15.000		.1		21.000		.1	
3.500		.1		9.500		.1		15.500		.1		21.500		.1	
4.000		.1		10.000		.1		16.000		.1		22.000		.1	
4.500		.1		10.500		.1		16.500		.1		22.500		.1	
5.000		.1		11.000		.1		17.000		.1		23.000		.1	
5.500		.1		11.500		.1		17.500		.1		23.500		.1	

RUNOFF VOLUME = .52930 INCHES = .2032 ACRE-FEET
 PEAK DISCHARGE RATE = .14 CFS AT 4.40 HOURS BASIN AREA = .0072 SQ. MI.

*S*****
 FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 10:22:27

Rating Curve for 8" pipes from harvest area 1

Project Description

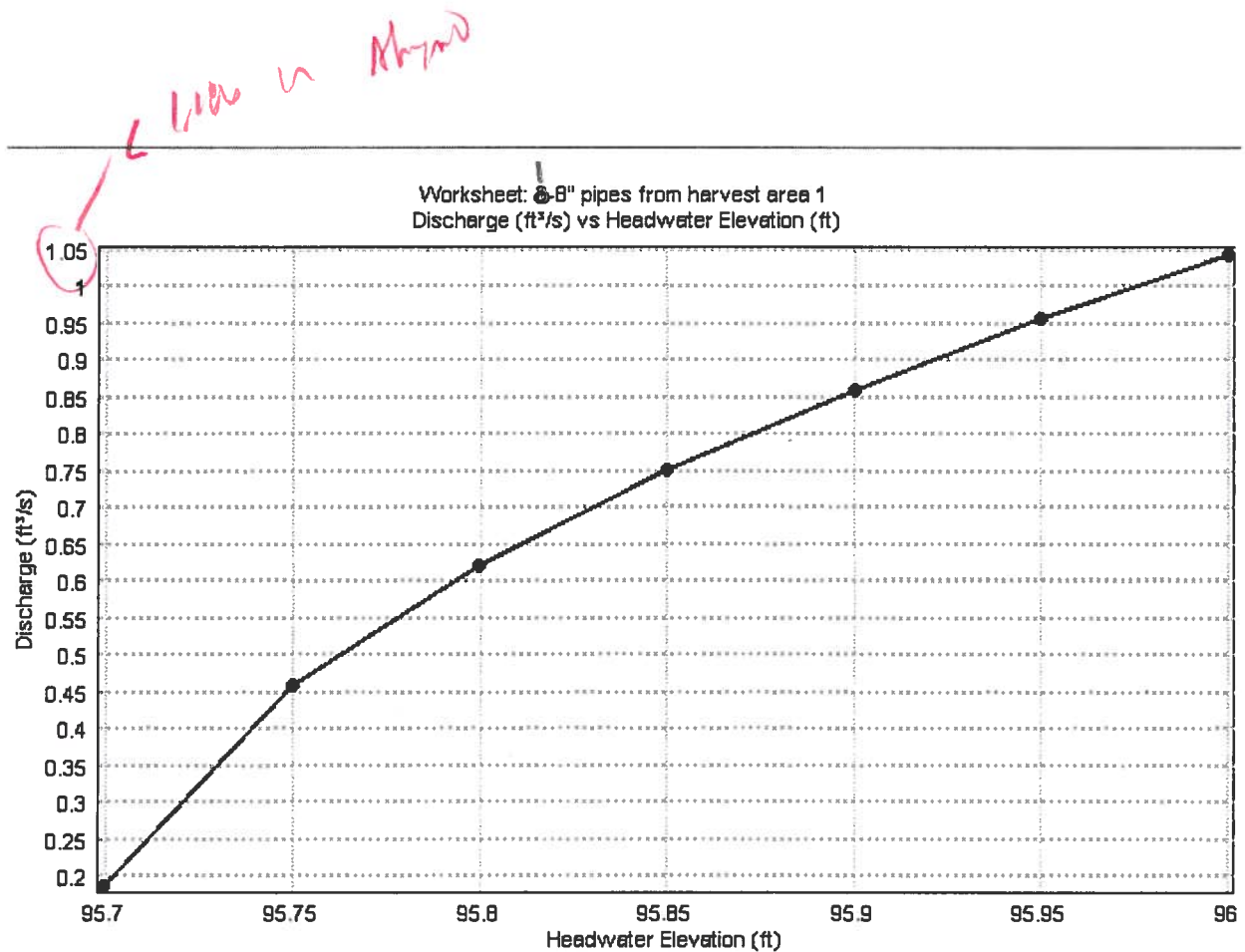
Flow Element: Circular Orifice

Solve For: Discharge

Input Data

Centroid Elevation: 95.69 ft
Tailwater Elevation: 95.16 ft
Discharge Coefficient: 0.67
Diameter: 0.67 ft

Attribute	Minimum	Maximum	Increment
Headwater Elevation (ft)	95.00	96.00	0.05



Rating Curve for 3-8' pipes leaving harvest area 2

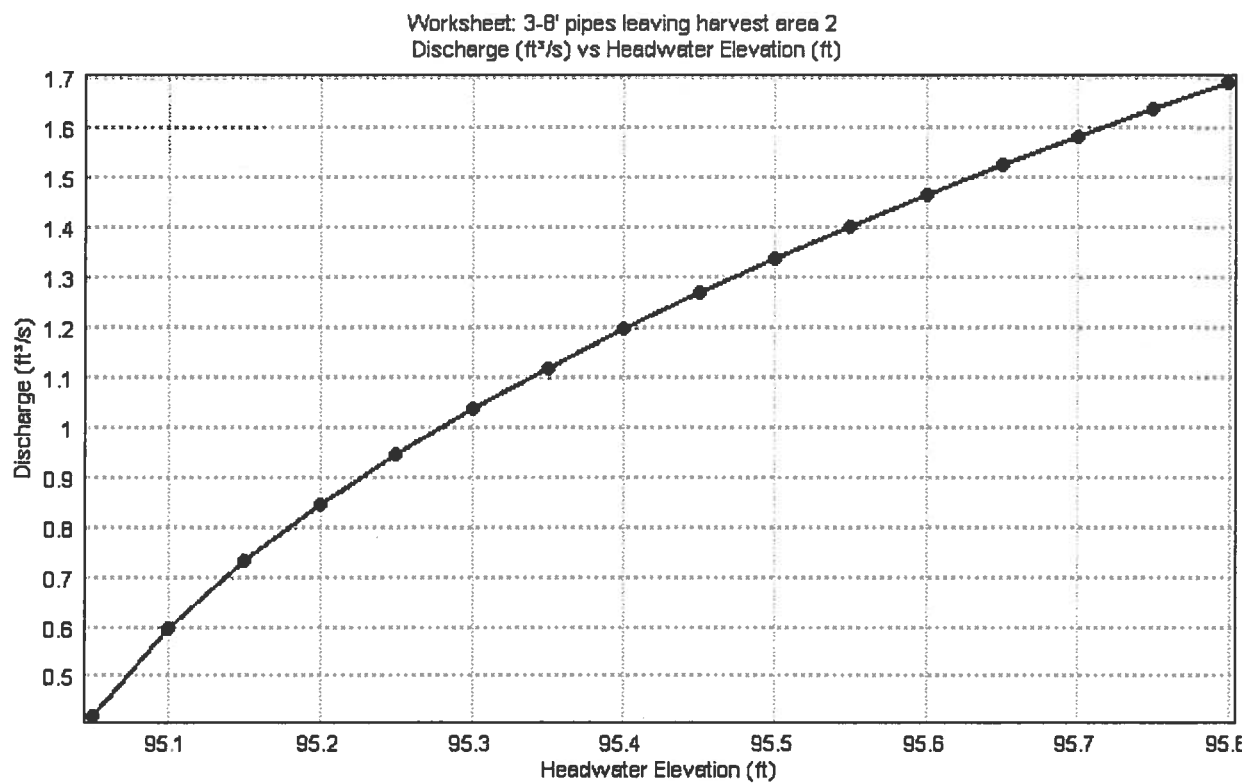
Project Description

Flow Element: Circular Orifice
Solve For: Discharge

Input Data

Centroid Elevation: 95.00 ft
Tailwater Elevation: 94.22 ft
Discharge Coefficient: 0.67
Diameter: 0.67 ft

Attribute	Minimum	Maximum	Increment
Headwater Elevation (ft)	94.50	95.80	0.05



Rating Curve for 2-8" pipes from harvest area 3

Project Description

Flow Element: Circular Orifice

Solve For: Discharge

Input Data

Centroid Elevation: 96.07 ft

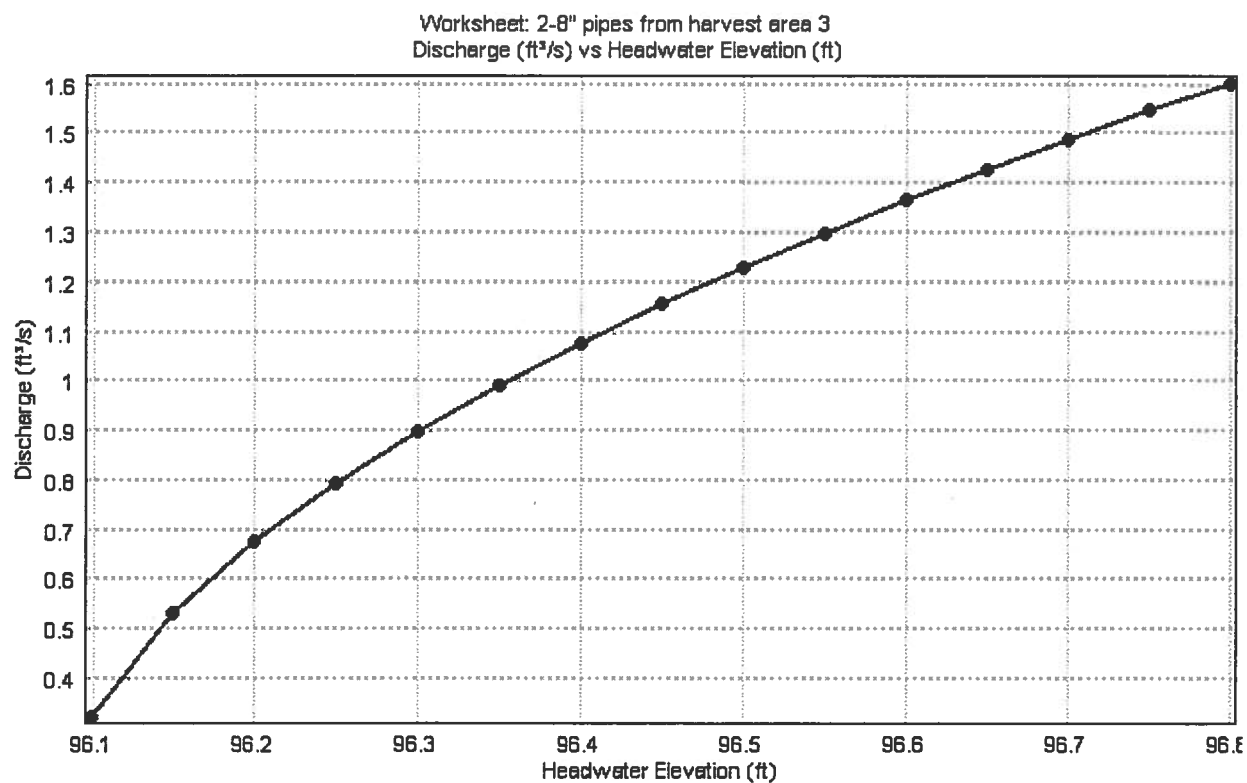
Tailwater Elevation: 94.63 ft

Discharge Coefficient: 0.67

Diameter: 0.67 ft

Attribute	Minimum	Maximum	Increment
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Headwater Elevation (ft)	95.50	96.82	0.05
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Exist 16" CMP

Rating Curve for Circular Orifice - 4

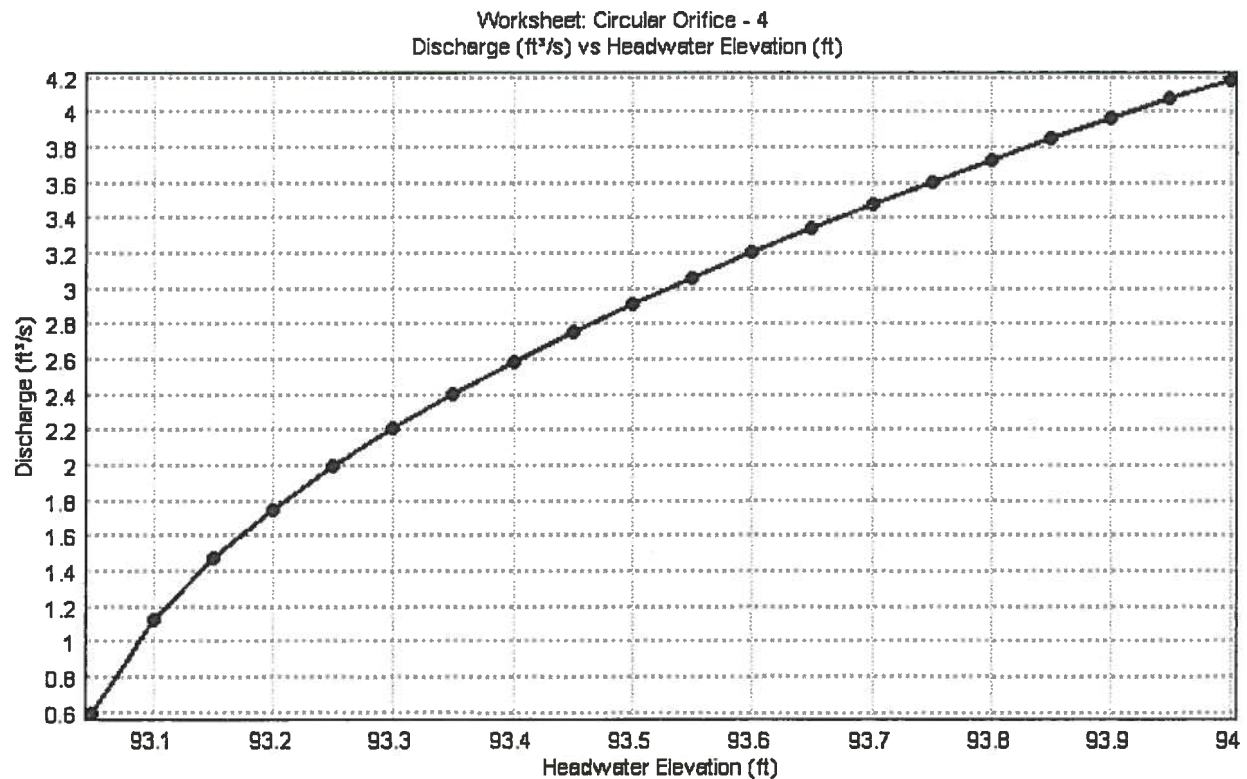
Project Description

Flow Element: Circular Orifice
Solve For: Discharge

Input Data

Centroid Elevation: 93.03 ft
Tailwater Elevation: 91.67 ft
Discharge Coefficient: 0.38
Diameter: 1.33 ft

Attribute	Minimum	Maximum	Increment
Headwater Elevation (ft)	92.50	94.00	0.05



Rating Curve for Broad Crested Weir - 1

EXISTING CONC SPILLWAY

Project Description

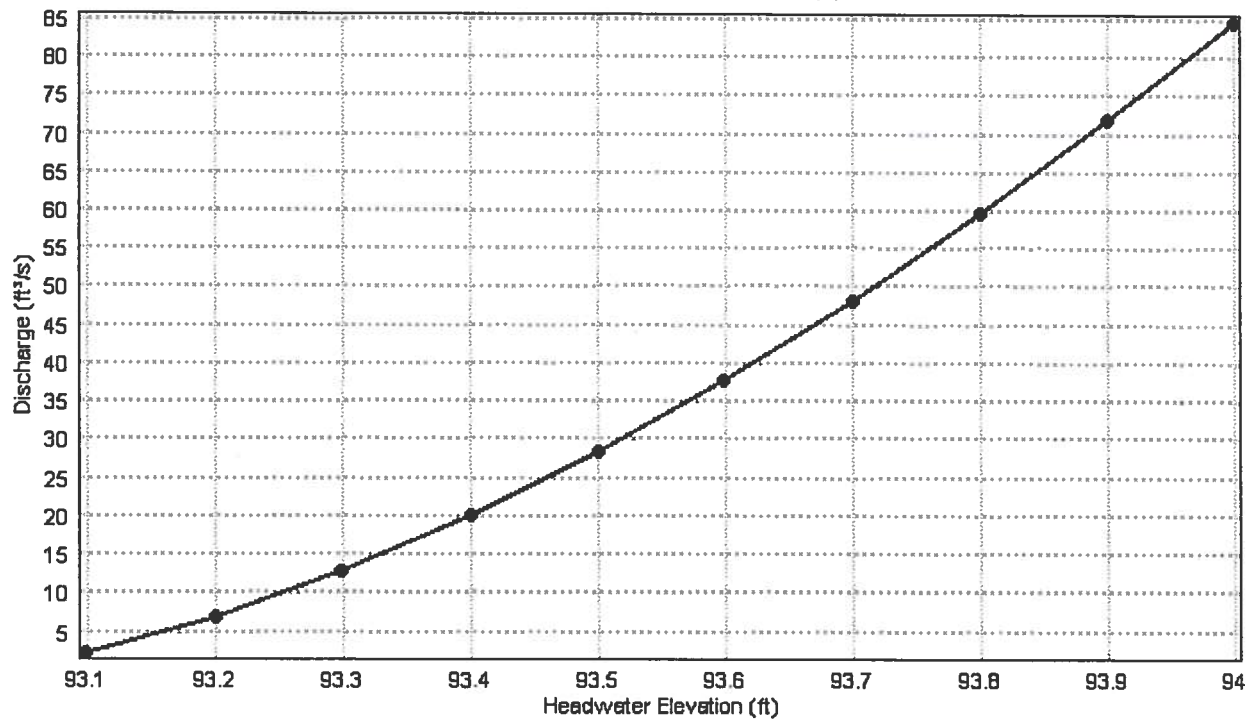
Flow Element: Broad Crested Weir
Solve For: Discharge

Input Data

Crest Elevation: 93.00 ft
Tailwater Elevation: 92.60 ft
Crest Surface Type: Gravel
Crest Breadth: 10.00 ft
Crest Length: 30.00 ft

Attribute	Minimum	Maximum	Increment
Headwater Elevation (ft)	93.00	94.00	0.10

Worksheet: Broad Crested Weir - 1
Discharge (ft³/s) vs Headwater Elevation (ft)



HARVESTING VOLUMES

1/2

#1

ELEV	SF	VOLUME	ACCUM	VOLUME
95.1	3370	1889 cf	1889	0.043 AF
95.5	4185	2305 cf	4194	<u>0.097 AF</u>
96.0	5035			

#2

do same from wa 2

94.5	570	338 cf	338 cf	0.0078 AF
95.0	780	418 cf	756 cf	0.0174 AF
95.5	890	488 cf	1244 cf	0.0286 AF
96.0	1060			

#3

95.5	69	50 cf	50 cf	0.0011
96.0	127	78 cf	128 cf	0.003
96.5	184			

#4

92.5	175 sf	173 cf	173 cf	0.004 AF
93.0	515 sf	349 cf	522 cf	0.012 AF
93.5	880 sf	1400 cf	1922 cf	0.044 AF
94.0	4722 sf			

ELEV	SF	VOLUME	ACCUM VOL
#5			
91.0			
92.0	9600	14300 cf	14300 cf 0.33AF
93.0	19000	42295 cf	56595 cf 1.30AF
94.0	65590		

**CITY OF ALBUQUERQUE
PLANNING DEPARTMENT
DEVELOPMENT SERVICE / HYDROLOGY SECTION**

DATE: 9-29-11
CONFERENCE RECAP

ZONE ATLAS PAGE NO: _____
DRAINAGE FILE: _____
ZONING: _____
DRB: _____
SUBJECT: _____
STREET ADDRESS (IF KNOWN): _____
SUBDIVISION NAME: _____

APPROVAL REQUESTED:

ATTENDANCE: _____

FINDINGS:

Comply w/ sedimentation scheme
north corner DMP

cc John Jaeger

AMAFCA Approval Req'd for BP.
cc 10-3-11

THE UNDERSIGNED AGREES THAT THE ABOVE FINDINGS ARE SUMMARIZED ACCURATELY AND ARE SUBJECT TO CHANGE IF FURTHER INVESTIGATION REVEALS THAT THEY ARE NOT REASONABLE OR THAT THEY ARE BASED ON INACCURATE INFORMATION.

SIGNED:
NAME (PRINT): Curtis A. Cherne

SIGNED:
NAME (PRINT):

****NOTE** PLEASE PROVIDE A COPY OF THIS RECAP WITH YOUR DRAINAGE SUBMITTAL.**