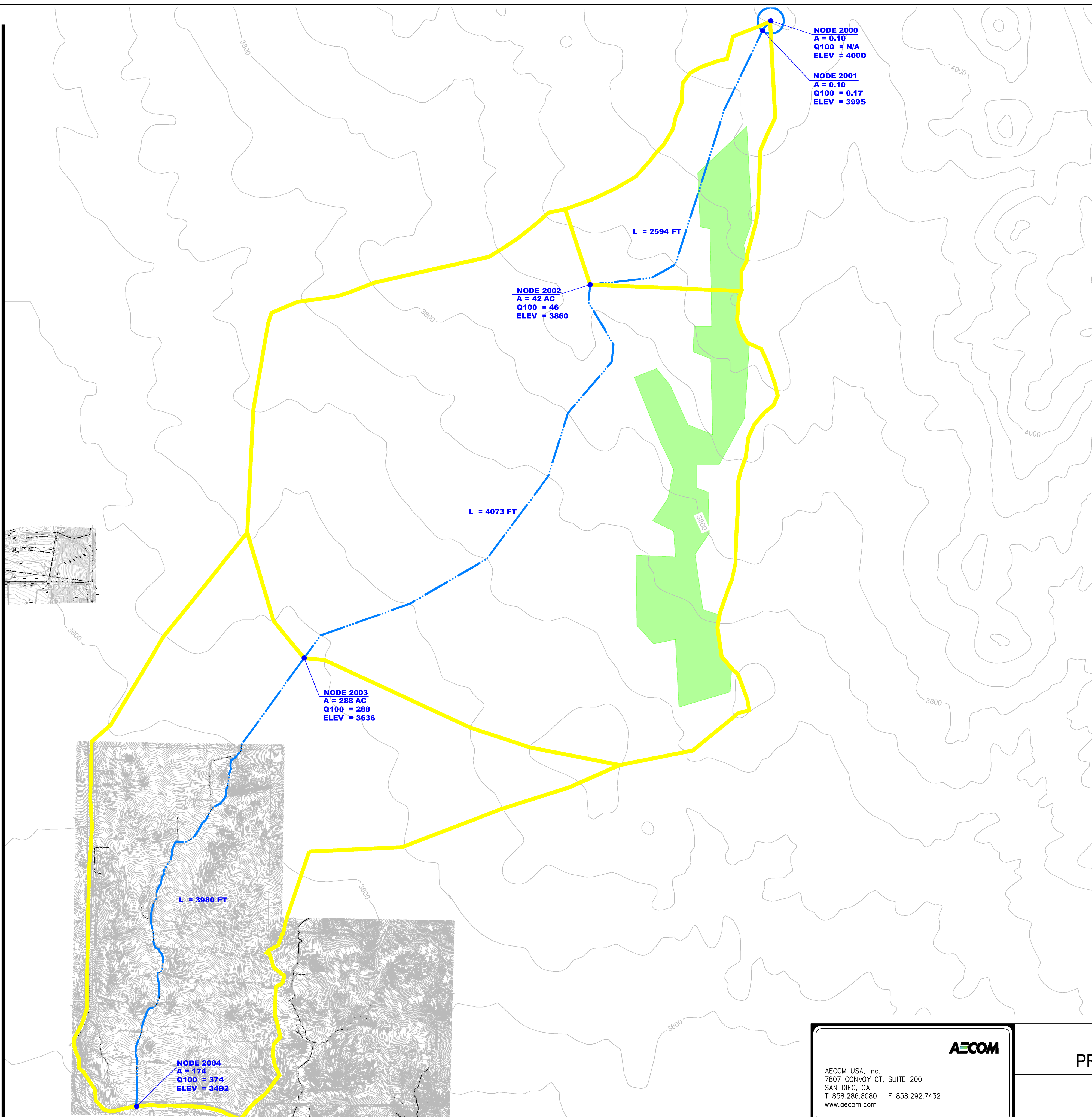
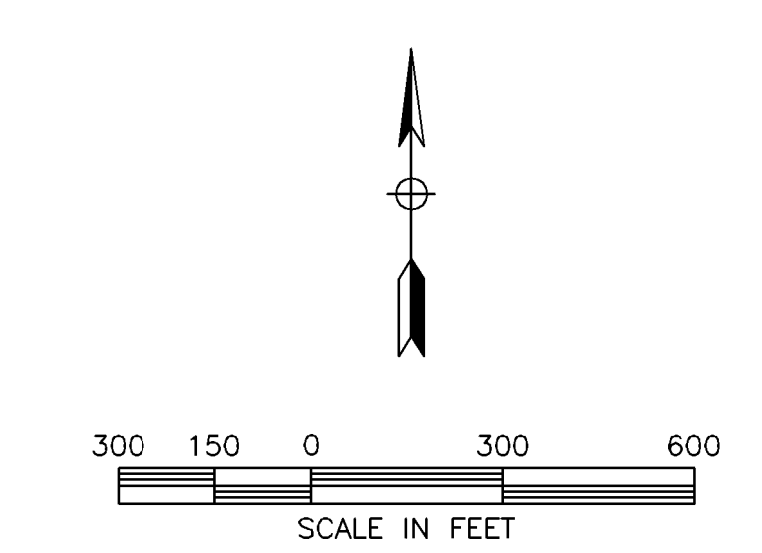


MATCHLINE - SEE FIGURE 3D



LEGEND

- EXISTING DRAINAGE BASIN (Yellow line)
- EXISTING DRAINAGE COURSE (Blue line)
- SOIL A (Light Green fill)
- SOIL B, ALL OTHER PROJECT AREAS (Light Blue fill)
- SOIL C (Pink fill)
- SOIL D (Cyan fill)



AECOM

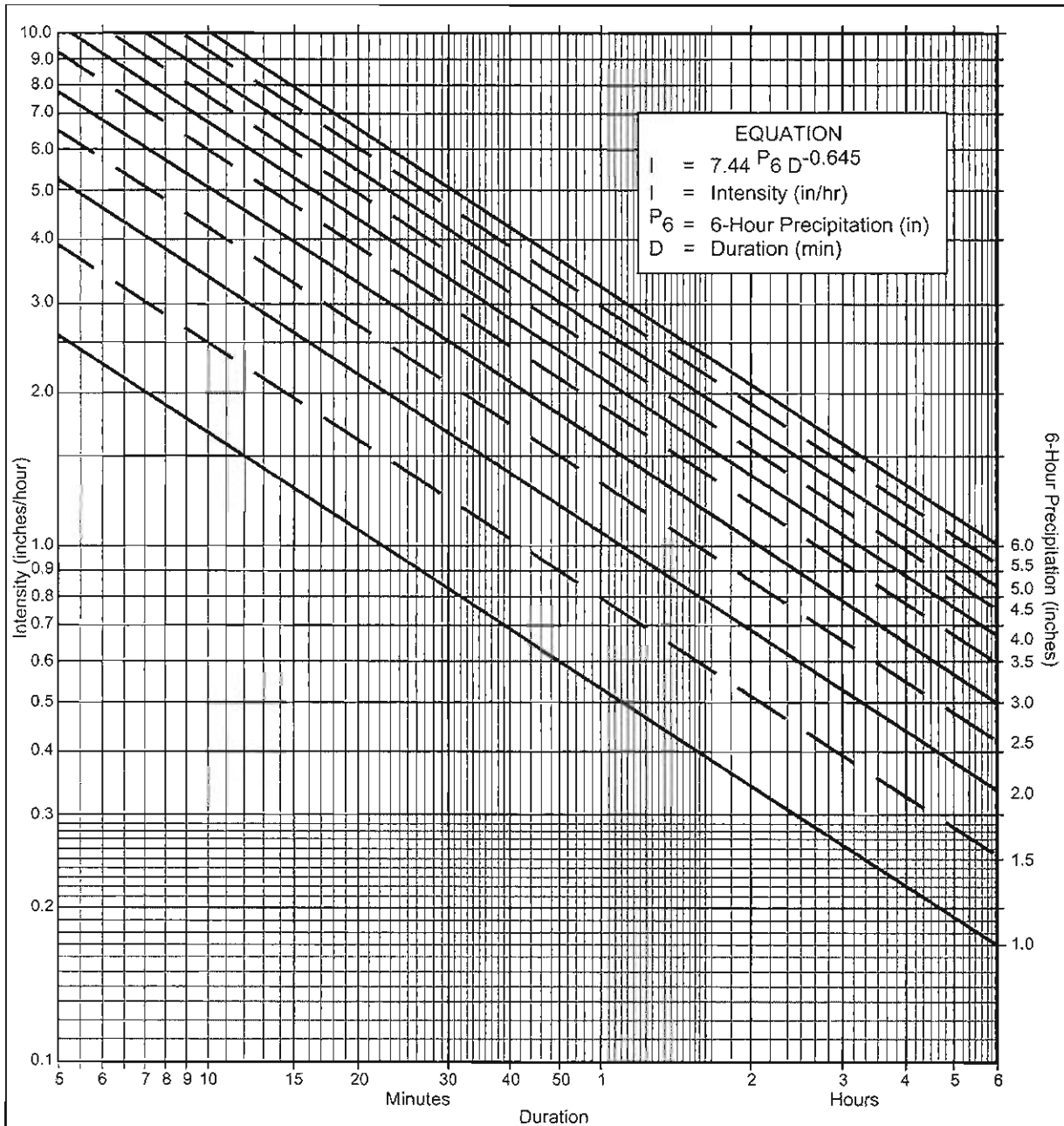
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**RUGGED ACRES
PROJECT SITE DRAINAGE BASIN**

EXISTING HYDROLOGY

AECOM
PROJECT NO.
60212653

FIGURE
3E



Directions for Application:

- (1) From precipitation maps determine 6 hr and 24 hr amounts for the selected frequency. These maps are included in the County Hydrology Manual (10, 50, and 100 yr maps included in the Design and Procedure Manual).
- (2) Adjust 6 hr precipitation (if necessary) so that it is within the range of 45% to 65% of the 24 hr precipitation (not applicable to Desert).
- (3) Plot 6 hr precipitation on the right side of the chart.
- (4) Draw a line through the point parallel to the plotted lines.
- (5) This line is the intensity-duration curve for the location being analyzed.

Application Form:

- (a) Selected frequency 100 year
- (b) $P_6 = 3.75$ in., $P_{24} = 6.5$ in., $\frac{P_6}{P_{24}} = 58$ %⁽²⁾
- (c) Adjusted $P_6^{(2)} = 3.75$ in.
- (d) $t_x =$ _____ min.
- (e) $I =$ _____ in./hr.

Note: This chart replaces the Intensity-Duration-Frequency curves used since 1965.

P6	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
5	2.63	3.95	5.27	6.59	7.90	9.22	10.54	11.86	13.17	14.49	15.81
7	2.12	3.18	4.24	5.30	6.36	7.42	8.48	9.54	10.60	11.66	12.72
10	1.68	2.53	3.37	4.21	5.05	5.90	6.74	7.58	8.42	9.27	10.11
15	1.30	1.95	2.59	3.24	3.89	4.54	5.19	5.84	6.49	7.13	7.78
20	1.08	1.62	2.15	2.69	3.23	3.77	4.31	4.85	5.39	5.93	6.46
25	0.93	1.40	1.87	2.33	2.80	3.27	3.73	4.20	4.67	5.13	5.60
30	0.83	1.24	1.66	2.07	2.49	2.90	3.32	3.73	4.15	4.56	4.98
40	0.69	1.03	1.38	1.72	2.07	2.41	2.76	3.10	3.45	3.79	4.13
50	0.60	0.90	1.19	1.49	1.79	2.09	2.39	2.69	2.98	3.28	3.58
60	0.53	0.80	1.06	1.33	1.59	1.86	2.12	2.39	2.65	2.92	3.18
90	0.41	0.61	0.82	1.02	1.23	1.43	1.63	1.84	2.04	2.25	2.45
120	0.34	0.51	0.68	0.85	1.02	1.19	1.36	1.53	1.70	1.87	2.04
150	0.29	0.44	0.59	0.73	0.88	1.03	1.18	1.32	1.47	1.62	1.76
180	0.26	0.39	0.52	0.65	0.78	0.91	1.04	1.18	1.31	1.44	1.57
240	0.22	0.33	0.43	0.54	0.65	0.76	0.87	0.98	1.08	1.19	1.30
300	0.19	0.28	0.38	0.47	0.56	0.66	0.75	0.85	0.94	1.03	1.13
360	0.17	0.25	0.33	0.42	0.50	0.58	0.67	0.75	0.84	0.92	1.00

Intensity-Duration Design Chart - Template

FIGURE

**Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS**

Land Use		Runoff Coefficient "C"				
NRCS Elements	County Elements	% IMPER.	Soil Type			
			A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient, C_p , for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).

DU/A = dwelling units per acre

NRCS = National Resources Conservation Service

Note that the Initial Time of Concentration should be reflective of the general land-use at the upstream end of a drainage basin. A single lot with an area of two or less acres does not have a significant effect where the drainage basin area is 20 to 600 acres.

Table 3-2 provides limits of the length (Maximum Length (L_M)) of sheet flow to be used in hydrology studies. Initial T_i values based on average C values for the Land Use Element are also included. These values can be used in planning and design applications as described below. Exceptions may be approved by the “Regulating Agency” when submitted with a detailed study.

Table 3-2

**MAXIMUM OVERLAND FLOW LENGTH (L_M)
 & INITIAL TIME OF CONCENTRATION (T_i)**

Element*	DU/ Acre	.5%		1%		2%		3%		5%		10%	
		L_M	T_i	L_M	T_i	L_M	T_i	L_M	T_i	L_M	T_i	L_M	T_i
Natural		50	13.2	70	12.5	85	10.9	100	10.3	100	8.7	100	6.9
LDR	1	50	12.2	70	11.5	85	10.0	100	9.5	100	8.0	100	6.4
LDR	2	50	11.3	70	10.5	85	9.2	100	8.8	100	7.4	100	5.8
LDR	2.9	50	10.7	70	10.0	85	8.8	95	8.1	100	7.0	100	5.6
MDR	4.3	50	10.2	70	9.6	80	8.1	95	7.8	100	6.7	100	5.3
MDR	7.3	50	9.2	65	8.4	80	7.4	95	7.0	100	6.0	100	4.8
MDR	10.9	50	8.7	65	7.9	80	6.9	90	6.4	100	5.7	100	4.5
MDR	14.5	50	8.2	65	7.4	80	6.5	90	6.0	100	5.4	100	4.3
HDR	24	50	6.7	65	6.1	75	5.1	90	4.9	95	4.3	100	3.5
HDR	43	50	5.3	65	4.7	75	4.0	85	3.8	95	3.4	100	2.7
N. Com		50	5.3	60	4.5	75	4.0	85	3.8	95	3.4	100	2.7
G. Com		50	4.7	60	4.1	75	3.6	85	3.4	90	2.9	100	2.4
O.P./Com		50	4.2	60	3.7	70	3.1	80	2.9	90	2.6	100	2.2
Limited I.		50	4.2	60	3.7	70	3.1	80	2.9	90	2.6	100	2.2
General I.		50	3.7	60	3.2	70	2.7	80	2.6	90	2.3	100	1.9

*See Table 3-1 for more detailed description

PRELIMINARY HYDROLOGY AND DRAINAGE STUDY
RUGGED ACRES SOLAR FARM

Post-Project Soil Type Areas - Site Plan

The C Values of the A - D Soil Types are From Table 3-1 in the SDCHM

Sub Basins Area (ft ²)	Soil Type - Area 200					Soil Type - Area 300					Soil Type - Area 400				
	A	B	C	D	IMP	A	B	C	D	IMP	A	B	C	D	IMP
1				1491385		92656			1758526					496043	
2				10035068											0.01
3	380925			388236											
Sub Basin Total Area		18216792					1941278					869048			
Soil Type Total Area (ft²)	380925	5921178	0	11914689	0	92656	90096	0	1758526	0	0	373004.99	0	496043	0.01
Soil Type Total Area (acres)	8.74	135.93	0.00	273.52	0.00	2.13	2.07	0.00	40.37	0.00	0.00	8.56	0.00	11.39	0.00
Total Sub Basin Drainage Area (acres)	418.20					44.57					19.95				
Percentage of Total	2.09%	32.50%	0.00%	65.40%	0	4.77%	4.64%	0.00%	90.59%	0	0.00%	42.92%	0.00%	57.08%	1.15068E-08
C for Natural Terrain	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0
Watershed Weighted C	0.31					0.34					0.31				

Sub Basins Area (ft ²)	Soil Type - Area 500					Soil Type - Area 600					Soil Type - Area 700				
	A	B	C	D	IMP	A	B	C	D	IMP	A	B	C	D	IMP
1				111868					1108692						
2					0.1				286553	0.27	492077			943778	
3															
4											1729840		46296		
Sub Basin Total Area		538376					4431740					31989001			
Total Area (ft²)	0	426507.9	0	111868	0.1	0	3036495	0	1395245	0.27	2221917	28777010	46296	943778	0
Total Area (acres)	0.00	9.79	0.00	2.57	0.00	0.00	69.71	0.00	32.03	0.00	51.01	660.63	1.06	21.67	0.00
Total Drainage Area (acres)	12.36					101.74					734.37				
Percentage of Total	0.00%	79.22%	0.00%	20.78%	0.000	0.00%	68.52%	0.00%	31.48%	6.1E-08	6.95%	89.96%	0.14%	2.95%	0
C for Natural Terrain	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0
Watershed Weighted C	0.27					0.28					0.25				

Sub Basins Area (ft ²)	Soil Type - Area 800					Soil Type - Area 900					Soil Type - Area 1000				
	A	B	C	D	IMP	A	B	C	D	IMP	A	B	C	D	IMP
1	567382		75674		555	546061		204220							
2										0.02	4264965				
3											1032521				
Sub Basin Total Area		3370837					2829585					25221680			
Total Area (ft²)	567382	2727226	75674	0	555	546061	2079304	204220	0	0.02	5297486	19924194	0	0	0
Total Area (acres)	13.03	62.61	1.74	0.00	0.01	12.54	47.73	4.69	0.00	0.00	121.61	457.40	0.00	0.00	0.00
Total Drainage Area (acres)	77.38					64.96					579.01				
Percentage of Total	16.83%	80.91%	2.24%	0.00%	0.000	19.30%	73.48%	7.22%	0.00%	0.000	21.00%	79.00%	0.00%	0.00%	0.000
C for Natural Terrain	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0
Watershed Weighted C	0.24					0.24					0.24				

PRELIMINARY HYDROLOGY AND DRAINAGE STUDY
RUGGED ACRES SOLAR FARM

Sub Basins Area (ft ²)	Soil Type - Area 1100					Soil Type - Area 1200					Soil Type - Area 1300				
	A	B	C	D	IMP	A	B	C	D	IMP	A	B	C	D	IMP
1						350799									
2	689098									0.14					0.03
Sub Basin Total Area		6378111					4534240					2115366			0.31
Total Area (ft²)	689098	5689013	0	0	0	350799	4183441	0	0	0.14	0	2115366	0	0	0.34
Total Area (acres)	15.82	130.60	0.00	0.00	0.00	8.05	96.04	0.00	0.00	0.00	0.00	48.56	0.00	0.00	0.00
Total Drainage Area (acres)	146.42					104.09					48.56				
Percentage of Total	10.80%	89.20%	0.00%	0.00%	0.00%	7.74%	92.26%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
C for Natural Terrain	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0
Watershed Weighted C	0.24					0.25					0.25				

Sub Basins Area (ft ²)	Soil Type - Area 1400					Soil Type - Area 1500					Soil Type - Area 1600				
	A	B	C	D	IMP	A	B	C	D	IMP	A	B	C	D	IMP
1						175929									
2				143549											
Sub Basin Total Area		3604567					3407610					762658			
Total Area (ft²)	0	3461018	0	143549	0	175929	3231681	0	0	0	0	762658	0	0	0
Total Area (acres)	0.00	79.45	0.00	3.30	0.00	4.04	74.19	0.00	0.00	0.00	0.00	17.51	0.00	0.00	0.00
Total Drainage Area (acres)	82.75					78.23					17.51				
Percentage of Total	0.00%	96.02%	0.00%	3.98%	0.00%	5.16%	94.84%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
C for Natural Terrain	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0
Watershed Weighted C	0.25					0.25					0.25				

Sub Basins Area (ft ²)	Soil Type - Area 1700					Soil Type - Area 1800					Soil Type - Area 1900				
	A	B	C	D	IMP	A	B	C	D	IMP	A	B	C	D	IMP
1									152719					869383	
2				143549							479380				
Sub Basin Total Area		856606					3957652					5921062			
Total Area (ft²)	0	713057	0	143549	0	0	3804933	0	152719	0	479380	4572299	0	869383	0
Total Area (acres)	0.00	16.37	0.00	3.30	0.00	0.00	87.35	0.00	3.51	0.00	11.01	104.97	0.00	19.96	0.00
Total Drainage Area (acres)	19.66					90.86					135.93				
Percentage of Total	0.00%	83.24%	0.00%	16.76%	0.00%	0.00%	96.14%	0.00%	3.86%	0.00%	8.10%	77.22%	0.00%	14.68%	0.00%
C for Natural Terrain	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0
Watershed Weighted C	0.27					0.25					0.25				

PRELIMINARY HYDROLOGY AND DRAINAGE STUDY
RUGGED ACRES SOLAR FARM

Sub Basins Area (ft ²)	Soil Type - Area 2000					Soil Type - Area 2100				
	A	B	C	D	IMP	A	B	C	D	IMP
1	359398									
2	1235700									
3										
Sub Basin Total Area		21925103					420395			
Total Area (ft²)	1595098	20330005	0	0	0	0	420395	0	0	0
Total Area (acres)	36.62	466.71	0.00	0.00	0.00	0.00	9.65	0.00	0.00	0.00
Total Drainage Area (acres)	503.33					9.65				
Percentage of Total	7.28%	92.72%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
C for Natural Terrain	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0
Watershed Weighted C	0.25					0.25				

PRELIMINARY HYDROLOGY AND DRAINAGE STUDY
RUGGED ACRES SOLAR FARM

POST-PROJECT AES 2011 RATSCx Inputs - Site Plan

P6 (in) 3.75
P24 (in) 6.5

Subarea		Upstream Elevation (ft)	Downstream Elevation (ft)	Flow Length (ft)	Land Cover	% Impervious	C Value	Area (ft^2)	Area (Ac)	Slope
From Node	To node									
200	201	3965	3960	100	35	0	0.31	4,007	0.09	5.0%
201	202	3960	3680	5007	35	0		9,554,102	219.33	5.6%
202	203	3680	3628	2181	35	0		5,682,929	130.46	2.4%
203	204	3628	3528	3093	35	0		2,976,659	68.33	3.2%
300	301	3725	3720	100	35	0	0.34	1,724	0.04	5.0%
301	302	3720	3538	4218	35	0		1,941,278	44.57	4.3%
400	401	3685	3680	100	35	0	0.31	8,712	0.20	5.0%
401	402	3680	3572	2110	35	0		869,048	19.95	5.1%
500	501	3685	3680	100	35	0	0.27	6,098	0.14	5.0%
501	502	3680	3576	1153	35	0		538,376	12.36	9.0%
600	601	3770	3765	100	35	0	0.28	6,969	0.16	5.0%
601	602	3765	3604	3984	35	0		3,717,418	85.34	4.0%
602	603	3604	3580	3074	35	0		714,322	16.40	0.8%
700	701	4320	4310	100	35	0	0.25	4,356	0.10	10.0%
701	702	4310	3993	4039	35	0		3,759,756	86.31	7.8%
702	703	3993	3760	3902	35	0		12,691,033	291.35	6.0%
703	704	3760	3659	3507	35	0		12,715,308	291.90	2.9%
704	705	3659	3582	2776	35	0		2,821,904	64.78	2.8%
800	801	3805	3800	100	35	0	0.24	4,380	0.101	5.0%
801	802	3800	3558	4472	35	0		3,370,837	77.384	5.4%
900	901	3725	3720	100	35	0	0.24	3,512	0.081	5.0%
901	902	3720	3549	2848	35	0		2,831,456	65.00	6.0%
1000	1001	4080	4075	100	35	0	0.24	4,355	0.10	5.0%
1001	1002	4075	3796	3953	35	0		2,829,585	64.96	7.1%
1002	1003	3796	3633	3963	35	0		16,422,460	377.01	4.1%
1003	1004	3633	3518	3141	35	0		5,969,455	137.04	3.7%
1100	1101	3760	3755	100	35	0	0.25	3,262	0.07	5.0%
1101	1102	3755	3640	3318	35	0		3,712,600	85.23	3.5%
1102	1103	3600	3530	3083	35	0		2,868,937	65.86	2.3%
1200	1201	3760	3755	100	35	0	0.25	4,324	0.10	5.0%
1201	1202	3755	3518	3637	35	0		4,531,006	104.02	6.5%
1300	1301	3765	3760	100	35	0	0.25	3,314	0.08	5.0%
1301	1302	3760	3596	2124	35	0		762,014	17.49	7.7%
1302	1303	3596	3512	1851	35	0		1,253,352	28.77	4.5%
1400	1401	3775	3770	100	35	0	0.25	2,765	0.06	5.0%
1401	1402	3770	3560	1940	35	0		535,670	12.30	10.8%
1402	1403	3560	3498	2522	35	0		3,070,897	70.50	2.5%

PRELIMINARY HYDROLOGY AND DRAINAGE STUDY
RUGGED ACRES SOLAR FARM

Subarea		Upstream Elevation (ft)	Downstream Elevation (ft)	Flow Length (ft)	Land Cover	% Impervious	C Value	Area (ft^2)	Area (Ac)	Slope
From Node	To node									
1500	1501	3680	3675	100	35	0	0.25	6,030	0.14	5.0%
1501	1502	3675	3499	4451	35	0		3,407,610	78.23	4.0%
1600	1601	3600	3595	100	35	0	0.25	4,324	0.10	5.0%
1601	1602	3595	3497	1580	35	0		762,658	17.51	6.2%
1700	1701	3605	3600	100	35	0	0.25	8,600	0.20	5.0%
1701	1702	3600	3501	1768	35	0		856,606	19.66	5.6%
1800	1801	3840	3835	100	35	0	0.25	1,367	0.03	5.0%
1801	1802	3835	3601	3730	35	0		1,763,661	40.49	6.3%
1802	1803	3601	3504	3230	35	0		2,193,991	50.37	3.0%
1900	1901	3840	3835	100	35	0	0.25	12,867	0.30	5.0%
1901	1902	3835	3616	2521	35	0		2,558,457	58.73	8.7%
1902	1903	3616	3507	3455	35	0		3,362,605	77.19	3.2%
2000	2001	4000	3995	100	35	0	0.25	4,344	0.10	5.0%
2001	2002	3995	3860	2594	35	0		1,808,495	41.52	5.2%
2002	2003	3860	3636	4073	35	0		12,526,845	287.58	5.5%
2003	2004	3636	3492	3980	35	0		7,589,847	174.24	3.6%
2100	2101	3690	3685	100	35	0	0.25	5,822	0.13	5.0%
2101	2102	3685	3585	1727	35	0		420,395	9.65	5.8%

Appendix D

Pre-Project & Post-Project Hydrology (Tule Creek) AES 2011 FLOODSCx Output

F L O O D R O U T I N G A N A L Y S I S

ACCORDING TO COUNTY OF SAN DIEGO
DEPARTMENT OF PUBLIC WORKS FLOOD CONTROL DIVISION HYDROLOGY
MANUAL(2003)

(c) Copyright 1989-2011 Advanced Engineering Software (aes)
Ver. 18.0 Release Date: 05/01/2011 License ID 1395

Analysis prepared by:

FILE NAME: C:\aes2011\hydrosft\floodX\Tule Trial.fld
TIME/DATE OF STUDY: 10:23 09/05/2012

FLOW PROCESS FROM NODE 100.00 TO NODE 101.00 IS CODE = 1

>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<

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(UNIT-HYDROGRAPH ADDED TO STREAM #1)

FEET
WATERCOURSE LENGTH = 55176.000 FEET
LENGTH FROM CONCENTRATION POINT TO CENTROID = 22726.000
ELEVATION VARIATION ALONG WATERCOURSE = 2125.000 FEET
BASIN FACTOR = 0.045
WATERSHED AREA = 15522.000 ACRES
BASEFLOW = 0.000 CFS/SQUARE-MILE
WATERCOURSE "LAG" TIME = 1.671 HOURS
* Instantaneous Unit-Hydrograph Option Selected.
S.C.S. S-GRAPH SELECTED
WATERSHED RUNOFF CURVE NUMBER = 79.00

SPECIFIED PEAK 5-MINUTES RAINFALL(INCH)= 0.82
 SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)= 1.56
 SPECIFIED PEAK 1-HOUR RAINFALL(INCH) = 1.99
 SPECIFIED PEAK 3-HOUR RAINFALL(INCH) = 2.94
 SPECIFIED PEAK 6-HOUR RAINFALL(INCH) = 3.75
 SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 6.50

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:

5-MINUTE FACTOR = 0.806
 30-MINUTE FACTOR = 0.806
 1-HOUR FACTOR = 0.882
 3-HOUR FACTOR = 0.943
 6-HOUR FACTOR = 0.957
 24-HOUR FACTOR = 0.970

UNIT HYDROGRAPH TIME UNIT = 15.000 MINUTES
 UNIT INTERVAL PERCENTAGE OF LAG-TIME = 14.960

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UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"q/q _p " GRAPH VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
--------------------	-------------------------------------	-----------------------------------

1	0.081	663.911
2	0.246	2008.533
3	0.509	4148.951
4	0.811	6605.506
5	0.971	7908.969
6	0.996	8114.779
7	0.920	7493.712
8	0.789	6431.903
9	0.606	4936.076
10	0.435	3546.368
11	0.326	2652.566
12	0.250	2036.257
13	0.190	1549.790
14	0.141	1149.651
15	0.107	868.097
16	0.081	655.988
17	0.060	492.824
18	0.046	372.558
19	0.035	282.352
20	0.026	213.230

21	0.020	160.280
22	0.015	119.314
23	0.011	91.032
24	0.009	73.504
25	0.007	56.535
26	0.005	39.762
27	0.003	25.621
28	0.001	11.481
29	0.000	0.000

 TOTAL STORM RAINFALL(INCHES) = 6.31
 TOTAL SOIL-LOSS(INCHES) = 2.35
 TOTAL EFFECTIVE RAINFALL(INCHES) = 3.96

 TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 3042.3389
 TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 5124.3921

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 =====
 2 4 - H O U R S T O R M
 R U N O F F H Y D R O G R A P H

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 =====
 HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
 (Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	3525.0	7050.0	10575.0
14100.0						

 0.083 0.0000 0.00 Q . . .
 .
 0.167 0.0000 0.00 Q . . .
 .
 0.250 0.0000 0.00 Q . . .
 .

0.333	0.0000	0.00	Q	.	.	.
0.417	0.0000	0.00	Q	.	.	.
0.500	0.0000	0.00	Q	.	.	.
0.583	0.0000	0.00	Q	.	.	.
0.667	0.0000	0.00	Q	.	.	.
0.750	0.0000	0.00	Q	.	.	.
0.833	0.0000	0.00	Q	.	.	.
0.917	0.0000	0.00	Q	.	.	.
1.000	0.0000	0.00	Q	.	.	.
1.083	0.0000	0.00	Q	.	.	.
1.167	0.0000	0.00	Q	.	.	.
1.250	0.0000	0.00	Q	.	.	.
1.333	0.0000	0.00	Q	.	.	.
1.417	0.0000	0.00	Q	.	.	.
1.500	0.0000	0.00	Q	.	.	.
1.583	0.0000	0.00	Q	.	.	.
1.667	0.0000	0.00	Q	.	.	.
1.750	0.0000	0.00	Q	.	.	.
1.833	0.0000	0.00	Q	.	.	.
1.917	0.0000	0.00	Q	.	.	.
2.000	0.0000	0.00	Q	.	.	.
2.083	0.0000	0.00	Q	.	.	.
2.167	0.0000	0.00	Q	.	.	.
2.250	0.0000	0.00	Q	.	.	.
2.333	0.0000	0.00	Q	.	.	.
2.417	0.0000	0.00	Q	.	.	.

2.500	0.0000	0.00	Q	.	.	.
2.583	0.0000	0.00	Q	.	.	.
2.667	0.0000	0.00	Q	.	.	.
2.750	0.0000	0.00	Q	.	.	.
2.833	0.0000	0.00	Q	.	.	.
2.917	0.0000	0.00	Q	.	.	.
3.000	0.0000	0.00	Q	.	.	.
3.083	0.0000	0.00	Q	.	.	.
3.167	0.0000	0.00	Q	.	.	.
3.250	0.0000	0.00	Q	.	.	.
3.333	0.0000	0.00	Q	.	.	.
3.417	0.0000	0.00	Q	.	.	.
3.500	0.0000	0.00	Q	.	.	.
3.583	0.0000	0.00	Q	.	.	.
3.667	0.0000	0.00	Q	.	.	.
3.750	0.0000	0.00	Q	.	.	.
3.833	0.0000	0.00	Q	.	.	.
3.917	0.0000	0.00	Q	.	.	.
4.000	0.0000	0.00	Q	.	.	.
4.083	0.0000	0.00	Q	.	.	.
4.167	0.0000	0.00	Q	.	.	.
4.250	0.0000	0.00	Q	.	.	.
4.333	0.0000	0.00	Q	.	.	.
4.417	0.0000	0.00	Q	.	.	.
4.500	0.0000	0.00	Q	.	.	.
4.583	0.0020	0.29	Q	.	.	.

4.667	0.0040	0.29	Q	.	.	.
4.750	0.0059	0.29	Q	.	.	.
4.833	0.0175	1.68	Q	.	.	.
4.917	0.0290	1.68	Q	.	.	.
5.000	0.0406	1.68	Q	.	.	.
5.083	0.0791	5.59	Q	.	.	.
5.167	0.1176	5.59	Q	.	.	.
5.250	0.1560	5.59	Q	.	.	.
5.333	0.2515	13.86	Q	.	.	.
5.417	0.3469	13.86	Q	.	.	.
5.500	0.4423	13.86	Q	.	.	.
5.583	0.6349	27.96	Q	.	.	.
5.667	0.8274	27.96	Q	.	.	.
5.750	1.0200	27.96	Q	.	.	.
5.833	1.3538	48.47	Q	.	.	.
5.917	1.6876	48.47	Q	.	.	.
6.000	2.0214	48.47	Q	.	.	.
6.083	2.5395	75.23	Q	.	.	.
6.167	3.0576	75.23	Q	.	.	.
6.250	3.5757	75.23	Q	.	.	.
6.333	4.3166	107.58	Q	.	.	.
6.417	5.0576	107.58	Q	.	.	.
6.500	5.7985	107.58	Q	.	.	.
6.583	6.7940	144.55	Q	.	.	.
6.667	7.7896	144.55	Q	.	.	.
6.750	8.7851	144.55	Q	.	.	.

6.833	10.0594	185.03	Q	.	.	.
6.917	11.3338	185.03	Q	.	.	.
7.000	12.6081	185.03	Q	.	.	.
7.083	14.1797	228.20	Q	.	.	.
7.167	15.7514	228.20	Q	.	.	.
7.250	17.3230	228.20	Q	.	.	.
7.333	19.2068	273.53	Q	.	.	.
7.417	21.0906	273.53	Q	.	.	.
7.500	22.9745	273.53	Q	.	.	.
7.583	25.1828	320.65	Q	.	.	.
7.667	27.3912	320.65	Q	.	.	.
7.750	29.5995	320.65	Q	.	.	.
7.833	32.1430	369.31	VQ	.	.	.
7.917	34.6864	369.31	VQ	.	.	.
8.000	37.2298	369.31	VQ	.	.	.
8.083	40.1177	419.31	VQ	.	.	.
8.167	43.0055	419.31	VQ	.	.	.
8.250	45.8933	419.31	VQ	.	.	.
8.333	49.1341	470.56	VQ	.	.	.
8.417	52.3749	470.56	VQ	.	.	.
8.500	55.6157	470.56	VQ	.	.	.
8.583	59.2178	523.02	VQ	.	.	.
8.667	62.8199	523.02	VQ	.	.	.
8.750	66.4220	523.02	VQ	.	.	.
8.833	70.3937	576.69	VQ	.	.	.
8.917	74.3654	576.69	VQ	.	.	.

9.000	78.3371	576.69	VQ	.	.	.
9.083	82.6871	631.61	VQ	.	.	.
9.167	87.0371	631.61	VQ	.	.	.
9.250	91.3870	631.61	VQ	.	.	.
9.333	96.1243	687.86	VQ	.	.	.
9.417	100.8616	687.86	VQ	.	.	.
9.500	105.5990	687.86	VQ	.	.	.
9.583	110.7334	745.53	V Q	.	.	.
9.667	115.8679	745.53	V Q	.	.	.
9.750	121.0024	745.53	V Q	.	.	.
9.833	126.5448	804.75	V Q	.	.	.
9.917	132.0872	804.75	VQ	.	.	.
10.000	137.6296	804.75	VQ	.	.	.
10.083	143.5917	865.69	.VQ	.	.	.
10.167	149.5537	865.69	.VQ	.	.	.
10.250	155.5158	865.69	.VQ	.	.	.
10.333	161.9107	928.53	.VQ	.	.	.
10.417	168.3056	928.53	.VQ	.	.	.
10.500	174.7004	928.53	.VQ	.	.	.
10.583	181.5427	993.50	.VQ	.	.	.
10.667	188.3850	993.50	.VQ	.	.	.
10.750	195.2272	993.50	.VQ	.	.	.
10.833	202.5332	1060.83	.V Q	.	.	.
10.917	209.8392	1060.83	.V Q	.	.	.
11.000	217.1452	1060.83	.V Q	.	.	.
11.083	224.9332	1130.82	.V Q	.	.	.

11.167	232.7212	1130.82	.V Q	.	.	.
11.250	240.5093	1130.82	.V Q	.	.	.
11.333	248.7999	1203.80	.V Q	.	.	.
11.417	257.0905	1203.80	. VQ	.	.	.
11.500	265.3811	1203.80	. VQ	.	.	.
11.583	274.1975	1280.15	. VQ	.	.	.
11.667	283.0140	1280.15	. VQ	.	.	.
11.750	291.8304	1280.15	. VQ	.	.	.
11.833	301.1990	1360.32	. VQ	.	.	.
11.917	310.5676	1360.32	. VQ	.	.	.
12.000	319.9362	1360.32	. VQ	.	.	.
12.083	329.8616	1441.17	. V Q	.	.	.
12.167	339.7870	1441.17	. V Q	.	.	.
12.250	349.7123	1441.17	. V Q	.	.	.
12.333	360.1952	1522.11	. V Q	.	.	.
12.417	370.6780	1522.11	. V Q	.	.	.
12.500	381.1609	1522.11	. V Q	.	.	.
12.583	392.1937	1601.96	. VQ	.	.	.
12.667	403.2265	1601.96	. VQ	.	.	.
12.750	414.2593	1601.96	. VQ	.	.	.
12.833	425.8477	1682.63	. VQ	.	.	.
12.917	437.4361	1682.63	. VQ	.	.	.
13.000	449.0244	1682.63	. VQ	.	.	.
13.083	461.2306	1772.34	. V Q	.	.	.
13.167	473.4368	1772.34	. V Q	.	.	.
13.250	485.6430	1772.34	. V Q	.	.	.

13.333	498.5449	1873.36	.	V Q	.	.	.
13.417	511.4469	1873.36	.	V Q	.	.	.
13.500	524.3488	1873.36	.	VQ	.	.	.
13.583	538.0363	1987.42	.	VQ	.	.	.
13.667	551.7238	1987.42	.	VQ	.	.	.
13.750	565.4113	1987.42	.	VQ	.	.	.
13.833	579.9816	2115.61	.	V Q	.	.	.
13.917	594.5519	2115.61	.	V Q	.	.	.
14.000	609.1223	2115.61	.	V Q	.	.	.
14.083	624.7540	2269.73	.	V Q	.	.	.
14.167	640.3858	2269.73	.	V Q	.	.	.
14.250	656.0176	2269.73	.	VQ	.	.	.
14.333	672.9547	2459.27	.	VQ	.	.	.
14.417	689.8918	2459.27	.	VQ	.	.	.
14.500	706.8290	2459.27	.	VQ	.	.	.
14.583	725.3989	2696.36	.	V Q	.	.	.
14.667	743.9689	2696.36	.	V Q	.	.	.
14.750	762.5388	2696.36	.	V Q	.	.	.
14.833	783.1359	2990.70	.	V Q	.	.	.
14.917	803.7330	2990.70	.	V Q	.	.	.
15.000	824.3301	2990.70	.	V Q	.	.	.
15.083	847.3196	3338.06	.	V Q.	.	.	.
15.167	870.3090	3338.06	.	V Q.	.	.	.
15.250	893.2983	3338.06	.	V Q.	.	.	.
15.333	919.0483	3738.89	.	V Q	.	.	.
15.417	944.7982	3738.89	.	V Q	.	.	.

15.500	970.5482	3738.89	.	V	Q	.	.
.							
15.583	999.7552	4240.86	.	V	.	Q	.
.							
15.667	1028.9622	4240.86	.	V	.	Q	.
.							
15.750	1058.1692	4240.86	.	V	.	Q	.
.							
15.833	1091.9021	4898.02	.	V	.	Q	.
.							
15.917	1125.6350	4898.02	.	V	.	Q	.
.							
16.000	1159.3679	4898.02	.	V.	Q	.	.
.							
16.083	1201.6648	6141.51	.	V.	Q	.	.
.							
16.167	1243.9617	6141.51	.	V.	Q	.	.
.							
16.250	1286.2585	6141.51	.	V	Q	.	.
.							
16.333	1341.1713	7973.32	.	V	.	Q	.
.							
16.417	1396.0840	7973.32	.	V	.	Q	.
.							
16.500	1450.9967	7973.32	.	V	.	Q	.
.							
16.583	1521.8418	10286.70	.	.V	.	Q.	.
.							
16.667	1592.6869	10286.70	.	.V	.	Q.	.
.							
16.750	1663.5320	10286.70	.	.V	.	Q.	.
.							
16.833	1750.3419	12604.80	.	.V	.	Q	.
.							
16.917	1837.1519	12604.80	.	.V	.	Q	.
.							
17.000	1923.9618	12604.80	.	.V	.	Q	.
.							
Q. 17.083	2019.5179	13874.75	.	.V	.	.	.
Q. 17.167	2115.0742	13874.75	.	.V	.	.	.
Q. 17.250	2210.6304	13874.75	.	.V	.	.	.
Q. 17.333	2307.2766	14033.05	.	.V	.	.	.
Q. 17.417	2403.9229	14033.05	.	.V	.	.	.
Q. 17.500	2500.5691	14033.05	.	.V.	.	.	.
Q. 17.583	2592.0938	13289.39	.	.V	.	.	.
Q .							

Q	17.667	2683.6184	13289.39	.	.	V	.
.	17.750	2775.1431	13289.39	.	.	V	.
Q	17.833	2857.7205	11990.24	.	.	. V	. Q
.	17.917	2940.2979	11990.24	.	.	. V	. Q
.	18.000	3022.8752	11990.24	.	.	. V	. Q
.	18.083	3093.8372	10303.66	.	.	. V	Q.
.	18.167	3164.7991	10303.66	.	.	. V	Q.
.	18.250	3235.7610	10303.66	.	.	. V	Q.
.	18.333	3295.4690	8669.61	.	.	. QV	.
.	18.417	3355.1770	8669.61	.	.	. Q V	.
.	18.500	3414.8850	8669.61	.	.	. Q V	.
.	18.583	3465.9363	7412.63	.	.	.Q	V .
.	18.667	3516.9875	7412.63	.	.	.Q	V .
.	18.750	3568.0388	7412.63	.	.	.Q	V .
.	18.833	3612.3496	6433.93	.	.	Q .	V .
.	18.917	3656.6604	6433.93	.	.	Q .	V .
.	19.000	3700.9712	6433.93	.	.	Q .	V .
.	19.083	3739.7634	5632.62	.	.	Q	. V.
.	19.167	3778.5557	5632.62	.	.	Q	. V.
.	19.250	3817.3479	5632.62	.	.	Q	. V.
.	19.333	3851.5479	4965.82	.	.	Q	. V
.	19.417	3885.7478	4965.82	.	.	Q	. V
.	19.500	3919.9478	4965.82	.	.	Q	. V
.	19.583	3950.5017	4436.44	.	.	. Q	. V
.	19.667	3981.0557	4436.44	.	.	. Q	. V
.	19.750	4011.6096	4436.44	.	.	. Q	. V

19.833	4039.1924	4005.01	.	.Q	.	.V
.						
19.917	4066.7751	4005.01	.	.Q	.	.V
.						
20.000	4094.3579	4005.01	.	.Q	.	.V
.						
20.083	4119.4775	3647.37	.	Q	.	. V
.						
20.167	4144.5972	3647.37	.	Q	.	. V
.						
20.250	4169.7168	3647.37	.	Q	.	. V
.						
20.333	4192.8052	3352.40	.	Q.	.	. V
.						
20.417	4215.8936	3352.40	.	Q.	.	. V
.						
20.500	4238.9819	3352.40	.	Q.	.	. V
.						
20.583	4260.3774	3106.63	.	Q .	.	. V
.						
20.667	4281.7729	3106.63	.	Q .	.	. V
.						
20.750	4303.1685	3106.63	.	Q .	.	. V
.						
20.833	4323.1367	2899.36	.	Q .	.	. V
.						
20.917	4343.1050	2899.36	.	Q .	.	. V
.						
21.000	4363.0732	2899.36	.	Q .	.	. V
.						
21.083	4381.8301	2723.47	.	Q .	.	. V
.						
21.167	4400.5869	2723.47	.	Q .	.	. V
.						
21.250	4419.3438	2723.47	.	Q .	.	. V
.						
21.333	4437.0654	2573.20	.	Q .	.	. V
.						
21.417	4454.7871	2573.20	.	Q .	.	. V
.						
21.500	4472.5088	2573.20	.	Q .	.	. V
.						
21.583	4489.3530	2445.76	.	Q .	.	. V
.						
21.667	4506.1973	2445.76	.	Q .	.	. V
.						
21.750	4523.0415	2445.76	.	Q .	.	. V
.						
21.833	4539.1382	2337.24	.	Q .	.	. V
.						
21.917	4555.2349	2337.24	.	Q .	.	. V
.						

V .	24.166	4923.3232	1731.97	.	Q	.	.	.
V .	24.250	4935.2515	1731.97	.	Q	.	.	.
V .	24.333	4946.5874	1645.99	.	Q	.	.	.
V .	24.416	4957.9233	1645.99	.	Q	.	.	.
V .	24.500	4969.2593	1645.99	.	Q	.	.	.
V .	24.583	4979.6646	1510.82	.	Q	.	.	.
V .	24.666	4990.0698	1510.82	.	Q	.	.	.
V .	24.750	5000.4751	1510.82	.	Q	.	.	.
V .	24.833	5009.5610	1319.26	.	Q	.	.	.
V .	24.916	5018.6470	1319.26	.	Q	.	.	.
V .	25.000	5027.7329	1319.26	.	Q	.	.	.
V .	25.083	5035.3101	1100.17	.	Q	.	.	.
V .	25.166	5042.8872	1100.17	.	Q	.	.	.
V .	25.250	5050.4644	1100.17	.	Q	.	.	.
V .	25.333	5056.5293	880.63	.	Q	.	.	.
V .	25.416	5062.5942	880.63	.	Q	.	.	.
V .	25.500	5068.6592	880.63	.	Q	.	.	.
V .	25.583	5073.3467	680.64	.	Q	.	.	.
V .	25.666	5078.0342	680.64	.	Q	.	.	.
V .	25.750	5082.7217	680.64	.	Q	.	.	.
V .	25.833	5086.2373	510.49	.	Q	.	.	.
V .	25.916	5089.7529	510.49	.	Q	.	.	.
V .	26.000	5093.2686	510.49	.	Q	.	.	.
V .	26.083	5095.8867	380.15	.	Q	.	.	.
V .	26.166	5098.5049	380.15	.	Q	.	.	.
V .	26.250	5101.1230	380.15	.	Q	.	.	.

V.	26.333	5103.0947	286.27	Q	.	.	.
V.	26.416	5105.0664	286.27	Q	.	.	.
V.	26.500	5107.0381	286.27	Q	.	.	.
V.	26.583	5108.5259	216.02	Q	.	.	.
V.	26.666	5110.0137	216.02	Q	.	.	.
V.	26.750	5111.5015	216.02	Q	.	.	.
V.	26.833	5112.6187	162.18	Q	.	.	.
V.	26.916	5113.7358	162.18	Q	.	.	.
V.	27.000	5114.8530	162.18	Q	.	.	.
V.	27.083	5115.6880	121.26	Q	.	.	.
V.	27.166	5116.5229	121.26	Q	.	.	.
V.	27.250	5117.3579	121.26	Q	.	.	.
V.	27.333	5117.9839	90.89	Q	.	.	.
V.	27.416	5118.6099	90.89	Q	.	.	.
V.	27.500	5119.2358	90.89	Q	.	.	.
V.	27.583	5119.7041	67.98	Q	.	.	.
V.	27.666	5120.1724	67.98	Q	.	.	.
V.	27.750	5120.6406	67.98	Q	.	.	.
V.	27.833	5120.9897	50.68	Q	.	.	.
V.	27.916	5121.3389	50.68	Q	.	.	.
V.	28.000	5121.6880	50.68	Q	.	.	.
V.	28.083	5121.9478	37.70	Q	.	.	.
V.	28.166	5122.2075	37.70	Q	.	.	.
V.	28.250	5122.4673	37.70	Q	.	.	.
V.	28.333	5122.6597	27.90	Q	.	.	.
V.	28.416	5122.8521	27.90	Q	.	.	.

V.	28.500	5123.0444	27.90	Q	.	.	.
V.	28.583	5123.1855	20.49	Q	.	.	.
V.	28.666	5123.3267	20.49	Q	.	.	.
V.	28.750	5123.4678	20.49	Q	.	.	.
V.	28.833	5123.5703	14.91	Q	.	.	.
V.	28.916	5123.6729	14.91	Q	.	.	.
V.	29.000	5123.7754	14.91	Q	.	.	.
V.	29.083	5123.8491	10.73	Q	.	.	.
V.	29.166	5123.9229	10.73	Q	.	.	.
V.	29.250	5123.9966	10.73	Q	.	.	.
V.	29.333	5124.0488	7.62	Q	.	.	.
V.	29.416	5124.1011	7.62	Q	.	.	.
V.	29.500	5124.1533	7.62	Q	.	.	.
V.	29.583	5124.1895	5.26	Q	.	.	.
V.	29.666	5124.2256	5.26	Q	.	.	.
V.	29.750	5124.2617	5.26	Q	.	.	.
V.	29.833	5124.2852	3.37	Q	.	.	.
V.	29.916	5124.3086	3.37	Q	.	.	.
V.	30.000	5124.3320	3.37	Q	.	.	.
V.	30.083	5124.3452	1.93	Q	.	.	.
V.	30.166	5124.3584	1.93	Q	.	.	.
V.	30.250	5124.3716	1.93	Q	.	.	.
V.	30.333	5124.3779	0.93	Q	.	.	.
V.	30.416	5124.3843	0.93	Q	.	.	.
V.	30.500	5124.3906	0.93	Q	.	.	.
V.	30.583	5124.3926	0.29	Q	.	.	.
V							

V	30.666	5124.3945	0.29	Q	.	.	.
V	30.750	5124.3965	0.29	Q	.	.	.
V	30.833	5124.3965	0.00	Q	.	.	.
V	30.916	5124.3965	0.00	Q	.	.	.
V	31.000	5124.3965	0.00	Q	.	.	.

 TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
 (Note: 100% of Peak Flow Rate estimate assumed to have
 an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1590.0
10%	765.0
20%	375.0
30%	255.0
40%	195.0
50%	150.0
60%	120.0
70%	105.0
80%	75.0
90%	45.0

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 END OF FLOODSCx ROUTING ANALYSIS

Appendix E

Pre-Project & Post-Project Hydrology (Project Site) AES 2011 RATSCx Output

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
2003,1985,1981 HYDROLOGY MANUAL
(c) Copyright 1982-2012 Advanced Engineering Software (aes)
Ver. 18.4 Release Date: 07/05/2012 License ID 1395

Analysis prepared by:

FILE NAME: TULEXRAT.DAT
TIME/DATE OF STUDY: 14:47 09/04/2012

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

2003 SAN DIEGO MANUAL CRITERIA

USER SPECIFIED STORM EVENT(YEAR) = 100.00
6-HOUR DURATION PRECIPITATION (INCHES) = 3.750
SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE =
0.85

SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE
ANALYSIS

*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW
MODEL*

MANNING FACTOR NO. (n)	HALF-	CROWN TO	STREET-CROSSFALL:			CURB	GUTTER-GEOMETRIES:		
	WIDTH (FT)	CROSSFALL (FT)	IN- SIDE	/	OUT-/PARK- SIDE/ WAY	HEIGHT (FT)	WIDTH (FT)	LIP (FT)	HIKE (FT)
1	30.0	20.0	0.018	/	0.018/0.020	0.67	2.00	0.0312	0.167

0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
 2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
- *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

FLOW PROCESS FROM NODE 200.00 TO NODE 201.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3965.00
DOWNSTREAM ELEVATION(FEET) = 3960.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.316
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.116
SUBAREA RUNOFF(CFS) = 0.20
TOTAL AREA(ACRES) = 0.09 TOTAL RUNOFF(CFS) = 0.20

FLOW PROCESS FROM NODE 201.00 TO NODE 202.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 5007.00
REPRESENTATIVE CHANNEL SLOPE = 0.1280
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.816
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 168.57
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.07
AVERAGE FLOW DEPTH(FEET) = 1.35 TRAVEL TIME(MIN.) = 6.92
Tc(MIN.) = 15.23

SUBAREA AREA(ACRES) = 219.33 SUBAREA RUNOFF(CFS) = 327.47
AREA-AVERAGE RUNOFF COEFFICIENT = 0.310
TOTAL AREA(ACRES) = 219.4 PEAK FLOW RATE(CFS) =
327.61

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.84 FLOW VELOCITY(FEET/SEC.) = 14.39
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 202.00 = 5107.00
FEET.

FLOW PROCESS FROM NODE 202.00 TO NODE 203.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 2181.00
REPRESENTATIVE CHANNEL SLOPE = 0.0170
CHANNEL BASE(FEET) = 10.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.993
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 408.49
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.08
AVERAGE FLOW DEPTH(FEET) = 2.75 TRAVEL TIME(MIN.) = 5.14
Tc(MIN.) = 20.37
SUBAREA AREA(ACRES) = 130.46 SUBAREA RUNOFF(CFS) = 161.49
AREA-AVERAGE RUNOFF COEFFICIENT = 0.310
TOTAL AREA(ACRES) = 349.9 PEAK FLOW RATE(CFS) =
433.10

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.83 FLOW VELOCITY(FEET/SEC.) = 7.19
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 203.00 = 7288.00
FEET.

FLOW PROCESS FROM NODE 203.00 TO NODE 204.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3093.00
REPRESENTATIVE CHANNEL SLOPE = 0.0320
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.426
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 469.40
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.44
AVERAGE FLOW DEPTH(FEET) = 2.96 TRAVEL TIME(MIN.) = 5.46
Tc(MIN.) = 25.83
SUBAREA AREA(ACRES) = 68.33 SUBAREA RUNOFF(CFS) = 72.57
AREA-AVERAGE RUNOFF COEFFICIENT = 0.310
TOTAL AREA(ACRES) = 418.2 PEAK FLOW RATE(CFS) =

444.16

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.89 FLOW VELOCITY(FEET/SEC.) = 9.30
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 204.00 = 10381

FLOW PROCESS FROM NODE 300.00 TO NODE 301.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3400
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3725.00
DOWNSTREAM ELEVATION(FEET) = 3720.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.001
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.296
SUBAREA RUNOFF(CFS) = 0.99
TOTAL AREA(ACRES) = 0.40 TOTAL RUNOFF(CFS) = 0.99

FLOW PROCESS FROM NODE 301.00 TO NODE 302.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 4218.00
REPRESENTATIVE CHANNEL SLOPE = 0.0430
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.841
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3400
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 31.95
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.16
AVERAGE FLOW DEPTH(FEET) = 0.77 TRAVEL TIME(MIN.) = 13.63
Tc(MIN.) = 21.63
SUBAREA AREA(ACRES) = 44.57 SUBAREA RUNOFF(CFS) = 58.21
AREA-AVERAGE RUNOFF COEFFICIENT = 0.340
TOTAL AREA(ACRES) = 45.0 PEAK FLOW RATE(CFS) =

58.73

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.05 FLOW VELOCITY(FEET/SEC.) = 6.10
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 302.00 = 4318.00
FEET.

FLOW PROCESS FROM NODE 400.00 TO NODE 401.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3685.00
DOWNSTREAM ELEVATION(FEET) = 3680.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.316
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.116
SUBAREA RUNOFF(CFS) = 0.44
TOTAL AREA(ACRES) = 0.20 TOTAL RUNOFF(CFS) = 0.44

FLOW PROCESS FROM NODE 401.00 TO NODE 402.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 2110.00
REPRESENTATIVE CHANNEL SLOPE = 0.0510
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.620
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15.24
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.43
AVERAGE FLOW DEPTH(FEET) = 0.49 TRAVEL TIME(MIN.) = 7.93
Tc(MIN.) = 16.25
SUBAREA AREA(ACRES) = 19.95 SUBAREA RUNOFF(CFS) = 28.57
AREA-AVERAGE RUNOFF COEFFICIENT = 0.310
TOTAL AREA(ACRES) = 20.2 PEAK FLOW RATE(CFS) =
28.86

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.70 FLOW VELOCITY(FEET/SEC.) = 5.31
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 402.00 = 2210.00
FEET.

FLOW PROCESS FROM NODE 500.00 TO NODE 501.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2700
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3685.00
DOWNSTREAM ELEVATION(FEET) = 3680.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.737
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.893
SUBAREA RUNOFF(CFS) = 0.26
TOTAL AREA(ACRES) = 0.14 TOTAL RUNOFF(CFS) = 0.26

FLOW PROCESS FROM NODE 501.00 TO NODE 502.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 1153.00
REPRESENTATIVE CHANNEL SLOPE = 0.0900
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.353
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2700
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 9.32
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.58
AVERAGE FLOW DEPTH(FEET) = 0.32 TRAVEL TIME(MIN.) = 4.19
Tc(MIN.) = 12.93
SUBAREA AREA(ACRES) = 12.36 SUBAREA RUNOFF(CFS) = 17.86
AREA-AVERAGE RUNOFF COEFFICIENT = 0.270
TOTAL AREA(ACRES) = 12.5 PEAK FLOW RATE(CFS) =
18.07

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.47 FLOW VELOCITY(FEET/SEC.) = 5.61
LONGEST FLOWPATH FROM NODE 500.00 TO NODE 502.00 = 1253.00
FEET.

FLOW PROCESS FROM NODE 600.00 TO NODE 601.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2800
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3770.00
DOWNSTREAM ELEVATION(FEET) = 3765.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.632
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.947

SUBAREA RUNOFF(CFS) = 0.31
TOTAL AREA(ACRES) = 0.16 TOTAL RUNOFF(CFS) = 0.31

FLOW PROCESS FROM NODE 601.00 TO NODE 602.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3984.00
REPRESENTATIVE CHANNEL SLOPE = 0.0400
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.008
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2800
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 50.62
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.72
AVERAGE FLOW DEPTH(FEET) = 0.99 TRAVEL TIME(MIN.) = 11.62
Tc(MIN.) = 20.25
SUBAREA AREA(ACRES) = 85.34 SUBAREA RUNOFF(CFS) = 95.78
AREA-AVERAGE RUNOFF COEFFICIENT = 0.280
TOTAL AREA(ACRES) = 85.5 PEAK FLOW RATE(CFS) =
95.96

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.36 FLOW VELOCITY(FEET/SEC.) = 6.80
LONGEST FLOWPATH FROM NODE 600.00 TO NODE 602.00 = 4084.00
FEET.

FLOW PROCESS FROM NODE 602.00 TO NODE 603.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 1171.00
REPRESENTATIVE CHANNEL SLOPE = 0.0800
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.415

*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2800
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 103.80
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.97
AVERAGE FLOW DEPTH(FEET) = 1.19 TRAVEL TIME(MIN.) = 5.71
Tc(MIN.) = 25.96
SUBAREA AREA(ACRES) = 16.40 SUBAREA RUNOFF(CFS) = 15.68
AREA-AVERAGE RUNOFF COEFFICIENT = 0.280
TOTAL AREA(ACRES) = 101.9 PEAK FLOW RATE(CFS) =
97.43

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.15 FLOW VELOCITY(FEET/SEC.) = 8.77
LONGEST FLOWPATH FROM NODE 600.00 TO NODE 603.00 = 7158.00
FEET.

FLOW PROCESS FROM NODE 700.00 TO NODE 701.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 4320.00
DOWNSTREAM ELEVATION(FEET) = 4310.00
ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 7.102
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc
CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.879
SUBAREA RUNOFF(CFS) = 0.20
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.20

FLOW PROCESS FROM NODE 701.00 TO NODE 702.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 4039.00
 REPRESENTATIVE CHANNEL SLOPE = 0.0780
 CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.616
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2500
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 52.40
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.34
 AVERAGE FLOW DEPTH(FEET) = 0.85 TRAVEL TIME(MIN.) = 9.17
 Tc(MIN.) = 16.27
 SUBAREA AREA(ACRES) = 86.31 SUBAREA RUNOFF(CFS) = 99.60
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
 TOTAL AREA(ACRES) = 86.4 PEAK FLOW RATE(CFS) =
 99.72

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 1.17 FLOW VELOCITY(FEET/SEC.) = 8.78
 LONGEST FLOWPATH FROM NODE 700.00 TO NODE 702.00 = 4139.00
 FEET.

FLOW PROCESS FROM NODE 702.00 TO NODE 703.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3902.00
 REPRESENTATIVE CHANNEL SLOPE = 0.0600
 CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.716
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2500
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 235.86
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.01
 AVERAGE FLOW DEPTH(FEET) = 1.88 TRAVEL TIME(MIN.) = 6.50
 Tc(MIN.) = 22.77
 SUBAREA AREA(ACRES) = 291.35 SUBAREA RUNOFF(CFS) = 270.69
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
 TOTAL AREA(ACRES) = 377.8 PEAK FLOW RATE(CFS) =
 350.97

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 2.26 FLOW VELOCITY(FEET/SEC.) = 11.05

LONGEST FLOWPATH FROM NODE 700.00 TO NODE 703.00 = 8041.00 FEET.

FLOW PROCESS FROM NODE 703.00 TO NODE 704.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3507.00
REPRESENTATIVE CHANNEL SLOPE = 0.0290
CHANNEL BASE(FEET) = 10.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.157
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 466.35
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.92
AVERAGE FLOW DEPTH(FEET) = 2.58 TRAVEL TIME(MIN.) = 6.55
Tc(MIN.) = 29.32
SUBAREA AREA(ACRES) = 291.90 SUBAREA RUNOFF(CFS) = 230.37
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 669.7 PEAK FLOW RATE(CFS) =
528.49

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.74 FLOW VELOCITY(FEET/SEC.) = 9.22
LONGEST FLOWPATH FROM NODE 700.00 TO NODE 704.00 = 11548.00 FEET.

FLOW PROCESS FROM NODE 704.00 TO NODE 705.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3074.00
REPRESENTATIVE CHANNEL SLOPE = 0.0280
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.827

*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 551.39
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.36
AVERAGE FLOW DEPTH(FEET) = 3.26 TRAVEL TIME(MIN.) = 5.47
Tc(MIN.) = 34.80
SUBAREA AREA(ACRES) = 64.78 SUBAREA RUNOFF(CFS) = 45.78
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 734.4 PEAK FLOW RATE(CFS) =
682.49

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 3.21 FLOW VELOCITY(FEET/SEC.) = 9.24
LONGEST FLOWPATH FROM NODE 700.00 TO NODE 705.00 = 14622.00
FEET.

FLOW PROCESS FROM NODE 800.00 TO NODE 801.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2400
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3805.00
DOWNSTREAM ELEVATION(FEET) = 3800.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 9.053
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.737
SUBAREA RUNOFF(CFS) = 0.16
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.16

FLOW PROCESS FROM NODE 801.00 TO NODE 802.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 4472.00
REPRESENTATIVE CHANNEL SLOPE = 0.0540

CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.823
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2400
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 37.62
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.85
AVERAGE FLOW DEPTH(FEET) = 0.79 TRAVEL TIME(MIN.) = 12.74
Tc(MIN.) = 21.80
SUBAREA AREA(ACRES) = 77.38 SUBAREA RUNOFF(CFS) = 70.99
AREA-AVERAGE RUNOFF COEFFICIENT = 0.240
TOTAL AREA(ACRES) = 77.5 PEAK FLOW RATE(CFS) =
71.08

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.09 FLOW VELOCITY(FEET/SEC.) = 6.98
LONGEST FLOWPATH FROM NODE 800.00 TO NODE 802.00 = 4572.00
FEET.

FLOW PROCESS FROM NODE 900.00 TO NODE 901.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2400
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3725.00
DOWNSTREAM ELEVATION(FEET) = 3720.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 9.053
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.737
SUBAREA RUNOFF(CFS) = 0.16
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.16

FLOW PROCESS FROM NODE 901.00 TO NODE 902.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 2848.00
REPRESENTATIVE CHANNEL SLOPE = 0.0600
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.499
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2400
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 36.32
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.03
AVERAGE FLOW DEPTH(FEET) = 0.75 TRAVEL TIME(MIN.) = 7.88
Tc(MIN.) = 16.93
SUBAREA AREA(ACRES) = 65.00 SUBAREA RUNOFF(CFS) = 70.19
AREA-AVERAGE RUNOFF COEFFICIENT = 0.240
TOTAL AREA(ACRES) = 65.1 PEAK FLOW RATE(CFS) =

70.29

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.06 FLOW VELOCITY(FEET/SEC.) = 7.22
LONGEST FLOWPATH FROM NODE 900.00 TO NODE 902.00 = 2948.00
FEET.

FLOW PROCESS FROM NODE 1000.00 TO NODE 1001.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2400
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 4080.00
DOWNSTREAM ELEVATION(FEET) = 4075.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 9.053
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.737
SUBAREA RUNOFF(CFS) = 0.16
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.16

FLOW PROCESS FROM NODE 1001.00 TO NODE 1002.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3953.00
REPRESENTATIVE CHANNEL SLOPE = 0.0710
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.092
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2400
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 33.49
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.24
AVERAGE FLOW DEPTH(FEET) = 0.69 TRAVEL TIME(MIN.) = 10.56
Tc(MIN.) = 19.62
SUBAREA AREA(ACRES) = 64.96 SUBAREA RUNOFF(CFS) = 63.79
AREA-AVERAGE RUNOFF COEFFICIENT = 0.240
TOTAL AREA(ACRES) = 65.1 PEAK FLOW RATE(CFS) =
63.89

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.96 FLOW VELOCITY(FEET/SEC.) = 7.48
LONGEST FLOWPATH FROM NODE 1000.00 TO NODE 1002.00 = 4053.00
FEET.

FLOW PROCESS FROM NODE 1002.00 TO NODE 1003.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3963.00
REPRESENTATIVE CHANNEL SLOPE = 0.0410
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.297
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2400
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 214.05
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.47
AVERAGE FLOW DEPTH(FEET) = 1.97 TRAVEL TIME(MIN.) = 7.80
Tc(MIN.) = 27.42

SUBAREA AREA(ACRES) = 377.01 SUBAREA RUNOFF(CFS) = 298.30
AREA-AVERAGE RUNOFF COEFFICIENT = 0.240
TOTAL AREA(ACRES) = 442.1 PEAK FLOW RATE(CFS) =
349.78

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.46 FLOW VELOCITY(FEET/SEC.) = 9.58
LONGEST FLOWPATH FROM NODE 1000.00 TO NODE 1003.00 = 8016.00
FEET.

FLOW PROCESS FROM NODE 1003.00 TO NODE 1004.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3141.00
REPRESENTATIVE CHANNEL SLOPE = 0.0370
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.932
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2400
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 398.00
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.57
AVERAGE FLOW DEPTH(FEET) = 2.66 TRAVEL TIME(MIN.) = 5.47
Tc(MIN.) = 32.89
SUBAREA AREA(ACRES) = 137.04 SUBAREA RUNOFF(CFS) = 96.42
AREA-AVERAGE RUNOFF COEFFICIENT = 0.240
TOTAL AREA(ACRES) = 579.1 PEAK FLOW RATE(CFS) =
407.47

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.69 FLOW VELOCITY(FEET/SEC.) = 9.61
LONGEST FLOWPATH FROM NODE 1000.00 TO NODE 1004.00 = 11157.00
FEET.

FLOW PROCESS FROM NODE 1100.00 TO NODE 1101.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3760.00
DOWNSTREAM ELEVATION(FEET) = 3755.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.948
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.788
SUBAREA RUNOFF(CFS) = 0.12
TOTAL AREA(ACRES) = 0.07 TOTAL RUNOFF(CFS) = 0.12

FLOW PROCESS FROM NODE 1101.00 TO NODE 1102.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3318.00
REPRESENTATIVE CHANNEL SLOPE = 0.0350
CHANNEL BASE(FEET) = 2.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.169
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 46.28
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.47
AVERAGE FLOW DEPTH(FEET) = 1.23 TRAVEL TIME(MIN.) = 10.11
Tc(MIN.) = 19.05
SUBAREA AREA(ACRES) = 85.23 SUBAREA RUNOFF(CFS) = 88.82
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 85.3 PEAK FLOW RATE(CFS) =

88.90

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.62 FLOW VELOCITY(FEET/SEC.) = 6.46
LONGEST FLOWPATH FROM NODE 1100.00 TO NODE 1102.00 = 3418.00
FEET.

FLOW PROCESS FROM NODE 1102.00 TO NODE 1103.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3083.00
REPRESENTATIVE CHANNEL SLOPE = 0.0230
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.261
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 115.83
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.82
AVERAGE FLOW DEPTH(FEET) = 1.69 TRAVEL TIME(MIN.) = 8.82
Tc(MIN.) = 27.88
SUBAREA AREA(ACRES) = 65.86 SUBAREA RUNOFF(CFS) = 53.70
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 151.2 PEAK FLOW RATE(CFS) =
123.25

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.74 FLOW VELOCITY(FEET/SEC.) = 5.91
LONGEST FLOWPATH FROM NODE 1100.00 TO NODE 1103.00 = 6501.00
FEET.

FLOW PROCESS FROM NODE 1200.00 TO NODE 1201.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3760.00
DOWNSTREAM ELEVATION(FEET) = 3755.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.948
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.788
SUBAREA RUNOFF(CFS) = 0.17
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.17

FLOW PROCESS FROM NODE 1201.00 TO NODE 1202.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3637.00
REPRESENTATIVE CHANNEL SLOPE = 0.0650
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.411
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 59.46
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.12
AVERAGE FLOW DEPTH(FEET) = 0.95 TRAVEL TIME(MIN.) = 8.51
Tc(MIN.) = 17.46
SUBAREA AREA(ACRES) = 104.02 SUBAREA RUNOFF(CFS) = 114.71
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 104.1 PEAK FLOW RATE(CFS) =
114.82

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.32 FLOW VELOCITY(FEET/SEC.) = 8.51
LONGEST FLOWPATH FROM NODE 1200.00 TO NODE 1202.00 = 3737.00
FEET.

FLOW PROCESS FROM NODE 1300.00 TO NODE 1301.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3765.00
DOWNSTREAM ELEVATION(FEET) = 3760.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.948
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.788

SUBAREA RUNOFF(CFS) = 0.14
TOTAL AREA(ACRES) = 0.08 TOTAL RUNOFF(CFS) = 0.14

FLOW PROCESS FROM NODE 1301.00 TO NODE 1302.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 2124.00
REPRESENTATIVE CHANNEL SLOPE = 0.0770
CHANNEL BASE(FEET) = 2.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.652
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 10.59
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.97
AVERAGE FLOW DEPTH(FEET) = 0.52 TRAVEL TIME(MIN.) = 7.13
Tc(MIN.) = 16.07
SUBAREA AREA(ACRES) = 17.49 SUBAREA RUNOFF(CFS) = 20.34
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 17.6 PEAK FLOW RATE(CFS) =
20.43

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.71 FLOW VELOCITY(FEET/SEC.) = 5.91
LONGEST FLOWPATH FROM NODE 1300.00 TO NODE 1302.00 = 2224.00
FEET.

FLOW PROCESS FROM NODE 1302.00 TO NODE 1303.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 1851.00
REPRESENTATIVE CHANNEL SLOPE = 0.0450
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.814

*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 34.21
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.32
AVERAGE FLOW DEPTH(FEET) = 0.79 TRAVEL TIME(MIN.) = 5.80
Tc(MIN.) = 21.87
SUBAREA AREA(ACRES) = 28.77 SUBAREA RUNOFF(CFS) = 27.43
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 46.3 PEAK FLOW RATE(CFS) =
44.18

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.90 FLOW VELOCITY(FEET/SEC.) = 5.73
LONGEST FLOWPATH FROM NODE 1300.00 TO NODE 1303.00 = 4075.00
FEET.

FLOW PROCESS FROM NODE 1400.00 TO NODE 1401.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3775.00
DOWNSTREAM ELEVATION(FEET) = 3770.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.948
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.788
SUBAREA RUNOFF(CFS) = 1.02
TOTAL AREA(ACRES) = 0.60 TOTAL RUNOFF(CFS) = 1.02

FLOW PROCESS FROM NODE 1401.00 TO NODE 1402.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 1940.00
REPRESENTATIVE CHANNEL SLOPE = 0.1080

CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.721
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2500
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.44
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.78
 AVERAGE FLOW DEPTH(FEET) = 0.29 TRAVEL TIME(MIN.) = 6.76
 Tc(MIN.) = 15.71
 SUBAREA AREA(ACRES) = 12.30 SUBAREA RUNOFF(CFS) = 14.52
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
 TOTAL AREA(ACRES) = 12.9 PEAK FLOW RATE(CFS) =
 15.23

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.40 FLOW VELOCITY(FEET/SEC.) = 5.74
 LONGEST FLOWPATH FROM NODE 1400.00 TO NODE 1402.00 = 2040.00
 FEET.

FLOW PROCESS FROM NODE 1402.00 TO NODE 1403.00 IS CODE = 51

 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
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CHANNEL LENGTH THRU SUBAREA(FEET) = 2522.00
 REPRESENTATIVE CHANNEL SLOPE = 0.0250
 CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.531
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .2500
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 46.74
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.70
 AVERAGE FLOW DEPTH(FEET) = 1.07 TRAVEL TIME(MIN.) = 8.94
 Tc(MIN.) = 24.65
 SUBAREA AREA(ACRES) = 70.50 SUBAREA RUNOFF(CFS) = 62.23
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
 TOTAL AREA(ACRES) = 83.4 PEAK FLOW RATE(CFS) =
 73.61

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 1.34 FLOW VELOCITY(FEET/SEC.) = 5.31
 LONGEST FLOWPATH FROM NODE 1400.00 TO NODE 1403.00 = 4562.00
 FEET.

FLOW PROCESS FROM NODE 1500.00 TO NODE 1501.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3680.00
DOWNSTREAM ELEVATION(FEET) = 3675.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.948
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.788
SUBAREA RUNOFF(CFS) = 0.24
TOTAL AREA(ACRES) = 0.14 TOTAL RUNOFF(CFS) = 0.24

FLOW PROCESS FROM NODE 1501.00 TO NODE 1502.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 4451.00
REPRESENTATIVE CHANNEL SLOPE = 0.0400
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.702
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 38.54
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.32
AVERAGE FLOW DEPTH(FEET) = 0.86 TRAVEL TIME(MIN.) = 13.96
Tc(MIN.) = 22.90
SUBAREA AREA(ACRES) = 78.23 SUBAREA RUNOFF(CFS) = 72.41
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 78.4 PEAK FLOW RATE(CFS) =

72.54

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.19 FLOW VELOCITY(FEET/SEC.) = 6.28
LONGEST FLOWPATH FROM NODE 1500.00 TO NODE 1502.00 = 4551.00
FEET.

FLOW PROCESS FROM NODE 1600.00 TO NODE 1601.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3600.00
DOWNSTREAM ELEVATION(FEET) = 3595.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.948
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.788
SUBAREA RUNOFF(CFS) = 0.17
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.17

FLOW PROCESS FROM NODE 1601.00 TO NODE 1602.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 1580.00
REPRESENTATIVE CHANNEL SLOPE = 0.0620
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.842
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 11.01
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.28
AVERAGE FLOW DEPTH(FEET) = 0.39 TRAVEL TIME(MIN.) = 6.16
Tc(MIN.) = 15.11
SUBAREA AREA(ACRES) = 17.51 SUBAREA RUNOFF(CFS) = 21.20
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250

TOTAL AREA(ACRES) = 17.6 PEAK FLOW RATE(CFS) = 21.32

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.56 FLOW VELOCITY(FEET/SEC.) = 5.24
LONGEST FLOWPATH FROM NODE 1600.00 TO NODE 1602.00 = 1680.00 FEET.

FLOW PROCESS FROM NODE 1700.00 TO NODE 1701.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3605.00
DOWNSTREAM ELEVATION(FEET) = 3600.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.948
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.788
SUBAREA RUNOFF(CFS) = 0.34
TOTAL AREA(ACRES) = 0.20 TOTAL RUNOFF(CFS) = 0.34

FLOW PROCESS FROM NODE 1701.00 TO NODE 1702.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 1768.00
REPRESENTATIVE CHANNEL SLOPE = 0.0560
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.699
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 12.18
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.28
AVERAGE FLOW DEPTH(FEET) = 0.42 TRAVEL TIME(MIN.) = 6.88

Tc(MIN.) = 15.83
SUBAREA AREA(ACRES) = 19.66 SUBAREA RUNOFF(CFS) = 23.10
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 19.9 PEAK FLOW RATE(CFS) =
23.33

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.61 FLOW VELOCITY(FEET/SEC.) = 5.17
LONGEST FLOWPATH FROM NODE 1700.00 TO NODE 1702.00 = 1868.00
FEET.

FLOW PROCESS FROM NODE 1800.00 TO NODE 1801.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3840.00
DOWNSTREAM ELEVATION(FEET) = 3835.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.948
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.788
SUBAREA RUNOFF(CFS) = 0.51
TOTAL AREA(ACRES) = 0.30 TOTAL RUNOFF(CFS) = 0.51

FLOW PROCESS FROM NODE 1801.00 TO NODE 1802.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3730.00
REPRESENTATIVE CHANNEL SLOPE = 0.0630
CHANNEL BASE(FEET) = 2.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.036
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 21.83
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.61
AVERAGE FLOW DEPTH(FEET) = 0.77 TRAVEL TIME(MIN.) = 11.09
Tc(MIN.) = 20.04
SUBAREA AREA(ACRES) = 40.49 SUBAREA RUNOFF(CFS) = 40.85
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 40.8 PEAK FLOW RATE(CFS) =
41.16

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.03 FLOW VELOCITY(FEET/SEC.) = 6.58
LONGEST FLOWPATH FROM NODE 1800.00 TO NODE 1802.00 = 3830.00
FEET.

FLOW PROCESS FROM NODE 1802.00 TO NODE 1803.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3230.00
REPRESENTATIVE CHANNEL SLOPE = 0.0300
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.112
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 60.84
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.41
AVERAGE FLOW DEPTH(FEET) = 1.16 TRAVEL TIME(MIN.) = 9.95
Tc(MIN.) = 29.99
SUBAREA AREA(ACRES) = 50.37 SUBAREA RUNOFF(CFS) = 39.18
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 91.2 PEAK FLOW RATE(CFS) =
70.91

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.26 FLOW VELOCITY(FEET/SEC.) = 5.63
LONGEST FLOWPATH FROM NODE 1800.00 TO NODE 1803.00 = 7060.00
FEET.

FLOW PROCESS FROM NODE 1900.00 TO NODE 1901.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3840.00
DOWNSTREAM ELEVATION(FEET) = 3835.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.948
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.788
SUBAREA RUNOFF(CFS) = 0.51
TOTAL AREA(ACRES) = 0.30 TOTAL RUNOFF(CFS) = 0.51

FLOW PROCESS FROM NODE 1901.00 TO NODE 1902.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 2521.00
REPRESENTATIVE CHANNEL SLOPE = 0.0870
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.858
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 36.95
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.91
AVERAGE FLOW DEPTH(FEET) = 0.69 TRAVEL TIME(MIN.) = 6.08
Tc(MIN.) = 15.03
SUBAREA AREA(ACRES) = 58.73 SUBAREA RUNOFF(CFS) = 71.33
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 59.0 PEAK FLOW RATE(CFS) =

71.69

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.97 FLOW VELOCITY(FEET/SEC.) = 8.30
LONGEST FLOWPATH FROM NODE 1900.00 TO NODE 1902.00 = 2621.00
FEET.

FLOW PROCESS FROM NODE 1902.00 TO NODE 1903.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3455.00
REPRESENTATIVE CHANNEL SLOPE = 0.0320
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.593
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 106.60
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.42
AVERAGE FLOW DEPTH(FEET) = 1.51 TRAVEL TIME(MIN.) = 8.97
Tc(MIN.) = 24.00
SUBAREA AREA(ACRES) = 77.19 SUBAREA RUNOFF(CFS) = 69.33
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 136.2 PEAK FLOW RATE(CFS) =
122.35

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.61 FLOW VELOCITY(FEET/SEC.) = 6.67
LONGEST FLOWPATH FROM NODE 1900.00 TO NODE 1903.00 = 6076.00
FEET.

FLOW PROCESS FROM NODE 2000.00 TO NODE 2001.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 4000.00
DOWNSTREAM ELEVATION(FEET) = 3995.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.948
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.788

SUBAREA RUNOFF(CFS) = 0.17
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.17

FLOW PROCESS FROM NODE 2001.00 TO NODE 2002.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 2594.00
REPRESENTATIVE CHANNEL SLOPE = 0.0540
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.429
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 23.92
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.15
AVERAGE FLOW DEPTH(FEET) = 0.62 TRAVEL TIME(MIN.) = 8.40
Tc(MIN.) = 17.35
SUBAREA AREA(ACRES) = 41.52 SUBAREA RUNOFF(CFS) = 45.98
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 41.6 PEAK FLOW RATE(CFS) =
46.09

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.87 FLOW VELOCITY(FEET/SEC.) = 6.20
LONGEST FLOWPATH FROM NODE 2000.00 TO NODE 2002.00 = 2694.00
FEET.

FLOW PROCESS FROM NODE 2002.00 TO NODE 2003.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 4073.00
REPRESENTATIVE CHANNEL SLOPE = 0.0550
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.502

*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 173.09
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.91
AVERAGE FLOW DEPTH(FEET) = 1.67 TRAVEL TIME(MIN.) = 7.62
Tc(MIN.) = 24.97
SUBAREA AREA(ACRES) = 287.58 SUBAREA RUNOFF(CFS) = 251.77
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 329.2 PEAK FLOW RATE(CFS) =
288.21

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.11 FLOW VELOCITY(FEET/SEC.) = 10.17
LONGEST FLOWPATH FROM NODE 2000.00 TO NODE 2003.00 = 6767.00
FEET.

FLOW PROCESS FROM NODE 2003.00 TO NODE 2004.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 3980.00
REPRESENTATIVE CHANNEL SLOPE = 0.0360
CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.972
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 353.01
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.18
AVERAGE FLOW DEPTH(FEET) = 2.54 TRAVEL TIME(MIN.) = 7.22
Tc(MIN.) = 32.19
SUBAREA AREA(ACRES) = 174.24 SUBAREA RUNOFF(CFS) = 129.48
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 503.4 PEAK FLOW RATE(CFS) =
374.11

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.61 FLOW VELOCITY(FEET/SEC.) = 9.31
LONGEST FLOWPATH FROM NODE 2000.00 TO NODE 2004.00 = 10747.00
FEET.

FLOW PROCESS FROM NODE 2100.00 TO NODE 2101.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

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*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 3690.00
DOWNSTREAM ELEVATION(FEET) = 3685.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.948
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.788
SUBAREA RUNOFF(CFS) = 0.22
TOTAL AREA(ACRES) = 0.13 TOTAL RUNOFF(CFS) = 0.22

FLOW PROCESS FROM NODE 2101.00 TO NODE 2102.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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CHANNEL LENGTH THRU SUBAREA(FEET) = 1727.00
REPRESENTATIVE CHANNEL SLOPE = 0.0580
CHANNEL BASE(FEET) = 2.00 "Z" FACTOR = 4.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.592
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.90
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.86
AVERAGE FLOW DEPTH(FEET) = 0.42 TRAVEL TIME(MIN.) = 7.45
Tc(MIN.) = 16.40
SUBAREA AREA(ACRES) = 9.65 SUBAREA RUNOFF(CFS) = 11.08
AREA-AVERAGE RUNOFF COEFFICIENT = 0.250
TOTAL AREA(ACRES) = 9.8 PEAK FLOW RATE(CFS) =

11.23

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.58 FLOW VELOCITY(FEET/SEC.) = 4.54

LONGEST FLOWPATH FROM NODE 2100.00 TO NODE 2102.00 = 1827.00
FEET.

=====
=====

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 9.8 TC(MIN.) = 16.40

PEAK FLOW RATE(CFS) = 11.23

=====
=====

=====
=====

END OF RATIONAL METHOD ANALYSIS

Appendix F

Post-Project Watershed (Tule Creek) C Calculations

PRELIMINARY HYDROLOGY AND DRAINAGE STUDY
RUGGED ACRES SOLAR FARM

Post-Project Soil Type Areas for Tule Creek

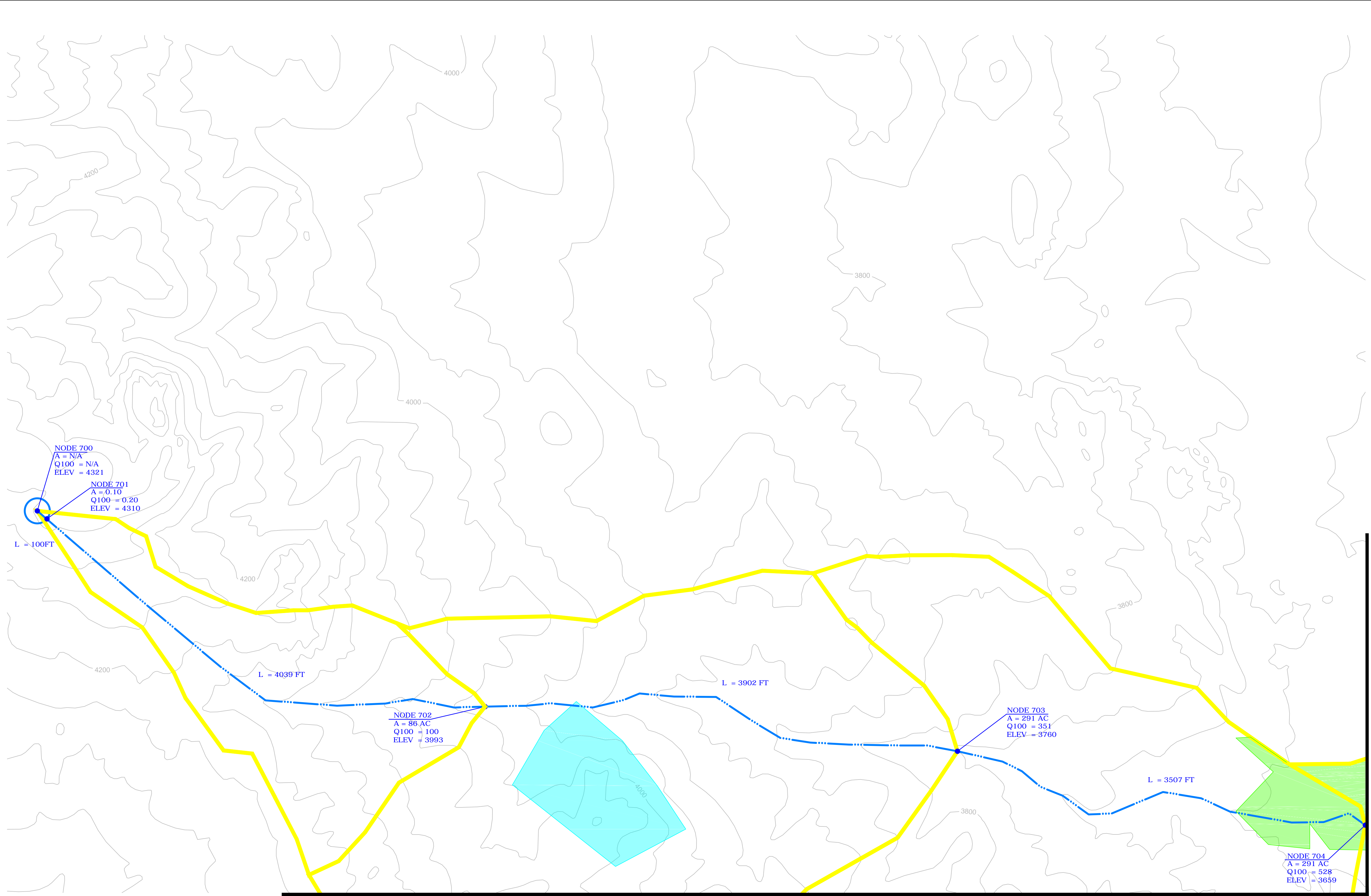
Sub Basins Area (ft ²)	Soil Type - Area 100				
	A	B	C	D	IMP
1	87631401	0	17697306	24105750	130680
2					
3					
4					
5					
6					
7					
Sub Basin Total Area		676102604			
Total Area (ft²)	87631401	570643217	17697306	24105750	130680
Total Area (acres)	2011.74	13100.17	406.27	553.39	3.00
Total Sub Basin Drainage Area (acres)	15521.18				
Percentage of Total	12.96%	84.40%	2.62%	3.57%	0.02%
CN for Desert Shrub (Fair)	55	72	81	86	1
Watershed Weighted CN	70				
Adjusted PZN for Q100 (Table 4-10)	79				

PZN (Figure C-1) 3.5
PZN Adjustment Factor (Table 4-6, Page 4-20) 2.5

Appendix G

Proposed Hydrology Map – Project Site Post-Project Watershed (Project Site) Sub-Area C Calculations

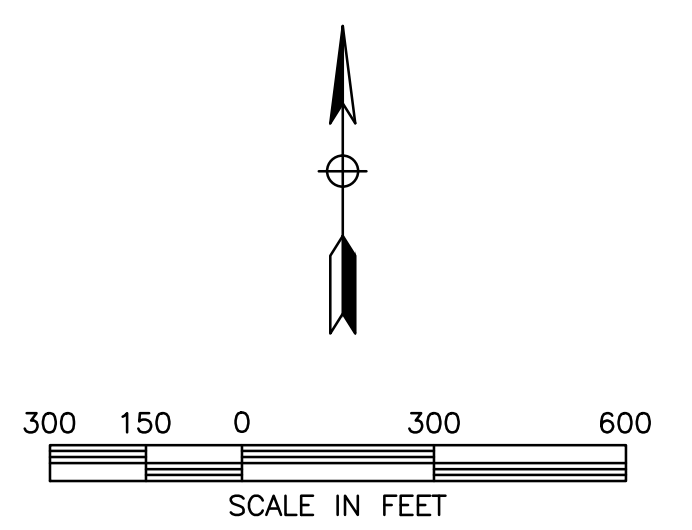
Proposed Roadway Crossing Calculations



- LEGEND**
- PROPOSED DRAINAGE BASIN
 - EXISTING DRAINAGE COURSE
 - SOIL A
 - SOIL B, ALL OTHER PROJECT AREAS
 - SOIL C
 - SOIL D
 - DIP CROSSING
 - PROPERTY BOUNDARY

MATCHLINE - SEE FIGURE 4C

MATCHLINE - SEE FIGURE 4B



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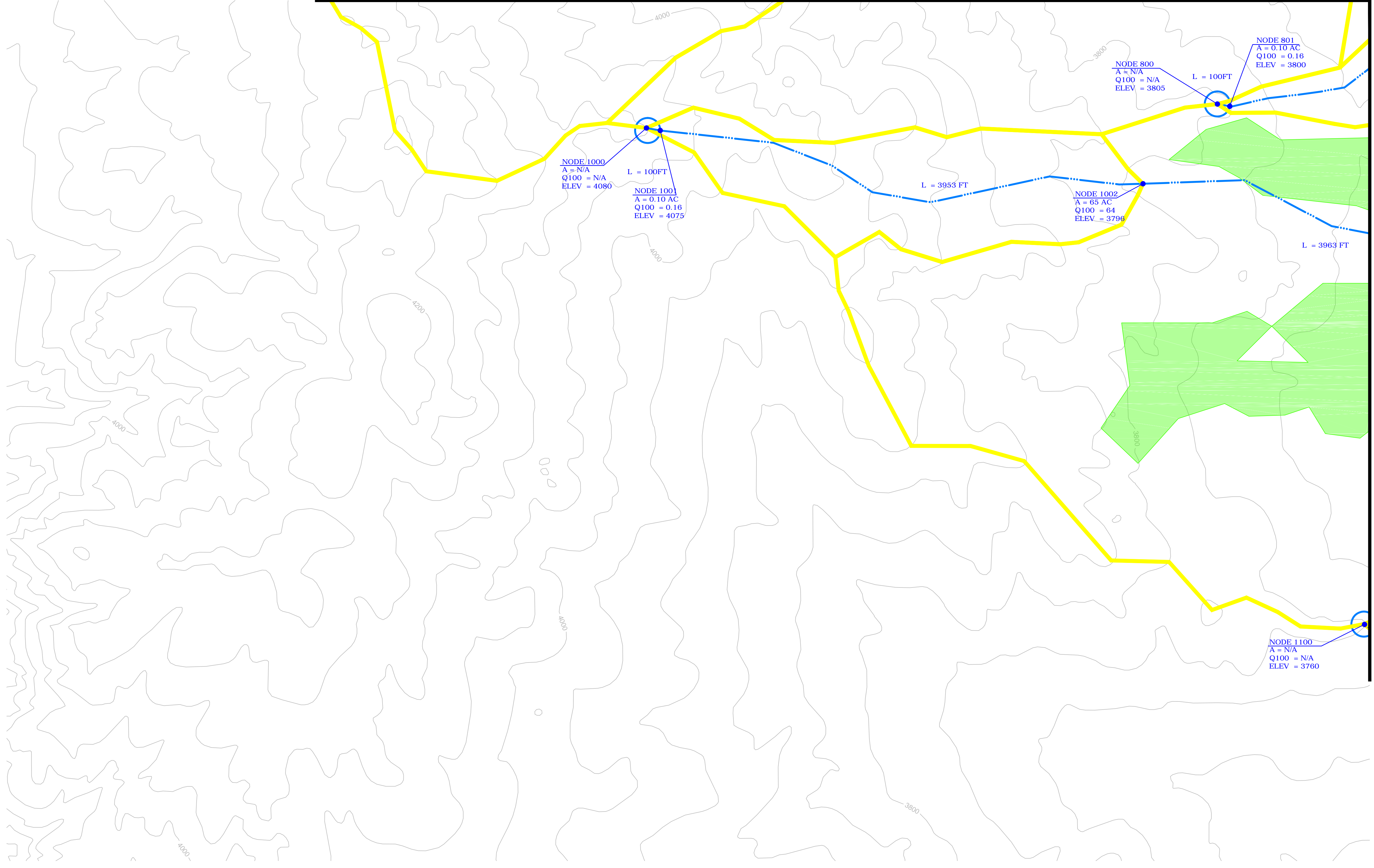
**RUGGED ACRES
 PROJECT SITE DRAINAGE BASIN**

PROPOSED HYDROLOGY

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 PROJECT NO.
 60212653

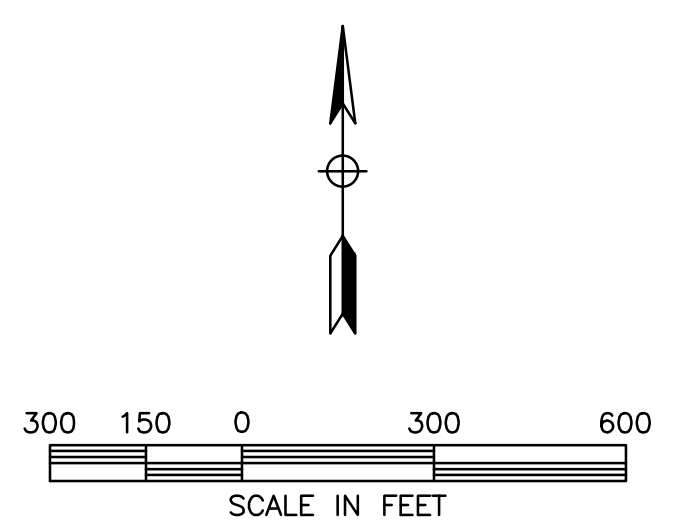
FIGURE
4A

MATCHLINE - SEE FIGURE 4A



- LEGEND**
- PROPOSED DRAINAGE BASIN
 - - - EXISTING DRAINAGE COURSE
 - SOIL A
 - SOIL B, ALL OTHER PROJECT AREAS
 - SOIL C
 - SOIL D
 - DIP CROSSING
 - PROPERTY BOUNDARY

MATCHLINE - SEE FIGURE 4D



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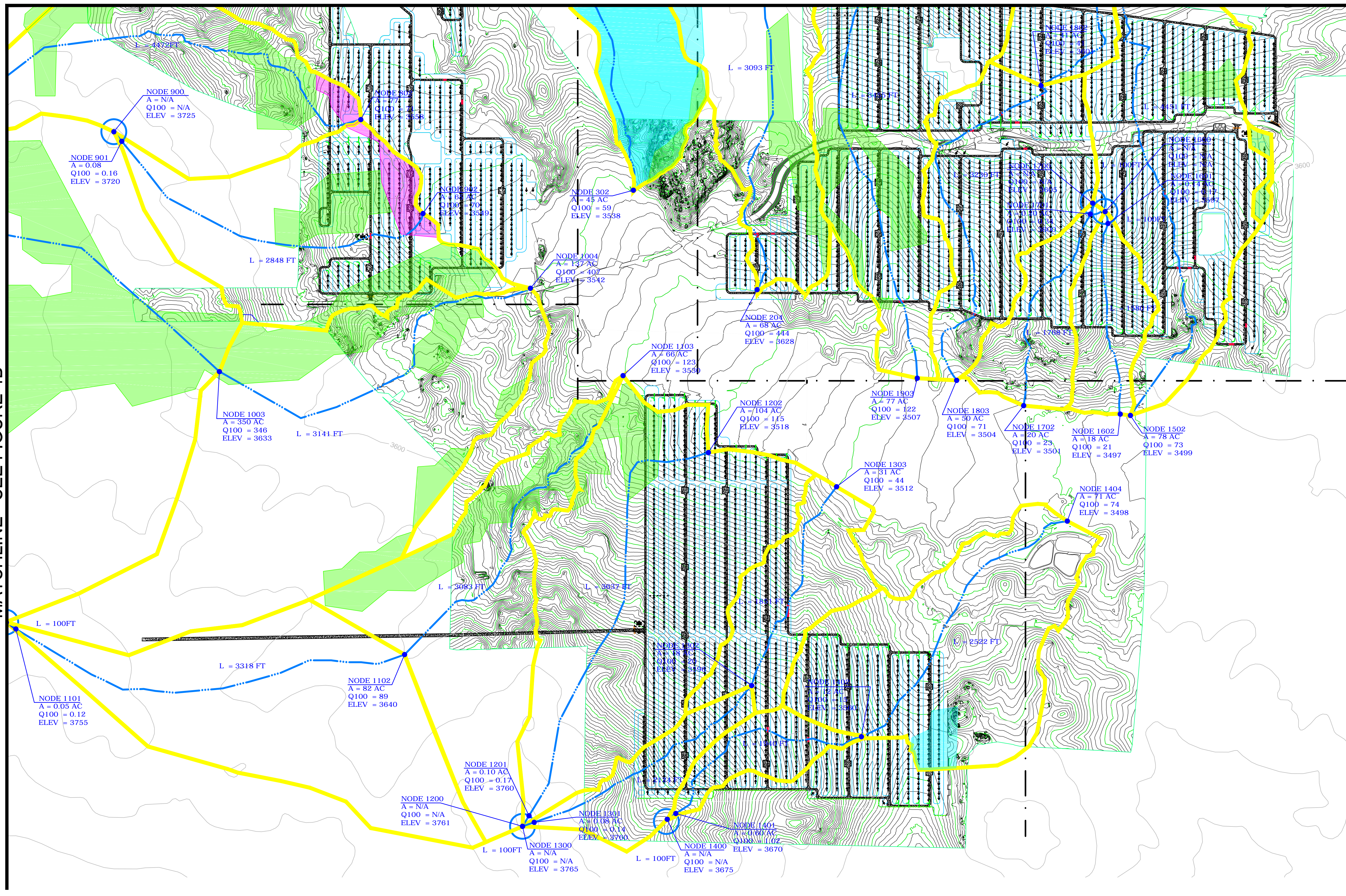
**RUGGED ACRES
 PROJECT SITE DRAINAGE BASIN**

PROPOSED HYDROLOGY

AECOM
 PROJECT NO.
 60212653

FIGURE
4B

MATCHLINE - SEE FIGURE 4C

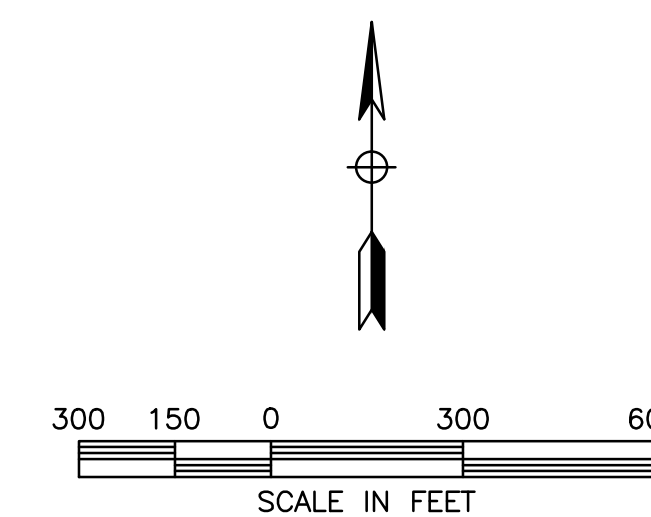


LEGEND

- PROPOSED DRAINAGE BASIN
- - - EXISTING DRAINAGE COURSE
- SOIL A
- SOIL B, ALL OTHER PROJECT AREAS
- SOIL C
- SOIL D
- DIP CROSSING
- PROPERTY BOUNDARY

MATCHLINE - SEE FIGURE 4B

MATCHLINE - SEE FIGURE 4E



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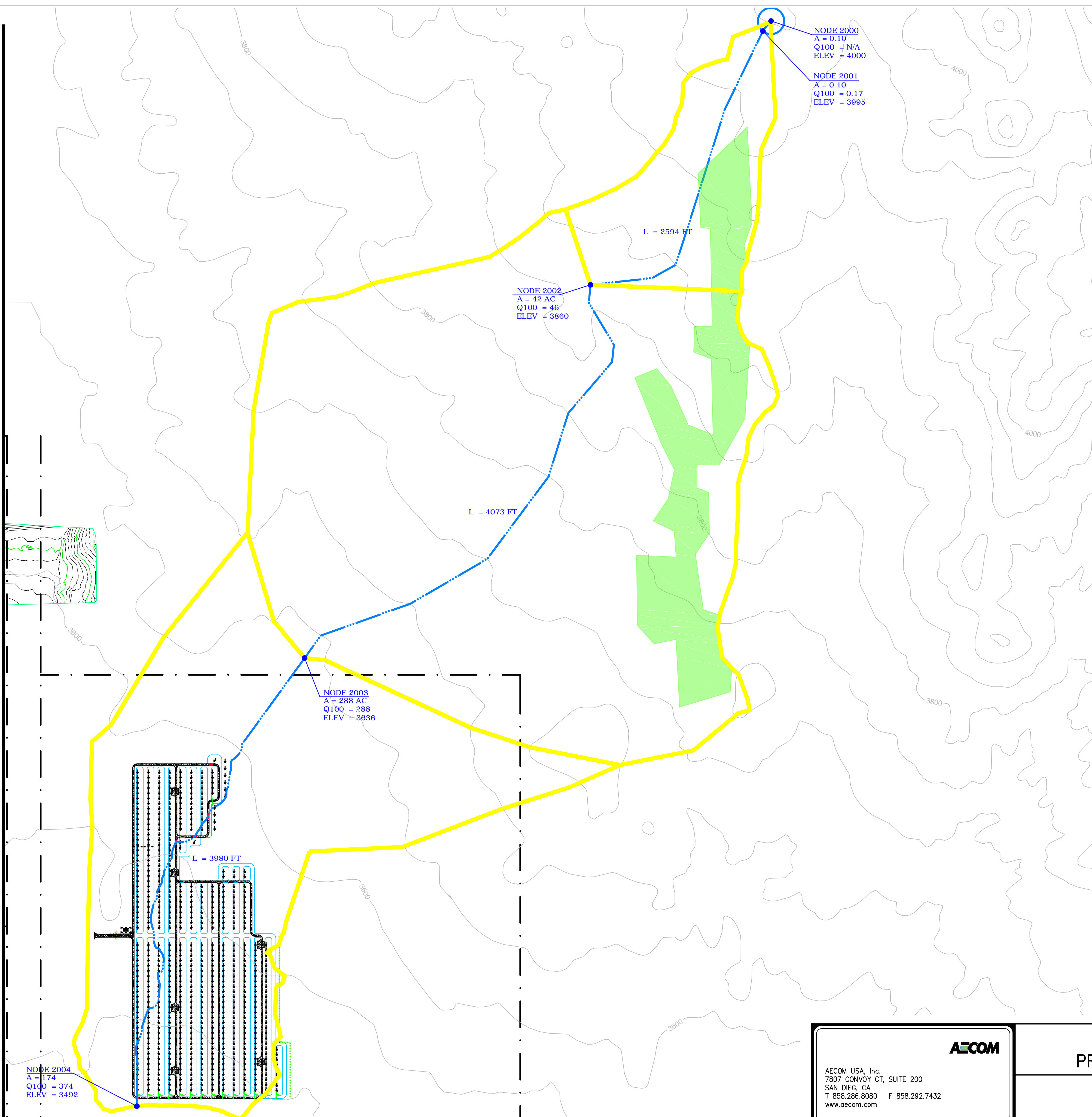
**RUGGED ACRES
 PROJECT SITE DRAINAGE BASIN**

PROPOSED HYDROLOGY

AECOM
 PROJECT NO.
 60212653

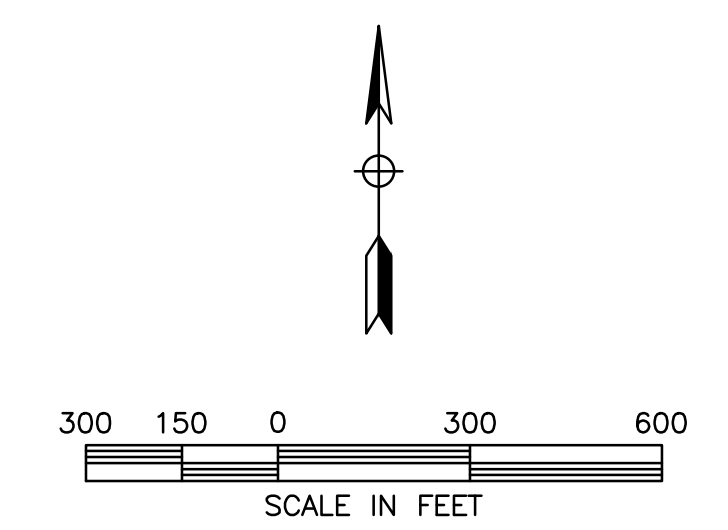
FIGURE
4D

MATCHLINE - SEE FIGURE 4D



LEGEND

- PROPOSED DRAINAGE BASIN
- EXISTING DRAINAGE COURSE
- SOIL A
- SOIL B, ALL OTHER PROJECT AREAS
- SOIL C
- SOIL D
- DIP CROSSING
- PROPERTY BOUNDARY



NODE 2004
A = 174
Q100 = 374
ELEV = 3492

NODE 2003
A = 288 AC
Q100 = 288
ELEV = 3636

NODE 2002
A = 42 AC
Q100 = 46
ELEV = 3860

NODE 2000
A = 0.10
Q100 = N/A
ELEV = 4000

NODE 2001
A = 0.10
Q100 = 0.17
ELEV = 3995

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**RUGGED ACRES
PROJECT SITE DRAINAGE BASIN**

PROPOSED HYDROLOGY

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PROJECT NO.
60212653

FIGURE
4E

PRELIMINARY HYDROLOGY AND DRAINAGE STUDY
RUGGED ACRES SOLAR FARM

Post-Project Soil Type Areas - Site Plan

The C Values of the A - D Soil Types are From Table 3-1 in the SDCHM

Sub Basins Area (ft ²)	Soil Type - Area 200					Soil Type - Area 300					Soil Type - Area 400				
	A	B	C	D	IMP	A	B	C	D	IMP	A	B	C	D	IMP
1				1491385		92656			1758526					496043	
2				10035068											0.01
3	380925			388236											
Sub Basin Total Area		18216792					1941278					869048			
Soil Type Total Area (ft²)	380925	5921178	0	11914689	0	92656	90096	0	1758526	0	0	373004.99	0	496043	0.01
Soil Type Total Area (acres)	8.74	135.93	0.00	273.52	0.00	2.13	2.07	0.00	40.37	0.00	0.00	8.56	0.00	11.39	0.00
Total Sub Basin Drainage Area (acres)	418.20					44.57					19.95				
Percentage of Total	2.09%	32.50%	0.00%	65.40%	0	4.77%	4.64%	0.00%	90.59%	0	0.00%	42.92%	0.00%	57.08%	1.15068E-08
C for Natural Terrain	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0
Watershed Weighted C	0.31					0.34					0.31				

Sub Basins Area (ft ²)	Soil Type - Area 500					Soil Type - Area 600					Soil Type - Area 700				
	A	B	C	D	IMP	A	B	C	D	IMP	A	B	C	D	IMP
1				111868					1108692						
2					0.1				286553	0.27	492077			943778	
3															
4											1729840		46296		
Sub Basin Total Area		538376					4431740					31989001			
Total Area (ft²)	0	426507.9	0	111868	0.1	0	3036495	0	1395245	0.27	2221917	28777010	46296	943778	0
Total Area (acres)	0.00	9.79	0.00	2.57	0.00	0.00	69.71	0.00	32.03	0.00	51.01	660.63	1.06	21.67	0.00
Total Drainage Area (acres)	12.36					101.74					734.37				
Percentage of Total	0.00%	79.22%	0.00%	20.78%	0.000	0.00%	68.52%	0.00%	31.48%	6.1E-08	6.95%	89.96%	0.14%	2.95%	0
C for Natural Terrain	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0
Watershed Weighted C	0.27					0.28					0.25				

Sub Basins Area (ft ²)	Soil Type - Area 800					Soil Type - Area 900					Soil Type - Area 1000				
	A	B	C	D	IMP	A	B	C	D	IMP	A	B	C	D	IMP
1	567382		75674		555	546061		204220							
2										0.02	4264965				
3											1032521				
Sub Basin Total Area		3370837					2829585					25221680			
Total Area (ft²)	567382	2727226	75674	0	555	546061	2079304	204220	0	0.02	5297486	19924194	0	0	0
Total Area (acres)	13.03	62.61	1.74	0.00	0.01	12.54	47.73	4.69	0.00	0.00	121.61	457.40	0.00	0.00	0.00
Total Drainage Area (acres)	77.38					64.96					579.01				
Percentage of Total	16.83%	80.91%	2.24%	0.00%	0.000	19.30%	73.48%	7.22%	0.00%	0.000	21.00%	79.00%	0.00%	0.00%	0.000
C for Natural Terrain	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0
Watershed Weighted C	0.24					0.24					0.24				

PRELIMINARY HYDROLOGY AND DRAINAGE STUDY
RUGGED ACRES SOLAR FARM

Sub Basins Area (ft ²)	Soil Type - Area 1100					Soil Type - Area 1200					Soil Type - Area 1300				
	A	B	C	D	IMP	A	B	C	D	IMP	A	B	C	D	IMP
1						350799									
2	689098									0.14					0.03
Sub Basin Total Area		6378111					4534240					2115366			0.31
Total Area (ft²)	689098	5689013	0	0	0	350799	4183441	0	0	0.14	0	2115366	0	0	0.34
Total Area (acres)	15.82	130.60	0.00	0.00	0.00	8.05	96.04	0.00	0.00	0.00	0.00	48.56	0.00	0.00	0.00
Total Drainage Area (acres)	146.42					104.09					48.56				
Percentage of Total	10.80%	89.20%	0.00%	0.00%	0.00%	7.74%	92.26%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
C for Natural Terrain	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0
Watershed Weighted C	0.24					0.25					0.25				

Sub Basins Area (ft ²)	Soil Type - Area 1400					Soil Type - Area 1500					Soil Type - Area 1600				
	A	B	C	D	IMP	A	B	C	D	IMP	A	B	C	D	IMP
1						175929									
2				143549											
Sub Basin Total Area		3604567					3407610					762658			
Total Area (ft²)	0	3461018	0	143549	0	175929	3231681	0	0	0	0	762658	0	0	0
Total Area (acres)	0.00	79.45	0.00	3.30	0.00	4.04	74.19	0.00	0.00	0.00	0.00	17.51	0.00	0.00	0.00
Total Drainage Area (acres)	82.75					78.23					17.51				
Percentage of Total	0.00%	96.02%	0.00%	3.98%	0.00%	5.16%	94.84%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
C for Natural Terrain	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0
Watershed Weighted C	0.25					0.25					0.25				

Sub Basins Area (ft ²)	Soil Type - Area 1700					Soil Type - Area 1800					Soil Type - Area 1900				
	A	B	C	D	IMP	A	B	C	D	IMP	A	B	C	D	IMP
1									152719					869383	
2				143549							479380				
Sub Basin Total Area		856606					3957652					5921062			
Total Area (ft²)	0	713057	0	143549	0	0	3804933	0	152719	0	479380	4572299	0	869383	0
Total Area (acres)	0.00	16.37	0.00	3.30	0.00	0.00	87.35	0.00	3.51	0.00	11.01	104.97	0.00	19.96	0.00
Total Drainage Area (acres)	19.66					90.86					135.93				
Percentage of Total	0.00%	83.24%	0.00%	16.76%	0.00%	0.00%	96.14%	0.00%	3.86%	0.00%	8.10%	77.22%	0.00%	14.68%	0.00%
C for Natural Terrain	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0
Watershed Weighted C	0.27					0.25					0.25				

PRELIMINARY HYDROLOGY AND DRAINAGE STUDY
RUGGED ACRES SOLAR FARM

Sub Basins Area (ft ²)	Soil Type - Area 2000					Soil Type - Area 2100				
	A	B	C	D	IMP	A	B	C	D	IMP
1	359398									
2	1235700									
3										
Sub Basin Total Area		21925103					420395			
Total Area (ft²)	1595098	20330005	0	0	0	0	420395	0	0	0
Total Area (acres)	36.62	466.71	0.00	0.00	0.00	0.00	9.65	0.00	0.00	0.00
Total Drainage Area (acres)	503.33					9.65				
Percentage of Total	7.28%	92.72%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
C for Natural Terrain	0.2	0.25	0.3	0.35	1.0	0.2	0.25	0.3	0.35	1.0
Watershed Weighted C	0.25					0.25				

PRELIMINARY HYDROLOGY AND DRAINAGE STUDY
RUGGED ACRES SOLAR FARM

Proposed Road Crossings of Existing Watercourses

Watercourse No.	Dip Crossing Down Stream Node.	Design Flow Rate	Depth	Flooded Width	n	Crossing Length	z1*	z2*	Area	wp	r	r ^{2/3}	s	s ^{1.5}	VEL
		cfs	ft	ft		20	10	10	sf	ft	ft	ft ^{2/3}	0.01	0.1	ft/sec
200	204	444	1.37	47.4	0.015	20	10	10	46.17	47.54	0.97	0.98	0.01	0.10	9.72
	204	444	1.37	47.4	0.015	20	10	10	46.17	47.54	0.97	0.98	0.01	0.10	9.72
600	602	96	0.61	32.2	0.015	20	10	10	15.92	32.26	0.49	0.62	0.01	0.10	6.19
	602	96	0.61	32.2	0.015	20	10	10	15.92	32.26	0.49	0.62	0.01	0.10	6.19
900	902	70	0.51	30.2	0.015	20	10	10	12.80	30.25	0.42	0.56	0.01	0.10	5.58
1300	1303	44	0.39	27.80	0.015	20	10	10	9.32	27.84	0.33	0.48	0.01	0.10	4.78
	1303	44	0.39	27.80	0.015	20	10	10	9.32	27.84	0.33	0.48	0.01	0.10	4.78
1400	1402	15	0.21	24.20	0.015	20	10	10	4.64	24.22	0.19	0.33	0.01	0.10	3.29
	1402	15	0.21	24.20	0.015	20	10	10	4.64	24.22	0.19	0.33	0.01	0.10	3.29
	1402	15	0.21	24.20	0.015	20	10	10	4.64	24.22	0.19	0.33	0.01	0.10	3.29
1500	1502	73	0.51	30.20	0.015	20	10	10	12.80	30.25	0.42	0.56	0.01	0.10	5.58
	1502	73	0.51	30.20	0.015	20	10	10	12.80	30.25	0.42	0.56	0.01	0.10	5.58
	1502	73	0.51	30.20	0.015	20	10	10	12.80	30.25	0.42	0.56	0.01	0.10	5.58
1800	1803	71	0.51	30.20	0.015	20	10	10	12.80	30.25	0.42	0.56	0.01	0.10	5.58
	1803	71	0.51	30.20	0.015	20	10	10	12.80	30.25	0.42	0.56	0.01	0.10	5.58
	1803	71	0.51	30.20	0.015	20	10	10	12.80	30.25	0.42	0.56	0.01	0.10	5.58
	1803	71	0.51	30.20	0.015	20	10	10	12.80	30.25	0.42	0.56	0.01	0.10	5.58
	1803	71	0.51	30.20	0.015	20	10	10	12.80	30.25	0.42	0.56	0.01	0.10	5.58
1900	1902	122	0.69	33.8	0.015	20	10	10	18.56	33.87	0.55	0.67	0.01	0.10	6.63
	1902	122	0.69	33.80	0.015	20	10	10	18.56	33.87	0.55	0.67	0.01	0.10	6.63
2000	2004	374	1.25	45.00	0.015	20	10	10	40.63	45.12	0.90	0.93	0.01	0.10	9.24
	2004	374	1.25	45.00	0.015	20	10	10	40.63	45.12	0.90	0.93	0.01	0.10	9.24
	2004	374	1.25	45.00	0.015	20	10	10	40.63	45.12	0.90	0.93	0.01	0.10	9.24
	2004	374	1.25	45.00	0.015	20	10	10	40.63	45.12	0.90	0.93	0.01	0.10	9.24

*Assume a 10% road slope down into the crossing